



Journal of the **TEXTILE Association**

VOL. 74

NO. 3

SEPTEMBER - OCTOBER 2013



**Add special colours
to your business with fibres and
yarns that are pre-coloured.**



Recron® Pre-coloured fibres and yarns come with a dual advantage. It will not only add colours to your customers' wardrobe, but also to your balance sheet.

Get an added advantage with special benefits:

- Eliminates traditional dyeing processes making it environment-friendly
- Excellent colour fastness and consistency of shades
- Higher downstream spinning productivity and superior yarn quality
- Products are Oekotex 100, class-1 certified and REACH compliant

So add that perfect balance of colour and strength to your business with Recron® Pre-coloured fibres and yarns.

Recron®
Pre-coloured

GO GREEN with SSP

Treat, Reuse & Conserve



Zero Liquid Discharge Effluent Treatment
Solution for textile Dyeing Industries



SSP PVT LIMITED has come up with a Zero Liquid Discharge Effluent Treatment Solution for Textile Dyeing Industries, by which in the one hand the textile dyeing industry at large can treat the effluent consisting of dissolved solids, dye chemicals & reuse the same condensate water repeatedly for the dyeing process instead of pumping the water from the ground and on the other hand the salt used for dyeing can be reused & sold in the market after dyeing.

The basic thrust of the technology is to convert entire quantity of effluent to zero liquid level by separating water & salt using evaporation & separation technology.

- Zero Liquid Discharge System
- Highest Steam Economy
- Low Operating Cost
- Less Downtime for Maintenance
- Generation of Reusable Condensate Water
- Operator Friendly

SSP PVT LIMITED

13 Milestone, Mathura Road
Faridabad - 121003, Haryana (INDIA)
Phone: +91-129-4183700 | Fax: +91-129-4183777
Email: info@ssg.co.in, marketing@ssp.co.in
Website: www.sspindia.com



The fiber brand for the heavenly softness

MicroModal® is absolute perfection in terms of softness. Fabrics of MicroModal® are heavenly soft and nestle up against the skin in a completely natural way. MicroModal® is made of beech wood and is thus 100% from Nature.

Find out more at: www.lenzing.com/micromodal

MicroModal® is a registered trademark of Lenzing AG.

Lenzing AG - India

1st Floor, Rajnarayan Towers 70, Race Course Coimbatore - 641018 Tamilnadu, India

Phone: +91(0) 422 4292800, Fax: +91(0) 422 4292814

www.lenzing.com/modal



LEADING FIBER INNOVATION

Testing equipment for fibres, yarns, and fabrics

STATIMAT DS

automatic tensile, evenness and count tester for yarns.

STATIMAT 4U

automatic tensile tester for high-tenacity yarns and monofilaments, with integrated yarn count measurement module AUTOCOUNT.

DYNAFIL ME

universal filament yarn tester, with automatic package changer model SE or SM.

TEXTURMAT ME+

automatic crimp contraction and shrinkage tester for DTY and other yarn types.

FAVIMAT+ ROBOT2

and -AIROBOT2

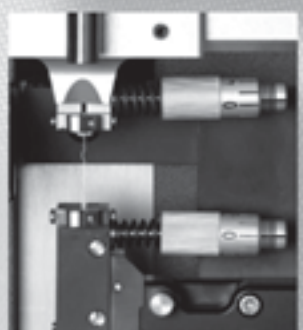
automatic linear density, crimp and tensile tester for single fibres.

FAVIGRAPH

single fibre linear density and tensile tester.

HELFI

single fibre shrinkage tester.



STATIMAT MEL+

automatic tensile tester for elastane yarns (Spandex), elastic combination yarns and elastic fabrics.

STATIMAT ME+

automatic tensile tester for yarns.

COVAFIL

capacitive evenness tester for filament yarns.

COMCOUNT

automatic yarn count measurement module.

FIBRESTRESS

bending-abrasion and cyclic stress tester for fibres and yarns.

FIBROTEST

fibre length- and strength tester.

LENGTHCONTROL LCT

fully automated fibre length tester.

Sole Agents in India: **M/s. World Traders MFG. Co.**

1413, Maker Chambers V, 13th Floor, Nariman Point, Mumbai 400 021;

Tel.: 91-22-2261 2743, 2284 3423, 2287 2935; Fax: 91-22-22872534;

E-Mail: info@wtmcindia.com

Delhi Office: Ph. No. 91-11-24333256, 24334457;

Chennai: Ph. No. 91-44-24321547, 24338767;

Service Centre: Vashi Ph. No. 91-22-27892948;

Corporate Office: 710, Maker Chambers V, Nariman Point,

Mumbai 400 021; Tel. No.: 91-22-2283 3458 / 2283 3453 / 2283 3457;

www.textechno.com

extend

over an entire range

Textile Machines

- Spinning
- Weaving
- Warp & circular knitting
- Dyeing
- Finishing
- Garment & home textiles
- Technical textiles
- Synthetics
- Carpets

Utilities

- Air engineering
- Lab equipment
- ETP

a t e

Accessories & Spare Parts

- Spinning accessories
- Processing accessories & retrofits
- Spare parts

Customer Support

- Erection & commissioning
- Technological services
- Annual maintenance contracts
- Machine audits

Backed with over 7 decades of experience, A.T.E. is a leader in textile engineering, both in apparel and technical textiles. With own manufacturing as well as representation of over 50 principals, A.T.E. is uniquely positioned as a **'one window solution provider'** across the textile value chain and across a comprehensive range of utilities.



Marketed by:
A.T.E. ENTERPRISES PRIVATE LIMITED

T: +91-22-6676 6100 F: +91-22-2675 2445

E: teq@ateindia.com

W: www.ateindia.com, www.ategroup.com



ALPENOL PRODUCTS

GET ZERO BREAKS IN LOOM WITH "ALPENOL" SINGLE SHOT SIZING MATERIALS.
APPROVED BY TEXTILES MILLS, INCREASING ORIGINAL EFFICIENCY BY 10 TO 20%.

'ALPENOL' SINGLE SHOT SIZING MATERIAL.

THE INTRODUCTION OF THE ABOVE MIRACULOUS MATERIAL HAS BROKEN THE
UPPER BARRIER OF LOOM SHED EFFICIENCY WITH ZERO WARP BREAK,
RESULTING IN BETTER SIZED YARN QUALITY WITH

- INCREASE IN TENSILE STRENGTH
- INCREASE IN THE LIFE OF HEALDS & READS
- INCREASE IN BREAKING LOAD
- FULL PENTRATION OF THE YARN
- DECREASE IN DEAD LOSS AND DROPPINGS

**MADE WITH LATEST TECHNOLOGY IN INDIA.
100% ECO-FRIENDLY AND ENVIROMENTALLY FRIENDLY.**



M/S. ALPENOL

601, Satyanarayan Prasad Commercial Center,
Dayaldas Road, Vileparle (E), Mumbai – 400 057 INDIA
Tel. No.: +91-022-26122651, 26122809, 42336308, 42336309
Fax: +91-022-42336330
Email Id: alpenols@gmail.com , Website: www.alpenol.net

ALPENOL

The Comfort of Competence

Settle back and relax – thanks to Rieter



Feel at ease and indulge in the comfort of truly tailored support. Our proficient personnel are at your service – from the very first meeting seamlessly through to operations of your spinning mill plants. Rest assured – Rieter provides all four spinning system technologies and will advise you with competence on the best investment in terms of economy and market impact. Benefit from our expert services and enjoy the comfort of partnership with Rieter.

Please visit us at ITME India 2012 in hall 1, booth J 14.

J 20 Air-Jet Spinning Machine

The J 20 Air-Jet Spinning Machine features up to 120 high-production spinning units. The J 20 can be equipped for separate production on both machine sides, i.e. two different yarn qualities can be spun simultaneously on one machine. In conjunction with the newly developed spinning unit, the J 20 offers maximum yarn quality, productivity and flexibility. The unique quality characteristics of Comfortjet® yarn are reflected in benefits for spinning mills, downstream processors and end users.



www.rieter.com



RIETER

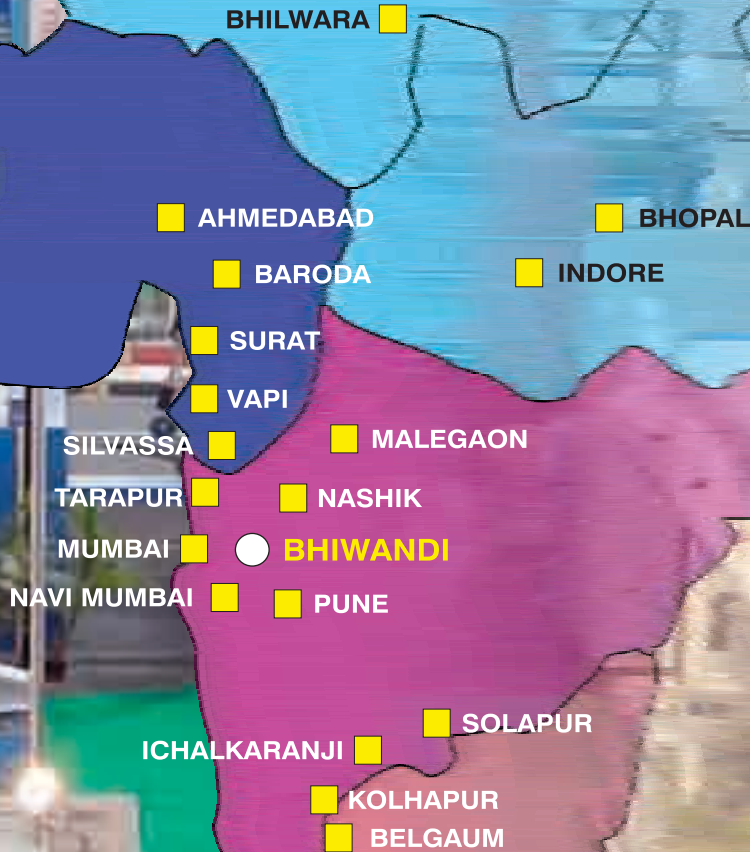
Discover Markets, Find New Customers



ITMACH

**INTERNATIONAL
TEXTILE MACHINERY
& ACCESSORIES
EXHIBITION**

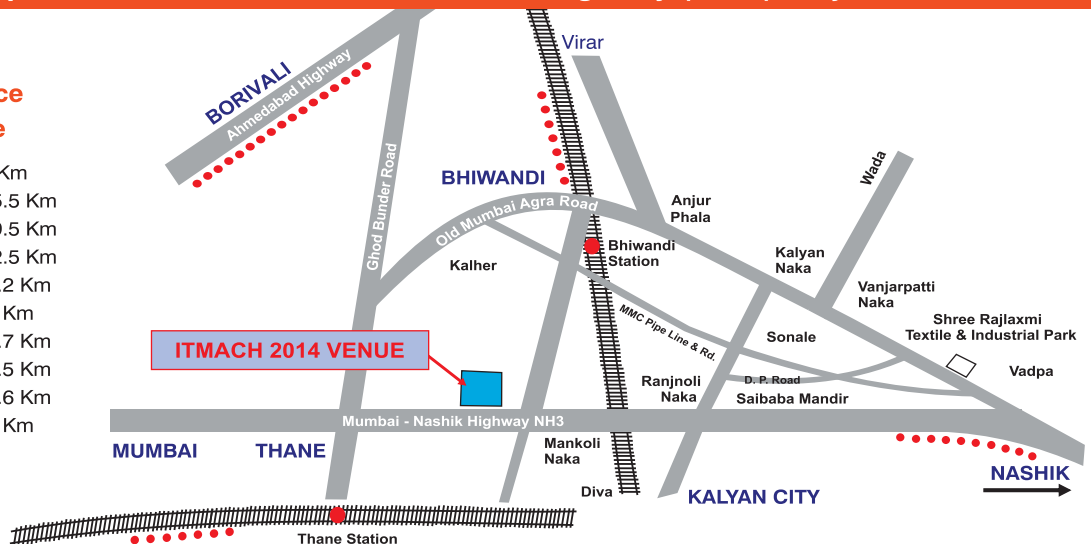
**January 22-24, 2014
Bhiwandi, India**



VENUE: Indian Corporation Premises, Mumbai - Nashik Highway (NH-3), Anjurdive, Bhiwandi

Connectivity & Distance From Exhibition Venue

N.H. 3	0 Km
Domestic Airport	: 35.5 Km
International Airport	: 29.5 Km
Borivali Station	: 32.5 Km
Kalyan Station	: 14.2 Km
Thane Station	: 13 Km
Ghatkopar	: 26.7 Km
Vikhroli	: 22.5 Km
Mulund	: 13.6 Km
Vashi (Navi Mumbai)	: 20 Km



SPACE BOOKING ENQUIRY

Arvind Semlani: Cell - 9833977743,
Farid K S: Cell: +91-9869185102
Tel. +91 (22) 22017013/61/62/63, E-mail: info@itmach.com,

VISITOR REGISTRATION

Website: www.ITMACH.com
E-mail: seivices@itmach.com



**LOWEST
OPERATING COSTS.
HIGHEST
QUALITY STANDARDS.**



TWO-FOR-ONE TWISTER

Features

- Various models for twisting all types of yarn from fine Voile to Carpet yarn (VJ-100-MN, VJ-120-MN, VJ-150-MN, VJ-160-MN, VJ-190-MN & VJ-190 MW & VJ-300 MW)
- Choice of 6" & 8" Feed Package
- Reduced machine width of 850 mm
- Automatic Cradle lifting during yarn break
- Provision for Soft/Dye Package winding
- Bunching device for providing tail end
- Top tray arrangement for storing yarn packages
- Waxing device for hosiery yarns

- High quality, simple to use machine • No need for skilled operators • Lesser power consumption
- Trouble free performance • Specially designed for multi-ply and very coarse yarns

Veejay Lakshmi Engineering Works Ltd.,

Sengalipalayam, N.G.G.O.Colony (Post), Coimbatore 641 022, India.
Ph : 91-422 2460 662, 2460 365, 2461 369. Extn. 403 / 404 | Fax: 91-422 2460453, 2461565
E-mail: sales@veejaylakshmi.com; spares@veejaylakshmi.com
www.veejaylakshmi.com

Selling Agent: Veejay Sales and Services Limited, Coimbatore.
Branch Offices: Mumbai, New Delhi, Chandigarh and Ahmedabad.



InFashion

4th edition
Design+Trends+Sourcing

17 Fri / 18 Sat January, 2014

Hall 5+6, Bombay Exhibition Center
Goregaon, Mumbai, India

www.indiainfashion.com

FORECAST, CREATE, TRANSFORM: The Business of Fashion

India's hottest trends, sourcing and fashion ingredients show is back with all the latest innovations in **fibre, yarn, fabric, accessories, CAD/CAM and services.**

A trade platform for Indian & International companies, to showcase products, services and innovations to the industry.

When you want to create the best you need the best of everything and this is where you will find it. Whether you are a merchandiser, designer, RMG manufacturer, retailer, wholesaler or buying house this is THE destination for Knowledge, Trends & Forecasting from fibre to fashion creation.

Future of Fashion begins here!

CONCURRENT SHOWS



Exhibition/Conference
Workshops/Awards



Exhibition/Conference
Awards

IMAGES
GROUP.IN

For Participation:

**India
Delhi**

Jitender Sharma: +91 9958729411
jitendersharma@imagesgroup.in

Adarsh Verma: +91 9999251621
adarshverma@imagesgroup.in

**India
Mumbai**

Bindu Pillai: +91 9820324063
bindupillai@imagesgroup.in

Chandan Singh: +91 9769653976
chandansingh@imagesgroup.in

Pakistan

Omar Satti: +92 42 3587 2884
omar.satti3@gmail.com

Mehreen Rana: +92 42 35873907/8
m.rana@jands.com.pk

China & Taiwan

May Chien: +886-2-2720-7890
may.chien@pilalus.intl.com

Europe

Ulf A. Leenings: +49-0-211-417429
infashion@expo-duesseldorf.com

Laboratory Temperature and Humidity Control Systems



LABORATORY PRECISION AIR CONDITIONING SYSTEMS

- Cooling solution for testing laboratory is very critical application. It requires maintaining the Temperature & Humidity in close tolerance as per ISO 139/187, ASTM D1776, M&S PGA and other international standards.
- The inside conditions of the laboratory are to be maintained at Temperature 20°C (70°F) \pm 1° and corresponding Relative Humidity at 65% \pm 2% irrespective of outside ambient condition.

The specially designed **GEA DENCO** Precision Air Condition units are best suitable and widely used for this application. The **GEA DENCO** Precision Air Condition units are designed with following special features to meet the requirement of cooling solution for testing laboratories.

1. Air cooled Condenser units
2. Scroll compressors
3. Hot gas bypass
4. Thyristor controlled heaters
5. Steam Humidifier
6. High speed forward curve direct driven blower fans
7. Thermostatic Expansion Valve for efficient cooling
8. EU4 air filters
9. Microprocessor based controls with digital display of temperature and humidity
10. Top discharge cold air with or without ducted solution
11. Ducted system for distribution of air

The Precision Air Conditioner Units of various cooling capacities are built as per the need of Testing Lab. The Precision AC units are designed and selected based on the Lab Equipment load, Lab Area and Ambient Condition of the location.

Marketed By



Premier Colorscan Instruments Pvt. Ltd.

EL-130, Electronic Zone, M.I.D.C., Mahape, Navi Mumbai - 400 710. India

Tel: + 91-22-27637900. | Fax: + 91-22-27622022 / 27622124 / 27637921

E:mail : pci@vsnl.com, colorlab@premiercolorscan.com, premiercipl@mtnl.net.in

www.premiercolorscan.com



THE TEXTILE ASSOCIATION (INDIA)

(An ISO 9001:2008 Certified Association)

Founded in 1939

In association with
THAILAND CONVENTION & EXHIBITION BUREAU

Presents

**GLOBAL
TEXTILE
CONGRESS**

Theme:

**" GLOBAL TEXTILE -
OPPORTUNITIES & CHALLENGES IN
AN INTEGRATED WORLD "**

on 23, 24 & 25th May, 2014
(Friday, Saturday & Sunday)
at Bangkok, Thailand



We choose our car with the latest technology and best features.....

on a similar thought GLX presents Tyga process for cotton pretreatment



- Now you can choose to pretreat cotton the Tyga way
- A new revolutionary pretreatment process for cotton with Tyga HP
- Bleach cotton with minimal alkali safer subsequent dyeing
- Dye in subsequent bath
- No intermediate hot wash
Save time water energy labour
- Reduced weight loss of fabric improved fabric feel
- Reduce load on ETP with minimum alkali in effluent

ASPIRE CHEMICALS PVT LTD.,

E-mail : glxindia@vsnl.com

www.glxindia.com

Phones : +91-22-26730272

Telefax : +91-22-26730940



South Gujarat Unit



11th

**International & 69th
All India Textile Conference**

Conference Theme

**Indian Textiles-Global Prospects
and Perceptions**

20th & 21st December, 2013.

At

The Gateway (Taj) Hotel, Athwalines, Surat

Host

The Textile Association (India) - South Gujarat Unit.

For more information, please visit

www.taisurat.org

More bite in your teeth

with TCC FGX1 cylinder wire



The distinctive feature of "straight tooth back" in the FGX1 cylinder wire from TCC offers un-paralleled benefits

Better carding action

The tooth back keeps the fibres on the surface and thus ensures an intensive interaction with the flat tops. Enough space between the rows of teeth for fibres to get out of the way ensures gentle carding

Consistent quality

Provides consistent quality over a long period of time

Lower IPI values

Help to reduce IPI values upto 15%

Low maintenance

Reduced grinding of FG wires reduces maintenance expenditure by at least 50%. Also reduces machine downtime, thus improving productivity

Longer life

The long tooth back forms a robust carding edge. Wear is considerably lower, which reduces need for grinding and thus improves working life



Exclusively marketed by

A.T.E. ENTERPRISES PRIVATE LIMITED

Shagwadi House, A - 19, ETS No. 689, Veera Desai Road,

Anandheri (West), Mumbai - 400 053, India

T: +91-22-6676 6100 F: +91-22-2673 3446

E: poacc@ateindia.com

W: www.ateindia.com, www.ategroup.com

43, Dr. V B Gandhi Marg, Fort, Mumbai 400 023 India

TRÜTZSCHLER



www.truetzschler.com

Promote your brands

with smart way

Connect with right audience

Advertise & be a web partner



Login to

www.textileassociationindia.org

The Textile Association (India)

Tel. : +91 22 2446 1145,

Fax : +91 22 2447 4971

M. : +91 9819801922

E-mail: taicnt@gmail.com,

javitra1941@gmail.com

- Global presence
- Perfect target audience
- Long term relationship with industry body
- Creative ways to utilize medium
- Staying ahead of competition
- E-mail marketing to all TAI members
- Press releases
- Knowledge articles
- Banner ad
- Company listing on members directory page

OUR ESTEEMED WEB PARTNERS

Leading Corporations in India-Advertise on TAI Website

www.textileassociationindia.org



Grasim Industries Ltd.

RIETER

Rieter



Benninger

softech

Softech



Morarjee Mills Ltd.



Mafatlal Industries Ltd.

DORNIER

Dornier Machinery India Pvt. Ltd.

SSP

SSP Pvt. Ltd.



Technocraft Industries

LENZING

Lenzing - AG

Are you one of them?

For more web advertising details

Contact

The Textile Association (India)

E-mail: taicnt@gmail.com

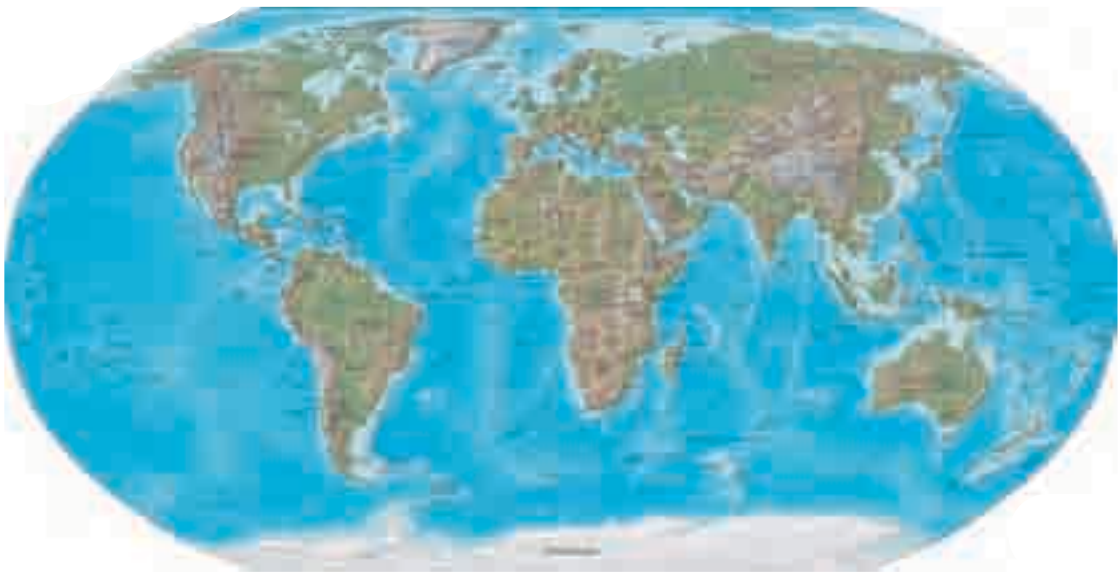


Splendid drapes by Mother Nature.

At Birla Cellulose, we don't just make fibres that are earth-friendly, we help create fabrics that have Mother Nature's splendid drapes, sheen and feel. Be it Spunshades that reflect the brilliant hues of nature, or Birla Modal which makes for delicate and naturally soft couture or even Birla Excel which wraps up opulent style with resilience, our fibres celebrate a healthier way of living and being.



Birla Cellulose
Fibres from nature



PRECITEX WORLD

PRECITEX is the undisputed leader in the domestic Indian market. That is not all. It is also the most preferred Indian brand of aprons and cots around the world, exported to more than 40 countries across the continents.

That is why we keep winning top export awards year after year. It is a testimony to the world class quality of PRECITEX products that go a long way in enhancing the productivity, profitability, and competitiveness of our highly demanding quality conscious customers.

PRECITEX

WORLD CLASS APRONS & COTS

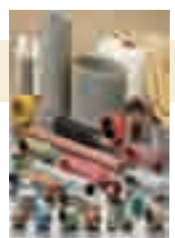
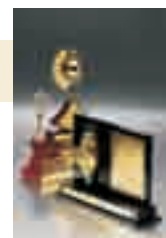
PRECISION RUBBER INDUSTRIES PVT. LTD.

(An ISO 9001:2000 Company)

201 A, Poonam Chambers, Worli, MUMBAI 400 018.

Tel: 91 22 40766444 / 40049750 Fax: 91 22 66605382 / 66605383

E-mail: precitex@vsnl.com Web Site: www.precitex.com



The Textile Association (India)



(Founded 1939)



ISO Certified Association

EDITORIAL BOARD

Chairman : Prof. (Dr.) M. D. TELI
Institute of Chemical Technology, Mumbai

Co-Chairman : Mr. K. L. VIDURASHWATHA
Technical Advisor, Rossari Biotech, Mumbai

Editor : Prof. (Dr.) R. V. ADIVAREKAR
Institute of Chemical Technology, Mumbai

MEMBERS

Dr. ARINDAM BASU (*CSTRI, Bangalore*)

Mr. C. BOSE (*Bose & Co., Mumbai*)

Dr. A. N. DESAI (*BTRA, Mumbai*)

Dr. ROSHAN PAUL (*Hohenstein Institute, Germany*)

Dr. A. K. PRASAD (*Clariant, Mumbai*)

Dr. RAMKUMAR SHESHADRI
(*Texas Tech University, USA*)

Dr. H. V. SREENIVASAMURTHY
(*Advisor, NMIMS-CTF, Shirpur*)

OFFICE BEARERS

National President

Mr. D. R. MEHTA

National Vice-President

Dr. ANIL GUPTA

Chairman

Mr. K. D. SANGHVI

Vice-Chairman

Dr. N. N. MAHAPATRA

Hon. Gen. Secretary

Mr. V. D. ZOPE

Hon. Jt. Gen. Secretary

Mr. HARESH B. PAREKH

Mr. VIRENDRA JARIWALA

Hon. Treasurer

Mr. V. N. PATIL

Chairman - J.T.A. Editorial Board

Prof. (Dr.) M. D. TELI

Chairman P.A.C.

Dr. H. V. SREENIVASAMURTHY

Chairman B.P.C.

Prof. ASHWIN I. THAKKAR

Printed at :

Sundaram Art Printing Press, Mumbai

Published by PAVITRA PUBLISHER

Mr. J. B. SOMA (Publisher)

7A/203, New Dindoshi Giridarshan CHS.,

Near N.N.P. No. 1 & 2, New Dindoshi,

Goregaon (E), Mumbai - 400 065.

M.: 9819801922

E-mail : pavitra1941@gmail.com / jb.soma@gmail.com

JTA is a Bimonthly Publication of

THE TEXTILE ASSOCIATION (INDIA)

Pathare House, 2nd Floor, Next to State Bank of India,

67, Ranade Road, Dadar (W), Mumbai - 400 028.

Phone : (91-22) 2446 1145 • Fax (91-22) 2447 4971

E-mail : taicnt@gmail.com

www.textileassociationindia.org

JTA is Abstracted By :

Chemical Abstracts, USA | Indian Science Abstracts, India

World Textile Abstracts, UK | Texincon, India



Journal of the
TEXTILE Association
TEXTILE SCIENCE | TECHNOLOGY | ENGINEERING | MANAGEMENT

ISSN 0368-4636

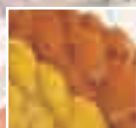
Sept - Oct 2013

Volume 74 No. 3

Contents

Editorial : A giant take off in the direction of success! 114

by Prof. (Dr.) R.V. Adivarekar



Influence of Substitution of Madder by Marigold 117

in Colouration of Natural Fibres

by M.D. Teli, Sanket Valia & Asmita Jadhav



Reactive Dyeing of Cotton with 122

Layer-by-Layer Technique

by S.D. Phadke, S. Maiti, P.V. Madiwale & R.V. Adivarekar



Advancements in Computer Colour Matching: 126

Colour Matching through Internet

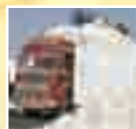
by Smita Honade, Neeraj Shrivastava, Aniket Bhute & C.W. Acharya



The Application of Advanced Control 131

Charts in Textiles

by Subhankar Maity



Quantitative and Qualitative Requirements of 140

Cotton in the 12th Five Year Plan Period

by K.P. Chellamani, R.S. Vignesh Balaji & J. Sudharsan



Texperience 150

Input-Output Reconciliation (A case study)

by Mr. S. Srinivasan



Texnotes 152

Chapter 2. Bio-based products and their application in Textile

by Manasi A. Damle, Madhura P. Nerurkar & Ravindra V. Adivarekar

OTHER FEATURES

Unit Activities 156

News 158

Advertisement Index 178

Forthcoming Events 194

Editorial

A giant take off in the direction of success!

By the time this issue of JTA reaches you, it will be already past Diwali. Still I take this occasion to wish all the beloved readers a Very Happy Diwali and a Happy New Year; though Belated. This Diwali indeed will be of great remembrance due to a special gift, as India enters the race of Mars Mission with the launch of *Mangalyan* on the auspicious day of Diwali. This definitely is a reason to celebrate. After India's successful unmanned *Chandrayaan* mission to the Moon in 2008 that brought back the first clinching evidence of the presence of water there, the **Mars Orbiter Mission (MOM)**, informally called as *Mangalyaan* is a "natural progression".

India's Rs.450 crore Mars Orbiter Mission (MOM) was launched using a Polar Satellite Launch Vehicle (PSLV) rocket, on 5th November 2013 from SHAR, Sriharikota, Andhra Pradesh. As per the survey, it is the fourth most tracked satellite globally.

"If we can't dare to dream big it would leave us as hewers of wood and drawers of water! India is today too big, to be just living on the fringes of high technology", aptly said somewhere. India has come a long way through hardships since it began its space programme half a century ago when it set up the first rocket launch pad in a coconut plantation in southern Kerala state. Now, 21 Indian satellites circle Earth, giving support to telephone operators, broadcast outlets, weather forecasters and providing remote education and healthcare.

The full credit goes to ISRO; who with the famed Indian skill of "*Jugaad*" (creating a cheap alternative solution) have become successful in making this mission at a low record prize of \$73 million. This prize is said to be 10 times less as compared to US counterpart, Nasa's *Maven* orbiter, which is due to launch on November 18.

We will have to wait for about 10 months to fully celebrate our conquest of a successful mission. The robotic satellite will have to travel about 780 million kilometre journey to Mars.

According to ISRO Chairman Koppillil Radhakrishnan, there were 51 missions so far around the world amongst which 21 were successful missions. If all goes well and the

satellite orbits the Red Planet, India's space agency will become the fourth in the world after those of the United States, Russia and Europe to undertake a successful Mars mission.

Coming back to our textile sector, it is also not behind in the celebration. The Cabinet Committee on Economic Affairs (CCEA), on 30th October 2013, has approved the launching of a new Integrated Processing Development Scheme (IPDS) with a total cost of Rs. 500 crore during the 12th Five Year Plan. The Finance Minister, Shri P. Chidambaram announced this policy in the Union Budget 2013-14.

The Indian textile industry was losing out to competition owing to environmental compliances. IPDS is expected to help the domestic manufacturers to improve their global competitiveness by using environment friendly processing standards and technology. The scheme would cover the following points,

1. Common Effluent Treatment Plant (CETP)
2. Captive power generation on technology preferably renewable/green technology
3. Infrastructure such as storm water management, necessary roads and pipelines for water & wastewater
4. Facility for testing and R&D centres.

This scheme is not only expected to create new processing units but also support the up-gradation of existing textile processing clusters. Significantly, it will also encourage research and development work in the textiles processing sector.

We pray for the success of our 'Missions'; one of Mangalyaan and another is careful utilisation of the new Integrated Processing Development Scheme.

Prof. (Dr.) R.V. Adivarekar,
Editor, JTA



Subscribe to the most instinctive Textile & Garment Journal from The Textile Association (India)

A peer reviewed bi-monthly published journal covers highly rich assortments of industrial & corporate news, views & research articles, easy-to-read technical knowledge, information on various segments of textile industry and trade innovations of entire global Textile and Garment business.

SUBSCRIPTION FORM



Yes, I wish to subscribe to **Journal of the Textile Association**

	India	Overseas
1 Year (6 issues)	INR 500	US \$ 75
2 Years (12 issues)	INR 900	US \$ 140
3 Years (18 issues)	INR 1300	US \$ 200

Name _____

Designation _____

Address _____

Ph. _____ Fax _____

E-mail _____

Payment Mode

Inland subscribers

Through Demand Draft / Cheque in favour of **The Textiles Association (India)**, payable at Mumbai and send it to:

The Textile Association (India)
Pathare House, Next to State Bank of India, 67, Ranade Road, Dadar (W), Mumbai – 400 028 (MH) India

Direct Bank Transfers

Bank : Bank of Maharashtra
Account No. : 60059709862
Bank MICR Code : 400014084
IFSC/NEFT/RTGS No. : MAHB0000980

The Textile Association (India)

Phone: +91-22-2446 1145, Fax: +91-22-2447 4971

E-mail: taicnt@gmail.com

Website: www.textileassociationindia.org

Influence of Substitution of Madder by Marigold in Colouration of Natural Fibres

M.D. Teli*, Sanket Valia & Asmita Jadhav

Department of Fibres and Textile Processing Technology
Institute of Chemical Technology

Abstract

The paper reports the results of various compound shades obtained from using mixture of natural dyes (Madder and Marigold) in the dye bath. Madder is one of the important plant sources for manufacturing red pigment and marigold flower is a rich source of lutein, a carotenoid yellow pigment and both of them have a great significance in textile colouration. Compound shades were obtained on cotton, silk and cotton/silk using combinations of madder and marigold with alum as a mordant. The L, a* and b* values of the dyed materials were studied with the use of computer colour matching software. The dyeability, wash fastness and light fastness were also studied. The results indicate an increase in the K/S values as the proportion of marigold was increased at the cost of madder. The fastness properties of the dyed samples were found to be quite satisfactory.

Keywords

Extraction, Madder, Marigold, Dyeing, Cotton, Silk, Cotton/silk, K/S values.

1. Introduction

Nowadays there is a global interest in the use of eco-friendly and bio-degradable materials. A considerable research work has been undertaken around the world on application of natural dyes on textile materials. Natural dyes have been used since ancient times. Use of natural dyes in colouration of textile materials and other purposes is just one of the consequences of increased environmental awareness. Natural dyes exhibit better biodegradability and generally have better compatibility with the environment and also possess lower toxicity and allergic reactions than synthetic dyes. However sometime tedious extraction of dyestuff from the raw material, low colour values and long dyeing times make natural dyeing less economical than conventional dyeing using synthetic dyes [1].

Natural dyes are known for their use in colouration of food substrates, leather, wood as well as natural fibres like cotton, wool, silk and flax since ancient times. Natural dyes have a wide range of shades and can be obtained from various parts of plants including roots, barks, leaves, flowers and fruits [2]. The natural dyes present in plants and animals are pigment molecules

which impart colour to the materials. These molecules containing aromatic ring structure coupled with a side chain are usually required for resonance and thus to impart colour. There is a correlation of chemical structure with colour, chromogen-chromophore with auxochrome [3]. Natural dyes can be classified into three categories: natural dyes obtained from plants, E.g. indigo, those obtained from animals, E.g. cochineal and those obtained from minerals E.g. ochre [4].

Natural dyes are mostly non-substantive and must be applied on the textiles with the help of mordants, usually a metallic salt, having affinity for both the colouring matter and the fibre [5]. Some of the important mordants used are alum, potassium dichromate, ferrous sulphate, copper sulphate, zinc sulphate, tannin, and tannic acid. The mordant helps in absorption and fixation of natural dyes and also prevents bleeding and fading of colours i.e., improves the fastness properties of the dyed fabrics. This complex may be formed by first applying the mordant on the textile substrate and then dyeing (pre-mordanting process) or by simultaneous application of the dye and the mordant (meta-mordanting process) or by after treatment of the dyed material with the mordant (post-mordanting process) [6].

Among the many natural dyes, madder and marigold are of particular interest. Madder plant (*Rubia Tinctorium*) is one of the most important plant sources

*All correspondence should be addressed to,
Prof. (Dr.) M.D. Teli,
I.C.T., Mumbai.
Email : md9pub@gmail.com

for manufacturing of red pigments. Its roots contain principally alizarin (1, 2- dihydroxyanthraquinone) and other several anthraquinones in minor proportions such as purpurine, pseudo- purpurin, alizarine 2- methyl ester, rubiadin, munjistin [1]. Structure of alizarin is given in Figure 1.1. It has been used since ancient times as vegetable red dye for leather, wool, cotton, and silk. The dye is fixed on the fabric with the help of a mordant, mainly alum [7].

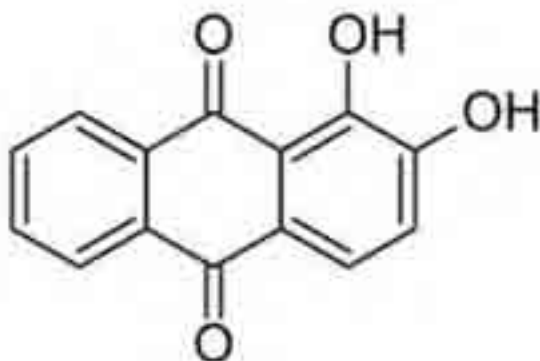


Figure 1.1: Structure of alizarin; i.e. Alizarin (1, 2-dihydroxyanthraquinone)

Marigold, an ornamental plant belonging to the composite family, has a rich source of natural antioxidant-Lutein. A natural pigment, xanthophylls offers an alternative to synthetic dyes as a food colourant, due to its non-toxicity [8]. Marigold, a major source of carotenoids and lutein, is grown as a cut flower and a garden flower, in addition to being grown for its medicinal values [9]. It produces natural dye from its flowers (petals) mainly consisting of carotenoid-lutein and flavonoid- patuletin. Structure of lutein is given in Figure 1.2. The crude extract is normally used for dyeing textiles. The present paper deals with the study of the compound shades obtained by using these two important natural colours on cotton, silk and cotton silk materials.



Figure 1.2: Structure of Lutein

2. Materials and Methods

2.1 Materials

Marigold and Madder dyes were supplied by Adiv pure natural in powdered form. Substrates used were cotton (80GSM), silk (50 GSM) and cotton/silk (30GSM) fab-

rics. Alum was used as mordant and was of laboratory grade purchased from local market.

2.2 Methods

2.2.1 Preparation of Mordant

A stock solution of alum (20%) was made by dissolving 20 gm of mordant powder in 100 ml water. The extract was filtered, made to original volume and used for mordanting.

2.2.2 Extraction of Dye

A stock solution of the dye (20%) was prepared by boiling 20 gm of dry marigold flowers in 100 ml water for 1h. The extract was filtered, made to original volume and used for dyeing.

2.2.3 Mordanting and dyeing process

The mordanting of cotton, silk and cotton/silk fabrics was carried out in Rota dyer machine keeping the material to liquor ratio 1:30. The fabrics were introduced into the mordant solution (alum) at room temperature and slowly the temperature was raised to 90°C for cotton and 70°C for silk and cotton/silk and the mordanting was continued for 1h. After mordanting, the fabrics were squeezed and dyed using natural dyes (madder and marigold). The mordanted fabrics were introduced in dye bath and dyeing was continued at 90°C for cotton and 70°C for silk and cotton/silk for 1h. After dyeing, the fabrics were squeezed and washed with cold water.

2.2.4 Compound shades on cotton, silk, and cotton/silk

In case of compound shades, the fabrics were mordanted using alum as a mordant as per procedure mentioned above. The mordanted samples were then dyed using combination of two dyes, madder and marigold, taken in proportion of 100:0, 70:30, 50:50, 30:70 and 0:100 of the total dye extract required for the targeted percentage shade. The dyeing procedure was same as mentioned above.

3. Testing and Analysis

3.1 Colour value by reflectance method

The dyed samples were evaluated for the depth of colour by reflectance method using 10 degree observer on Rayscan Spectrascan 5100+ equipped with reflectance accessories. The K/S values were determined using expression:

$$\frac{K}{S} = \frac{(1-R)^2}{2R}$$

Where, R is the reflectance at complete opacity; K is the Absorption coefficient & S is the Scattering coefficient. The dyed fabrics were simultaneously evaluated in terms of CIELAB colour space (L^* , a^* and b^*) values using the Rayscan Spectrascan 5100+. In general, the higher the K/S value, the higher the depth of the colour on the fabric. L^* corresponding to the brightness (100- white, 0- black), a^* corresponds to the red-green coordinate (positive- red, negative -green) and b^* corresponds to the yellow-blue coordinate (positive -yellow, negative -blue). As a whole, a combination of these entire co-ordinates enables one to understand the tonal variations.

3.2 Evaluation of Wash fastness

Evaluation of colour fastness to washing was carried out using ISO II method. A solution containing 5g/L soap solution was used as the washing liquor. The samples were treated for 45 min at 50°C using liquor to material ratio of 50:1 in Rota dyeing machine. After rinsing and drying, the change in colour of the sample and staining on the undyed samples were evaluated on the respective standard scales (rating 1-5, where 1 - poor, 2 - fair, 3 - good, 4 - very good and 5 - excellent).

3.3 Evaluation of Light fastness

Dyed fabric was tested for colour fastness to light according to ISO 105/B02. The light fastness was determined using artificial illumination with Xenon arc light source, Q-Sun Xenon Testing Chamber with black standard temperature 65°C with relative humidity of the air in the testing chamber as 40% and daylight filter, wavelength, 420 nm. The samples were compared with the standard scale of blue wool (ratings, 1-8, where 1 - poor, 2 - fair, 3 - moderate, 4 - good, 5 - better, 6 - very good, 7 - best and 8 - excellent).

4. Results and Discussion

In order to study the effect of mordant and the combination of dyes (Madder and Marigold) on the shades of cotton, silk and cotton/silk fabrics, various combinations of madder and marigold were successfully dyed in the fabrics keeping the overall dye shade as 100%. The results of the compound shades of madder and marigold with alum as a mordant are illustrated in Tables 4.1 to 4.3 and their a^* b^* plots are given in Figures 4.1 to 4.3 respectively.

The colour values in case of natural dyes are a combined contribution of dye and a mordant with respect to a given fabric. In case of cotton, silk and cotton/silk

samples, the results clearly indicate the increase in K/S values as the concentration of marigold was increased at the cost of madder. Pure madder (100:0) and pure marigold (0:100) shade gave minimum and maximum K/S values. Similarly, increase in redness was observed with the increase in proportion of madder dye as a^* values increased. There was also increase in yellowness (b^* values) with the increase in the proportion of marigold dye.

It is noted that in general the increase in K/S values cause decrease in L^* values. However, in their combination we clearly see that, the pure madder when replaced incrementally by marigold in compound shade, K/S values increased along with increase in L^* values indicating thereby that the shades are brighter and yellow.

It is also interesting to note that pure madder shade (100:0) gave least K/S value (0.57), this when compared with 70:30 madder: marigold ratio; the later one showed drastic increase in K/S values (2.98), mainly dominated by tremendous increase in b^* or yellowness tone. This was mainly due to the dominance of marigold in this compound shade even at 30% replacement of madder. As such a replacement of madder by marigold increased a^* values considerably increasing K/S values too and thus over all shades were dominated by yellowish tone almost nullifying the redness of madder. Although the actual values of K/S and L^* , a^* , b^* varied for these combinations on different fabrics studied, the general trend of tonal variations of the compound shades remained almost same (refer Figures 4.1 to 4.3). This is because the relative variation in their proportions of two dyes in the dyeing bath was kept same.

The fastness properties of the dyed cotton, silk and cotton/silk samples using various combinations of madder and marigold dyes are illustrated in Tables 4.4 to 4.6. Wash fastness of the dye is in general influenced by the extent of diffusion of the dye and the state of dye inside the fibre. During washing of the dyed samples with non-ionic soap, there was slight decrease in the colour depth of the samples. In case of cotton, silk and cotton/silk samples, the wash fastness of rating 3 was observed.

The resistance of dye/pigment to chemical or photochemical attack is an inherent property of the dye chromophore. At the same time the auxochrome may

also alter the fastness either way. The substitution pattern of dyes and stability of dye mordant complex seem to play an important role in determining the light fastness. The light fastness properties of cotton, silk and cotton/silk dyed samples were found to be of rating 4 i.e. good

Table 1: Effect of varying dye proportions on colour values of 20% mordanted cotton samples

Sr. No.	Mordant	Dye ratio		K/S	L*	a*	b*
		Madder	Marigold				
RFD	-	-	-	0.0303	92.451	0.418	0.566
	Alum	-	-	0.0481	94.007	-0.195	1.873
1	Alum	100	0	0.5758	91.838	5.392	1.943
2	Alum	70	30	2.9896	95.264	0.818	4.798
3	Alum	50	50	4.2195	96.077	-0.122	5.635
4	Alum	30	70	5.1653	96.438	-0.49	5.992
5	Alum	0	100	8.1865	97.226	-1.259	6.8

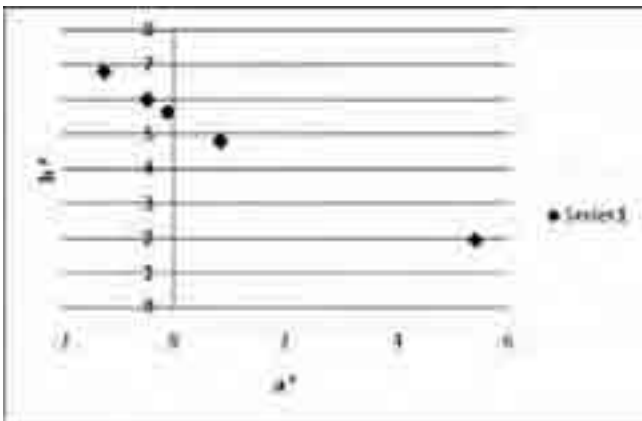


Figure 4.1: Tonal variation (a*, b*) plots for dyed cotton sample

Table 2: Effect of varying dye proportions on colour values of 20% mordanted silk samples

Sr. No.	Mordant	Dye ratio		K/S	L*	a*	b*
		Madder	Marigold				
RFD fabric	-	-	-	0.1458	85.51	-0.176	4.552
	Alum	-	-	0.1193	87.623	-0.149	6.767
1	Alum	100	0	0.7182	86.615	7.672	7.684
2	Alum	70	30	3.3494	93.002	0.397	12.538
3	Alum	50	50	4.0224	93.777	-1.013	13.059
4	Alum	30	70	5.1341	93.959	-1.816	13.064
5	Alum	0	100	6.836	95.345	-2.931	14.312

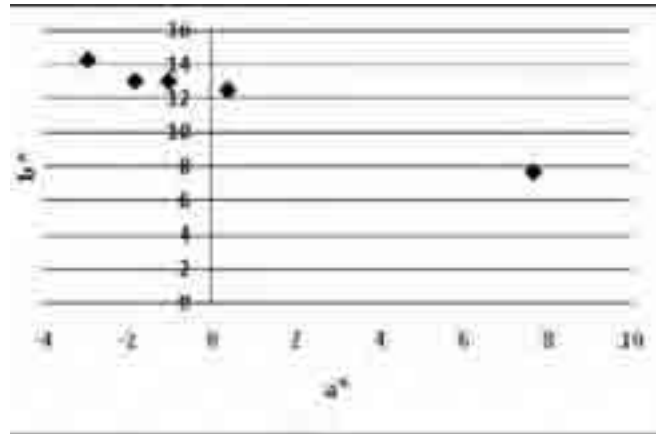


Figure 4.2: Tonal variations (a*, b*) plots for dyed silk samples

Table 3: Effect of varying dye proportions on colour values of 20% mordanted cotton/silk samples.

Sr. No.	Mordant	Dye ratio		K/S	L*	a*	b*
		Madder	Marigold				
RFD fabric	-	-	-	0.1031	87.431	-0.572	3.537
	Alum	-	-	0.1765	88.022	0.816	4.332
1	Alum	100	0	0.7567	87.061	8.221	5.343
2	Alum	70	30	3.4682	92.583	0.055	9.778
3	Alum	50	50	4.7457	93.866	-0.966	10.96
4	Alum	30	70	6.5758	94.419	-1.645	11.456
5	Alum	0	100	8.1715	94.871	-2.195	11.896

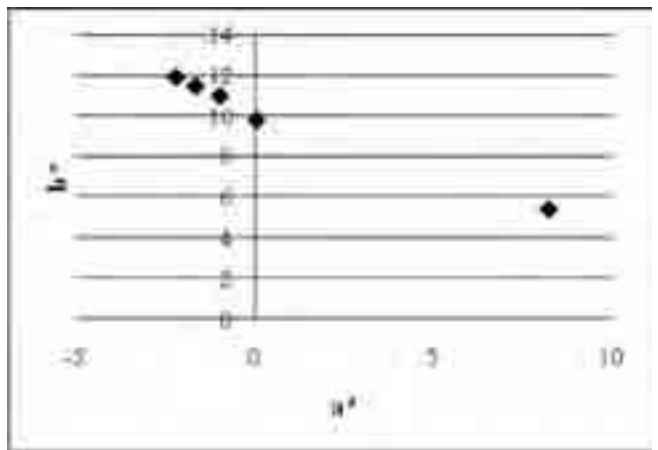


Figure 4.3 Tonal variations (a*, b*) plots for dyed cotton/silk samples

Texttreasure

The fundamental cause of trouble in the world is that the stupid are cocksure while the intelligent are full of doubt."

- Bertrand Russell

Table 4.4: Washing and Light Fastness of Alum (20%) mordanted and dyed cotton fabric.

Sr. No.	Dye ratio		Wash Fastness	Light Fastness
	Madder	Marigold	Colour change	Colour change
1	100	0	3	4
2	70	30	3	4
3	50	50	3	4
4	30	70	3	4
5	0	100	3	5

Table 4.5: Washing and Light Fastness of Alum (20%) mordanted and dyed silk fabric.

Sr. No.	Dye ratio		Wash Fastness	Light Fastness
	Madder	Marigold	Colour change	Colour change
1	100	0	3-4	4
2	70	30	3-4	4
3	50	50	3-4	4
4	30	70	3-4	4
5	0	100	3	4

Table 4.6: Washing and Light Fastness of Alum (20%) mordanted and dyed cotton/ silk fabric.

Sr. No.	Dye ratio		Wash Fastness	Light Fastness
	Madder	Marigold	Colour change	Colour change
1	100	0	3	4
2	70	30	3	4
3	50	50	3	4
4	30	70	3	4
5	0	100	3	4

5. Conclusion

A global awareness is already in place favoring the use of natural resources for protecting the environment and earth from pollution and ecological imbalances. Hence, the present scenario is directed towards the utilization of natural dyes. In this study, compound shades were obtained using combinations of natural dyes such as madder and marigold and alum as mordant, cotton, silk and cotton/silk fabric samples. A wide range of shades were obtained ranging from typical yellow of marigold to red of madder. The fastness properties of the dyed samples obtained were found to be quite satisfactory.

References

1. Goodarzian H. and Ekrami E. *World Applied Sciences Journal*, **9** (4): 434-436, (2010).
2. Samanta A.K. and Agarwal P. *Indian J Fibre Text*, Vol. 34, 384-399, (2009).
3. Saravanan P., Chandramohan G. and Saivaraj S. A. *Asian J. Chem*, **5**(3), 418-421, (2012).
4. Almahy H.A., Ali M.A., and Band Ali, A.A. *Research Journal of Chemical Sciences*, **3**(1), 63-66, (2013).
5. http://cdn.intechopen.com/pdfs/23051/InTech-Dyeing_of_textiles_with_natural_dyes.pdf
6. Prabhu K. H. and Bhute A.S. *A Review Journal of Natural Products and Plant Resources*, **2** (6), 649-664, (2012).
7. <http://en.wikipedia.org/wiki/Madder>
8. Vankar P.S., Shanker, R. and Wijayapala, S. *Journal of Textile and Apparel Technology Management*, **6**(1), 1-15, (2009).
9. Pratheesh B V.B., Benny N. and Sujatha C.H. *Modern Applied Science*, **B3**(2), (2009).

□ □ □

Attention All Members of THE TEXTILE ASSOCIATION (INDIA)

Please update their profile & contact information by
Sending us e-mail to update our website

www.textileassociationindia.org

E-mail: taicht@gmail.com,

Reactive Dyeing of Cotton with Layer-by-Layer Technique

S.D. Phadke, S. Maiti, P.V. Madiwale & R.V. Adivarekar*

*Department of Fibres and Textile Processing Technology
Institute of Chemical Technology*

Abstract

Eco-friendly wet processing of textiles is the need of the hour. Layer-by-layer self-assembly deposition of polyelectrolytes on textile materials might provide a new approach to achieve the same. The LBL self-assembled deposition of polyelectrolytes on textile substrates introduces a novel processing method for textile functionalisation. Reactive dyeing of cotton requires use of salt in huge quantity. The alternate deposition of (polydiallyldimethylammonium chloride) (POLYDADMAC) and reactive dye on cotton fabric is carried out at ambient temperature in absence of salt as exhausting agent. The colour strength and fastness properties of the dyed sample were assessed and are reported in this paper. The results are indicative of a promising future for this process.

Key Words

Layer-by-layer, polyelectrolyte, self-assembly, POLYDADMAC

1. Introduction

The electrostatic self-assembly process has proven to be a successful technique for creating materials with multilayers having desired properties [1]. As almost any surface with charged groups can be used as a substrate for assembly, the surface modification of polymer materials that can be flexibly charged has become one particular application of this process [1, 2]. Layer-by-layer (LBL) deposition may offer some advantages as a surface modification technique which could be used as to develop a sustainable technology. When the substrates are alternately dipped into different solutions containing polyelectrolytes carrying opposite charges, multilayers could be spontaneously deposited on the polymer surface through ionic bonding [3]. Thus the multilayer deposition is easy, simple and energy-saving. The thickness of deposited multilayers can be finely controlled at a nano-scale. Meanwhile, the surface functionality can be directly and flexibly altered by choosing appropriate polyelectrolytes. Hyde et al. reported a pioneering application of self-assembly technique on cotton substrates [4]. They utilized X-ray photoelectron spectroscopy. Dubas et al. investigated the deposition of POLYDADMAC/anionic scarlet dye multilayers on nonwoven nylon fibres [5, 6]. In

addition, they also demonstrated that coating silk fibres with the LBL deposition of PSS/POLYDADMAC could improve color fastness to washing [7, 8]. Lin et al. investigated the effects of self-assembled PDDA/clay films on thermal properties of lignocellulosic fibres used for pulp fibres [9, 10]. Thus it can be seen that, this method has already enthralled many researchers and is gaining their attention.

Vinyl sulphone and HE class of dyes were used to dye cotton in the undertaken study, however the present communication depicts the results obtained using layer by layer method to dye cotton fabric with vinyl sulphone based reactive dye at room temperature. This method on its own does not require use of salt. But a study has been done to find the compatibility of polyelectrolytes with usual textile auxiliaries. This was done for the understanding of commercial feasibility of the process. Also to understand the significance of polyelectrolyte, experiments were repeated without the use of polyelectrolyte. Furthermore with trial and error method, the dyeing with highest depth is matched with results of exhaust and continuous dyeing method.

2. Materials and methods

100% cotton woven fabric was used in all experiments. Poly (diallyldimethylammonium chloride) (POLYDADMAC, BASF) and CBFIX SUPRA RED BS (vinyl sulphone type, Colorband) and DRIMARINE

*All correspondence should be addressed to,

Prof. (Dr.) R. V. Adivarekar

I.C.T., Mumbai.

Email: rv.adivarekar@ictmumbai.edu.in

ORANGE HE 2XI (HE type, Clariant) were used for dyeing without further purification. The structures of polyelectrolyte used in this experiment are shown in Figure 2.1. All chemicals were obtained from S. D. Fine Chemicals unless particularly mentioned.

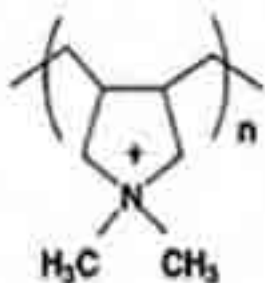


Figure 2.1: POLYDADMAC

2.1 Dyeing with LBL technique

Fabric is dipped into a solution of POLYDADMAC which results in adsorption of first layer. A washing step is needed to remove loosely deposited polyelectrolyte. For this purpose, deionised water is used. The fabric is dipped in the beaker containing reactive dye followed with washing step to remove loosely deposited dye. This is one complete cycle. In this study 5 and 10 cycles are used. After completion of dyeing process, after-treatment is done using 2 gpl non-ionic detergent. Fabric is dipped in each beaker for 2 minutes. Also POLYDADMAC is used in combination with sodium carbonate (10 gpl) and Glauber's salt (20 gpl). Figure 2.2 gives the schematic of the process.

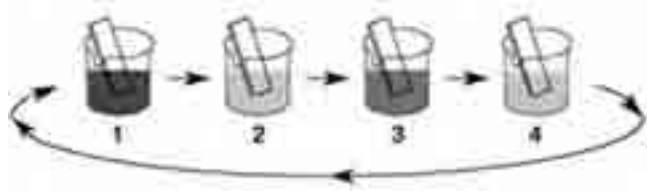


Figure 2.2: Dyeing with LBL method

Experiments have been carried using following four sequences;

- 1) POLYDADMAC → deionised water → reactive dye → deionised water
- 2) POLYDADMAC → deionised water → reactive dye → deionised water
After completion, the fabric is dipped in soda ash solution (10 gpl) for 20 minutes.
- 3) POLYDADMAC → deionised water → reactive dye (predissolved 20g/l glaubers salt) → deionised water

- 4) POLYDADMAC → deionised water → reactive dye (predissolved 20g/l glaubers salt) → deionised water
After completion, the fabric is dipped in soda ash solution (10 gpl) for 20 minutes.

2.2 Fastness testing of dyed fabric

The concentrations of polyelectrolyte and dye are 0.5 gpl and 1 gpl respectively. For washing fastness, light fastness and rubbing fastness, AATCC Test Method 61-2006, AATCC Test Method 16-2004 and AATCC Test Method 8-2005 were used respectively.[11]

2.3 Colour value by reflectance method

The dyed samples were evaluated for the depth of colour by reflectance method using 10 degree observer. The absorbance of the dyed samples was measured on Rayscan Spectrascan 5100 + equipped with reflectance accessories. The K/S values were determined using expression;

$$K/S = (1-R)^2/2R$$

Where, R is the reflectance at complete opacity; K is the Absorption coefficient & S is the Scattering coefficient.

3. Results and Discussion

Table 1 gives the results obtained for LBL technique using POLYDADMAC as polyelectrolyte.

Table 1: K/S and % strength of cotton dyed using POLYDADMAC with layer-by-layer method

Sequence	Cycles	K/S	% Strength
Control	-	1.6554	100
1	5	1.6678	101.3
1	10	3.3141	200.1
2	5	2.1252	128.3
2	10	4.0215	242.9
3	5	2.736	165.2
3	10	5.7112	345.4
4	5	3.3719	203.6
4	10	6.3719	384.9

Where, Control is 1% exhaust dyed fabric with conventional recipe.

In sequence 1, Due to the formation of alternate positive and negative layers, exhaustion of reactive dye on

cotton takes place. The fastness ratings are depicted in Table 2.

Table 2: Fastness ratings of sequence 1

Fastness tests	Rating
Washing fastness	4
Light fastness	4
Rubbing fastness	3 and 2/3 (dry and wet respectively)

In sequence 2, the dye uptake resulting in this process is higher than in sequence 1.

In this case the exhaustion due to the building of alternate positive and negative layers is supported by the fixation taking place with the treatment of soda ash solution. Thus more dye is getting fixed improving the utilization of dye. This is evident from fastness ratings obtained as in Table 3.

Table 3: Fastness ratings of sequence 2

Fastness test	Rating
Washing fastness	4/5
Light fastness	4/5
Rubbing fastness	3 and 2/3 (dry and wet respectively)

In sequence 3, the dye uptake resulting in this process is higher than that in sequence 1.

Normal cotton when dipped in water assumes negative charge and hence glauber salt is added to neutralise these charges to improve the exhaustion. However in this case, the cotton entering the reactive dye solution is already having POLYDADMAC layer bearing a positive charge on it. Therefore the conventional theory of neutralising the zeta potential does not hold good here. The point to be noted here is the solubility of Glauber's salt being higher than that of reactive dye in water it is helping out in salting out of the dye from the dye liquor which is electrostatically attracted by the cotton having cationic nanolayer improving the dye exhaustion. The fastness ratings for this sequence are depicted in Table 4.

Table 4: Fastness ratings of sequence 3

Fastness test	Rating
Washing fastness	4/5
Light fastness	4/5
Rubbing fastness	3and 2/3 (dry and wet respectively)

In the sequence 4, we bring in all the factors together and study their combined effect on dye uptake. It is found that highest depth is obtained in this sequence. The fastness properties obtained are also at par with the conventionally dyed fabric.

Table 5: Fastness ratings of sequence 4

Fastness test	Rating
Washing fastness	4/5
Light fastness	4/5
Rubbing fastness	3and 2/3(dry and wet respectively)

The colour rendering properties and fastness properties of shades obtained with LBL technique without using polyelectrolyte are very inferior. This is evident from Tables 6 and 7.

Table 6: K/S and % strength of cotton dyed with layer-by-layer method without polyelectrolyte

Sequence	Cycles	K/S	% Strength
1	5	0.21	10.1
2	5	0.31	11.1
3	5	0.34	21.2
4	5	0.39	35.4
1	10	0.35	12.5
2	10	0.42	15.4
3	10	0.46	24.6
4	10	0.5	40.8

Table 7: Fastness ratings of cotton dyed with layer-by-layer method without polyelectrolyte

Fastness test	Rating
Washing fastness	1
Light fastness	½
Rubbing fastness	½ and ½ (dry and wet respectively)

4.1 Comparison with conventional dyeing

The shade obtained using LBL technique with sequence 4 was matched with conventional exhaust dyeing as well as pad-batch method. By exhaust dyeing method the equivalent depth was found to be 2.5%. As far as continuous method (pad-batch) is concerned, the % expression used was 70% and the equivalent depth was found when dye used was 5 gpl. Results were confirmed by evaluating K/S values on computer colour matching system (CCM).

5. Conclusions

LBL technique is a novel method of dyeing. The depth of dyeing is reproducible and the shades obtained are even. The quantity of polyelectrolyte used is less and thus the load of chemicals is less in this method. The technique is applicable for a range of textile fibres. The reactive dyes which are applied at higher temperature can be used at room temperature using this technique without compromising quality of dyeing. The technique is suited for continuous dyeing. The method is also sustainable as dyeing is done at room temperature and hence process is less energy intensive. There-

fore, to sum it up, it can be definitely said that this method has tremendous potential to be used at production level if thoroughly researched

References

- 1) Chen W, McCarthy *Macromolecules* **30**, 78-86(1997)
- 2) Cheung JH, Fou AF, Rubner MF *Thin Solid Films* **244**:985-989 (1994)
- 3) Decher G *Science* **277**:1232-1237. (1997)
- 4) Decher G, Hong JD, Schmitt J *Thin Solid Films* **210**, 831-835. (1992)
- 5) Dubas ST, Limsavarn L, Iamsamai C, *J Appl Polym Sci* **101**, 3286-3290. (2006)
- 6) Dubas ST, *Text Res J* **77**, 437-441. (2007)
- 7) Ferreira M, Rubner MF *Macromolecules* **28**, 7107-7114. (1995)
- 8) Hauser PJ, Tappa AH *Colo Technol* **117**, 282-288. (2001)
- 9) Hyde K, Rusa M, Hinestroza J, *Nanotechnology* **16**, 422-428. (2005)
- 10) Hyde K, Dong H, Hinestroza JP, *Cellulose* **14**, 615-623. (2007)
- 11) American Association of Textile Chemists and Colorists. *AATCC Technical Manual 2007*, 76, Research Triangle Park, NC: AATCC



TOMSIC "EASY" EVENNESS TESTER

for yarn, roving, sliver & with Hairiness attachment

Advanced technologies

Features:

- Capacitive measurement of mass variations and imperfections in yarn, roving and sliver of staple fibers
- Testing speed: 25 to 800 m/min.
- Humidity & integrated sensor for measurement of humidity & temperature in the environment of the Test Unit.
- Automatic transfer of the yarn from the package changer & insertion into the measuring slot.
- Determination of the hairiness of staple fiber yarn in the range of approx. 5 to approx. 1000 tex
- Using standard and NOT blocked desktop PC you can replace it by yourselves, anytime... FREE!!!
- Software in .NET technology; you can reinstall on any operative system (XP, Vista, Win7, Win8, ...) by yourselves, anytime... FREE!!!
- Open SQL database; you can access with your mainframes or any other application (excel, ...)

Exclusive sales & service agent for India (except South India)

Thymas Electronics Pvt. Ltd.

Manufactured by: Tomasic S.r.l. Italy Email: tomasic@tomasic.it

"Yogdhara" Building, 2 Nandharvan Society, Behind Railway Station, Vadodara 390007.
Phone: 2351634 / 2312730. Fax: 0265 2335581 Email: tepl26@yahoo.com, thymasad1@bsnl.in

Advancements in Computer Colour Matching: Colour Matching through Internet

Smita Honade*, Neeraj Shrivastava, Aniket Bhute & C.W. Acharya

Wool Research Association

Abstract

Today colour matching and colour control have become an integral part of any colour industry. Computer Colour Matching Systems (CCM) predicts very close recipe for any shade with advanced spectrophotometer & colour software. But conventional CCM system is a prohibitive cost for small and medium dye houses in India. The two main components of CCM such as spectrophotometer and colour matching software are very expensive. Therefore to provide affordable colourmatching service to small & medium dye houses, Wool Research Association has developed a very simple solution of internet based online colour matching service. This service has two main components i.e. Formulation for predicting recipe for any target shade with extensive database (readily available) and Quality Control where one can predict colour difference between various samples and can also measured whiteness and yellowness index of sample.

Keywords

Computer colour matching (CCM), primary database, wracolourmatch, Right First Time (RFT), formulation, quality control.

1.Introduction

In recent years there has been increasing demands put on the dyeing industry to export fully finished fabrics and garment to the developed countries. Correct recipe prediction and its consistency is the major requirement in the export market. Today Colour measurement and colour control have become an integral part of any colour industry. Due to advanced colour software and spectrophotometer today colourist gets a very close recipe for any shade.

Today high cost, imported Computer Colour Matching Systems (CCM) are mostly used in the organized sector of the Indian textile industry. However, the cost of CCM System is very prohibitive because spectrophotometer and colour matching software are very expensive for small and medium dye houses.

The conventional computer colour matching system consists of the following components:

- ◆ A Spectrophotometer that senses the colour and analyses it.
- ◆ A well configured PC/Laptop that is loaded with

**All correspondence should be addressed to,*

Smita Honade
Textile Chemical & Colour Department
Wool Research Association, Thane 400607
E-mail : sphonade@wraindia.com

the necessary operating system to run the software.

- ◆ Colour Matching Software, that collects all the data required, analyses the data and displays comments about the overall appearance of colour of the sample, i.e. whether it is lighter/ darker, stronger/ weaker ,or whether it matches in different lights such as D65, CWF, and TL84.
- ◆ Quality Control: Colour match software consists of various programs such as quality control package for pass/fail of incoming and outgoing material, shade sorting, colour strength, whiteness and yellowness indices etc.
- ◆ Formulation: Program for generation of recipes that requires colourant database (primary database) for variety of substrates with different class of dyes and different processes of dyeing.

Entire success of CCM system depends on the accuracy of primary database. Preparation of primary database requires a very good Lab facility and most of the small and medium scale dyeing units in India are not equipped with good laboratory facilities and colour technology experts are not available to handle the colour technology problems.

Therefore to provide affordable colourmatching service to small & medium dye houses in India, Wool Research Association has developed a very simple

solution of internet based online colour matching service entitled as WRACOLOURMATCH which is available on www.wracolourmatch.com.

2. Computer Colour Matching

Cost of applying colour in textile processes have raised dramatically. At the same time, the demand for consistent and accurate colour matching has also increased. Today, textile colourist, technician and managers have realized the impact of instrumental match prediction which is now popularly known as Computer Colour Matching. Fibre-Dye-Process systems are rapidly changing and creating new problems for textile processor. Now, textile chemist can communicate colour in mathematical languages based on modern colorimetry. By using computer colour matching system textile colourist not only generates colour recipe formulae in seconds but also selects the low cost/least metameric match by sorting out hundreds of formulations predicted by colour system.

3. Why to use an internet based computer colour matching

CCM systems used in textile industries are cost prohibitive and not affordable for small and medium dye houses. The two main components such as spectrophotometer and colour matching software are very expensive. Apart from that preparation of database requires very good laboratory facilities and most of the dyeing units are not equipped with good laboratory facilities such as automatic dye dispensing machines and lab dyeing machines with process controller. Colour experts are not available and salaries are increasing day by day therefore small dye houses cannot employ CCM experts who can handle the colour technology problems and interpret colour science data. In organised sector the primary database updating is not a routine job. Taking all these factors into consideration, Wool Research Association has developed a very simple solution of internet based online colour matching service for small and medium dye houses.

4. WRACOLOURMATCH Service

(www.wracolourmatch.com)

Under a recently concluded Ministry of Textiles, Government of India sponsored R&D project, WRA has developed Information Technology linked colourmatching facility WRACOLOURMATCH service which is available on www.wracolourmatch.com. WRACOLOURMATCH is a very simple and Affordable colour matching service for small & medium dye

houses in India. Through this service small and medium dye houses can predict recipe for any unknown shades by using extensive database on various substrates and dyestuff as per their requirement. This service provides exhaustive primary database on various substrate with different dyes and dyeing processes to the users.



Figure 4.1: Home Page of WRACOLOURMATCH

The main objects of this service is to provide dye house users with

- ◆ Instant Colour Matching through internet
- ◆ Any Time Colour Matching (24 X 7)
- ◆ Accurate colour matching with readily available database

To access this affordable colour match service as a package deal dye house user will just require following things:

- 1) Affordable low cost hand-held spectrophotometer
- 2) Access to www.wracolourmatch.com website

WRACOLOURMATCH service is designed to bring unprecedented combination of accuracy, ease of use, and affordability to small, medium as well as large dye houses in India. This service is available for users with a nominal annual Usage Fees. For higher level of accuracy in colour matching WRA Lab will update the database time to time and it will be automatically available to user on website. As it is an Internet based technology, there is no need of any software to install, timely updates to worry about, or painstaking hardware maintenance agreements to be followed.

4.1 Features of WRACOLOURMATCH

4.1.1. Effective Database preparation for CCM
Any CCM prediction system, however sophisticated, cannot predict Right First Time (RFT) recipes unless it

has been fed with most accurate primary standards. Making primary standards are the most crucial work for the accurate recipe prediction. It is advisable to carry out as many levels in self shades as possible with at least 9 concentration levels while feeding primary standards in the computer colour matching system as K/S per unit concentration is not constant at all concentrations. Sample preparation, sample presentation and sample measurement is other vital task while carrying out any colourimetric measurement.

WRA is having a huge database of various dyes used for dyeing of wool & polyester and different dyeing processes. This work is carried out with utmost accuracies. WRA will also prepare and store database as per users own substrate-dye-process combination. Therefore dye houses will not be required to spend time and money on developing the huge work on database preparation. Currently this website has database of more than 100 dyes and more dyes will be added to existing database in near future. WRA will also prepare the database as per the user's requirement.

Current primary database file:

1. Wool Blanket-Shidimo-Milling Dyes (10 dyes)
2. Wool Blanket-Clariant-Milling Dyes (7 dyes)
3. Wool Blanket-Colourtex-Milling Dyes (10 Dyes)
4. Wool Blanket-Dystar-Milling Dyes (10 Dyes)
5. Wool Blanket-Milling Dyes (37 Dyes, File 1 to 4 Combine)
6. Wool Top-Clariant-Lanasyn-Metal Complex Dyes (19 Dyes)
7. Wool Top-Dystar-Isolan-Metal Complex Dyes (19 Dyes)
8. Wool Top-Metal Complex Dyes (38 Dyes, File 6 &7 Combine)
9. Woollen Yarn Atul Dorolan E Dyes (11 Dyes)
10. Polyester Top-Clariant-Foron Dyes (12 Dyes)
11. Polyester Top-Dystar-Dianix Dyes (14 Dyes)
12. Polyester Top-Disperse Dyes (26 Dyes, File 9 & 10 Combine)

4.1.2. Regular update of colour database

Regular update of primary database is often not done in process houses and this is the main reason for not obtaining correct shades Right Every Time (RET) when

carried out after gap of months. Most users compute relative strength relation of new supply but do not use it in recipe prediction. Therefore to enhance Right First Time (RFT) and Right Every Time (RET) dyeing WRA is updating the database with corrected dye strength, replacing obsolete dyes with new ones.

4.2 Components of *www.wracolourmatch.com*

WRACOLOURMATCH has both Formulation and Quality Control option.

4.2.1. Formulation

Formulation allows users to predict recipe for any target shade by using online database. Users can predict recipe for any target shade using readily available dyestuff database as per their requirement. Database preparation and uploading is continuous process. Therefore more database as per the users request will be prepared and will be uploaded by to the current website.

Recipe Predication with WRACOLOURMATCH:

To predict recipe for any target shade reflectance value of target shade can be measured by any spectrophotometer which can give 35 reflectance values (ranging from 380-730 nm at the interval of 10 nm) in the Microsoft excel 2003 format. For this purpose WRA recommends I one pro (As shown in Figure 4.2) portable low cost spectrophotometer which satisfies all mentioned terms.

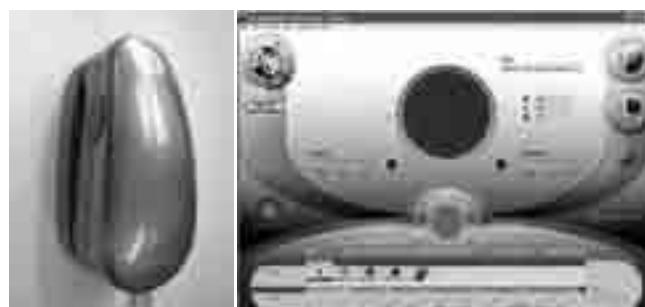
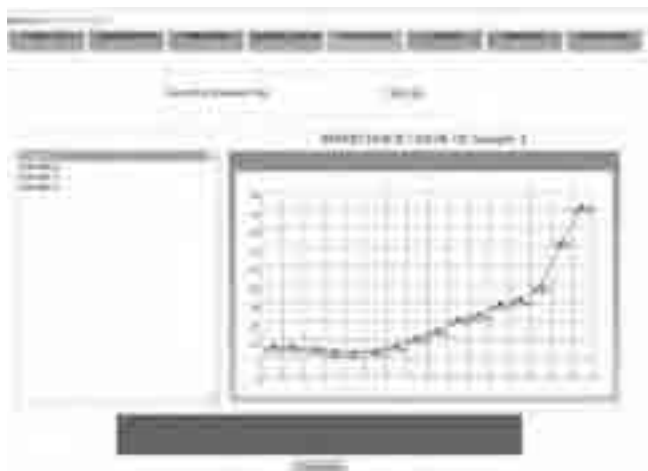


Figure 4.2: I one Pro Spectrophotometer & Its software for measurement of sample reflectance value

For measurement of reflectance value, spectrophotometer head is placed on target sample and measured with a single click. Then measured reading has to be exported in excel format for uploading it to website. The above exported excel file can uploaded on the website and recipe can be predicted as per the preferred dye selections by the users (as shown in figures 4.3 to 4.6).



Figure 4.3: Uploading of target shades (sample 1 to 4) to WRACOLOURMATCH



4.4: Selection of target shade (sample 1) for recipe prediction

As mentioned under 4.1.1 this website has 12 database file on wool top, polyester top, wool blanket and woollen yarn. Users have to select the database file as per their substrate and dyestuff requirements. Then after selecting database file they have to select required dyes from the database file (as shown in figure 4.5).



Figure 4.5: Selection of Primary database file & dyes for recipe prediction

After dyestuff selection user gets 10 recipes for target shade (figure 4.6) along with colour difference,

metameric index, reflectance curve of standard and predicted combination and cost of the recipe as shown below.



Figure 4.6: Recipes for target shade (sample 1)

4.2.2. Quality Control

Quality control option is provided to find out colour difference between standard and batch sample and to measure whiteness index and yellowness index of textile substrate before dyeing. By using quality control option, users can measure colour difference between two samples by DEcmc2:1 equation as well as DL, Da, Db under three different illuminants i.e. D65, A, TL84. Reflectance curve of standard and batch can also be assessed by using QC option.



Figure 4.7: Selection of standard and batch for Quality control assessment

Textsmile

Man 1 : After buying this new hearing aid, I am able to hear something two blocks away.

Man 2 : Cool, how much did it cost?

Man 1 : The time is three past ten



Figure 4.8: Quality control assessment and reflectance graph of standard & batch

5. Conclusion

In conventional Computer Colour Matching System (CCM), one has to buy a full CCM System with Spectrophotometer and Colour Matching Software for matching and correction and has to develop a complete database of dyes. This is a prohibitive cost for small and medium dye houses in India. In online colour matching service, colourmatching software is uploaded to website and therefore it is available 24x7. One can get instant recipe for any shade any time and any where if provided with Portable spectrophotometer and subscription for WRACOLOURMATCH. This web based application is very fast in predicting recipe. Online colour matching service is very beneficial for small & medium scale industries which will be able to make use of latest colour prediction technology which are currently only being used by large process houses. WRA Lab will update the database from time to time and will be readily available to users on website. WRACOLOURMATCH service is very affordable with reasonable annual Usage Fees. Dye house user will just have to buy a low cost spectrophotometer plus Annual Usage Fees to get instant recipe for any unknown shade with wide range of dyestuff. This affordable colourmatching service is effectively working and

it brings a simple colourmatching solution at your doorstep.

6. Acknowledgements

WRACOLOURMATCH service is developed under a R &D project "Development of Internet Based Color Matching Facility for Small and Medium Dye Houses in the decentralized sector of the country" sponsored by Ministry of Textiles, Government of India. We would like to acknowledge Dr. Narendra Gangakhedkar (Director, Compute Spectra Color Pvt. Ltd.) for his consistent guidance and help. We are also thankful Mr. P. Ravichandran (Praveen Colourscan Systems) and Auro Infotech, Pondicherry for their help & support.

References

1. Xin J. H., *Total Colour Management in Textiles*, Woodhead Publishing Limited, Cambridge England, 5-10, (2006)
2. Roderick McDonald, *Colour Physics for Industry*, Society of Dyers and Colourists, West Yorkshire England, 1-55, (1997)
3. Gupte V. C., *Colour Technology Tools, Techniques & Application*, Colour Publication Pvt. Ltd., Mumbai, 133-257, (2008)
4. Christie R. M., *Colour Chemistry*, The Royal Society of Chemistry, Cambridge UK, 13-44, (2001)
5. Wilfred Ingamells, *Colour for textiles*, Society of Dyers and Colourists, West Yorkshire England, 150-157, (1993)
6. Gangakhedkar N. S., *Computer Colour matching*, Rutu Prakashan, Mumbai, 8-42, (2003)
7. Ronnier Luo M., *Review of Progress in Coloration and Related Topic*, **32** (6), 28, (2002)
8. Gilbert J. M., Dago J. M., *Colouration Technology*. **121** (5), 147, (2005)

□ □ □

Connecting you with right audience for strengthening business promotion

The Application of Advanced Control Charts in Textiles

Subhankar Maity*

Department of Textile Technology, Dr. B.R. Ambedkar National Institute of Technology

Abstract

This paper deals with some advanced control charts such as Individual control chart, Zone chart, CUSUM control chart, and EWMA control chart. Theoretical aspects of these control charts with merits and demerits have been discussed. Uses of these control charts in textile industry and research are cited with numerical illustrations in each case. Some data are collected from textile industry and some are assumed here for illustration. The analysis has been done by MINITAB 15 software.

Keywords

Individual control chart, Zone chart, CUSUM, EWMA, Textile industry

1. Introduction

Statistical Control Charts are useful to study and control the process variations to obtain quality product or service. Textile industry also adopted and implemented control charts like other industries [1-2]. Shewhart Control charts for attributes and variables were used by traditional basis [3-4]. But there are advances in this area of control charts with some new features of detecting small shift of variability in the process. Short description about some of these control charts with these consequences has been noted here.

2. Individuals Control Charts

The individuals control chart is a type of control chart that can be used with variables data. Like most other variables control charts, it is actually two charts. One chart is for the individual sample result (x_i). The other chart is for the moving range (R_i) between successive individual samples. The individuals chart is very useful for monitoring processes where data are not available on a frequent basis. The individuals control chart examines variation in individual sample results over time. While rational sub grouping does not apply, thought must be given to when the results will be measured. If the process is in statistical control, the average on the individuals chart is our estimate of the population average. The average range will be used to estimate the

population standard deviation as shown below [5-7],

Control charts for individual measurements, e.g., the sample size = 1, use the moving range of two successive observations to measure the process variability. The moving range is defined as

$$MR_i = (x_i - x_{i-1})$$

It is the absolute value of the first difference (e.g., the difference between two consecutive data points) of the data. Analogous to the Shewhart control chart, one can plot both the data (which are the individuals) and the moving range.

For the control chart for individual measurements, the lines plotted are:

$$UCL = \bar{x} + 3 \frac{\overline{MR}}{d_2}$$

$$\begin{aligned} \text{Centre Line} &= \bar{x} \\ LCL &= \bar{x} - 3 \frac{\overline{MR}}{d_2} \end{aligned}$$

Where, \bar{x} is the average of all the individuals and (\overline{MR}) is the average of all the moving ranges of two observations. d_2 is an arbitrary constant used for estimation of population standard deviation from average range. The value of d_2 can be obtained from standard statistical table. Here, at $n = 2$ observations $d_2 = 1.128$.

The individuals control chart is a method of looking at variation. One source of variation is the variation in the individual sample results. This represents "long-term" variation in the process. The second source of variation is the variation in the ranges between successive samples. This represents "short-term" variation [5-7].

*All correspondence should be addressed to,

Subhankar Maity
Department of Textile Technology,
Dr. B. R. Ambedkar National Institute of Technology, Jalandhar,
Punjab-144011
Email: maity.textile@gmail.com

2.1 Utility and limitations of Individual Control Chart

This chart is useful where automated inspection and measurement technology is used. Every unit manufactured can be analyzed. It is also used where no basis for rational subgrouping is available. But the moving range individual chart cannot really provide useful information about a shift in process variability. The ability of the individuals control chart to detect small shifts is very poor [5,13].

2.2 Illustration 1

The following example illustrates the control chart for individual observations. A converter machine produces wet wipes from spunlace nonwoven. Each pack contains 20 pieces of wet wipes having nominal weight of 50 gm. In order to monitor the mass variation of these packs, an automatic weight measurement system is installed in the machine line which weigh and reports each and every single pack of wet wipes. The weight results of first 10 consecutive packs are shown in Table 2.1.

Table 2.1: Result of weight measurement of packs of wet wipes

Batch Number	mass(gm)	Moving Range
xi		MR
1	49.6	-
2	47.6	2
3	49.9	2.3
4	51.3	1.4
5	47.8	3.5
6	51.2	3.4
7	52.6	1.4
8	52.4	0.2
9	53.6	1.2
10	52.1	1.5
Average	$x = 50.81$	MR = 1.8778

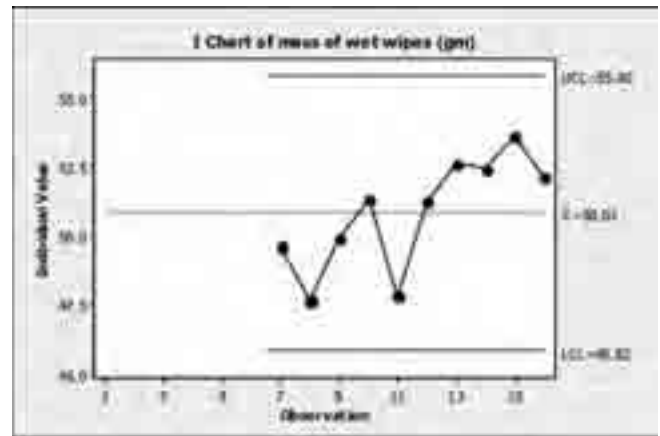


Figure 2.1: MINITAB output of individual chart of mass of wet wipe packet

This yields the parameters below:

$$UCL = x + \frac{3MR}{1.128} = 50.81 + 3 \frac{1.8778}{1.128} = 55.8041$$

$$\text{Centre Line} = x = 50.81$$

$$LCL = x - 3 \frac{MR}{1.128} = 50.81 - 3 \frac{1.8778}{1.128} = 45.8159$$

Figure 2.1 shows that the process is in control, since none of the plotted points fall outside either the *UCL* or *LCL*.

3. Zone Chart

The basic Shewhart control chart is a common tool used in monitoring the mean of a process to ensure that it remains in control. This chart has a center line at the in-control mean value and 3σ limits on either side of the center line. The chart signals an out-of-control condition if any observed sample mean falls beyond the 3σ limits.

The concept behind the zone control chart is to allow for automatic signaling of the following out-of-control indicators in the Shewart chart.

A zone chart is divided into four zones. Zone 1 is defined as values within 1σ of the mean, zone 2 is defined as values between 1σ and 2σ of the mean, zone 3 is defined as values between 2σ and 3σ of the mean, and zone 4 as values 3σ or more from the mean. Weights are assigned to the four zones. Weights for points on the same side of the centerline are added. When a cumulative sum is equal to or greater than the weight assigned to zone 4, this is taken as a signal that the process is out of control. The cumulative sum is set

Textsmile

Employer : We need someone for this Job, who is Responsible.

Applicant : Sir, your search ends here, in my previous job, whenever anything went wrong, they said I am Responsible...

equal to 0 after signaling a process out of control, or when the next plotted point crosses the centerline[7-9].

3.1 Interpretation of Zone control chart [14]

The process signals out of control when any of the following situations appears. The situations are represented graphically at below in figure 3.1.

1. A point falling outside the 3σ limits,
2. Two of three successive points falling outside the 2σ limits on the same side of the center line.
3. Four of five successive points falling outside the 1σ limits on one side of the center line,
4. Eight consecutive points falling on the same side of the center line.

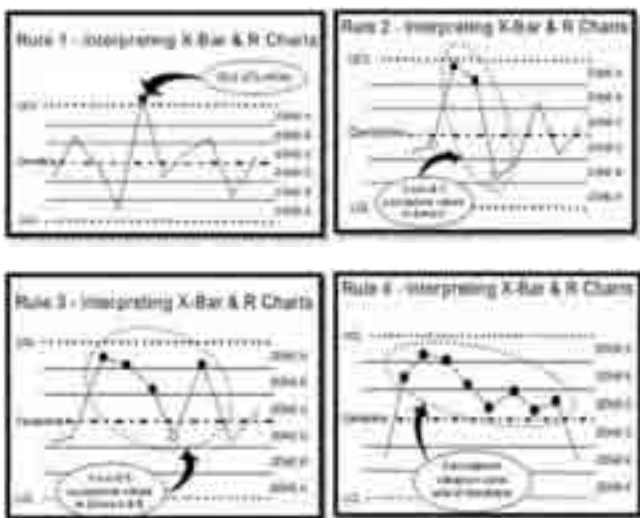


Figure 3.1: Interpretation of Zone chart

3.2 Utility and limitations of Zone chart

The shift of process mean and variability can be detected more efficiently and categorically. Any trend in the process towards higher shift from central limit can be detected quickly and process can be modified to maintain the quality. Only difficulty of this chart is that it is little complicated to study and interpret the process.

3.3 Illustration 2

Test results of average GSM of spunlace nonwoven fabric is shown in Table 3.1. These are original data, collected from R&D Department of Ginni Nonwovens, Panoli, Gujrat (Lot No. O119901, product code: PV7030P1040). Fabric samples were randomly collected from production line after an interval of one hour. 10 measurements of GSM were done for each sample and average GSM was calculated. All results of average GSM for two consecutive shifts (16 Hours)

has been shown in Table 3.1. The nominal GSM was 40. Zone chart of mean has been plotted with MINITAB 15 software as shown in figure 3.2. Standard deviation is estimated from mean range as shown in table 3.1.

Table 3.1: Test results of Nonwoven GSM

Sample no	Average GSM	Grand Mean	Standard Deviation
1	40.84	40.235	0.768913
2	39.11		
3	38.69		
4	39.83		
5	40.68		
6	39.66		
7	39.39		
8	39.36		
9	40.14		
10	41.11		
11	41.09		
12	42.51		
13	40.05		
14	39.70		
15	40.35		
16	41.25		

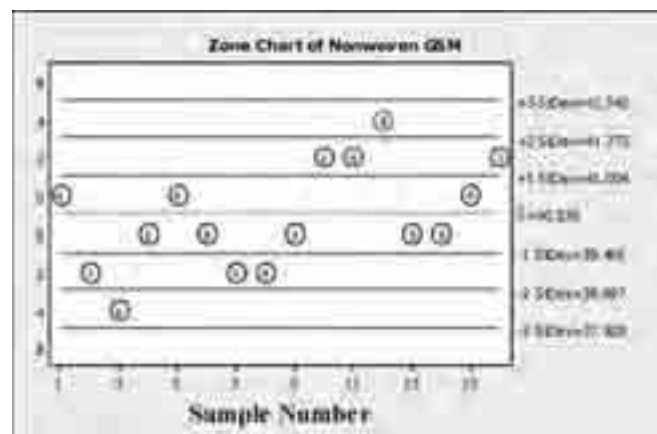


Figure 3.2: Zone chart of Nonwoven GSM

It can be seen from Figure 3.2 that though sample no 12 falls outside 2σ limits; none of the rules is satisfied for decision of out of control. So, process was within control.

4. CUSUM Control Charts

CUSUM charts, while not as intuitive and simple to operate as Shewhart charts, have been shown to be more efficient in detecting small shifts in the mean of a process. CUSUM control charts shows that they are better than Shewhart control charts when it is desired to detect shifts in the mean that are 2σ or less.

CUSUM works as follows: Let us collect m samples, each of size n , and compute the mean of each sample. Then the cumulative sum (CUSUM) control chart is formed by plotting one of the following quantities:

$$S_m = \sum_{i=1}^m (x_i - \mu_0) \text{ or } S'_m = \frac{1}{\sigma_x} \sum_{i=1}^m (x_i - \mu_0)$$

Where, m = sample number, x_i is the average of the i^{th} sample, μ_0 is the estimate/target of the in-control mean and σ_x is the known (or estimated) standard deviation of the sample means.

The choice of which of these two quantities is plotted is usually determined by the statistical software package. In either case, as long as the process remains in control centered at σ_x , the CUSUM plot will show variation in a random pattern centered about zero. If the process-mean shifts upward, the charted CUSUM points will eventually drift upwards, and vice versa if the process mean decreases [4, 7, 10, 12].

4.1 Illustration 3

Consistency in GSM of spunlace nonwoven fabric is very important which otherwise affects the quality of end products. Test results of average GSM of spunlace nonwoven fabric is shown in Table 4.1. These are practical data, collected from R&D Department of Ginni Nonwovens, Panoli, Gujrat (Lot No. O118901, product code: PV7535P1040). The fabric samples were collected randomly from production line after each 1 hour for gsm measurement. From each fabric sample 10 measurements were done and average GSM was calculated. The test results of average GSM for 25 samples have been shown in table 4.1. We need to formulate a CUSUM control chart to detect the small shift of GSM from targeted mean value. The targeted mean value was 40.

Table 4.1: CUSUM Chart of gsm data of 25 samples of spunlace nonwoven fabric

Sr.no. (i)	Garment GSM (xi)	Target	$x_i - 40$	Cumulative sum $S_i = (x_i - 40) + S_{i-1}$
1	40.68	40	0.68	0.68
2	39.66	40	-0.34	0.34
3	39.39	40	-0.61	-0.27
4	39.36	40	-0.64	-0.91
5	40.14	40	0.14	-0.77
6	41.11	40	1.11	0.34
7	41.09	40	1.09	1.43
8	42.51	40	2.51	3.94
9	40.05	40	0.05	3.99
10	39.7	40	-0.3	3.69
11	40.35	40	0.35	4.04
12	41.25	40	1.25	5.29
13	39.91	40	-0.09	5.2
14	39.54	40	-0.46	4.74
15	40.14	40	0.14	4.88
16	39.06	40	-0.94	3.94
17	40.36	40	0.36	4.3
18	40.26	40	0.26	4.56
19	39.31	40	-0.69	3.87
20	39.6	40	-0.4	3.47
21	40.5	40	0.5	3.97
22	39.65	40	-0.35	3.62
23	39.05	40	-0.95	2.67
24	40.5	40	0.5	3.17
25	41.65	40	1.65	4.82
26	40.8	40	0.8	5.62

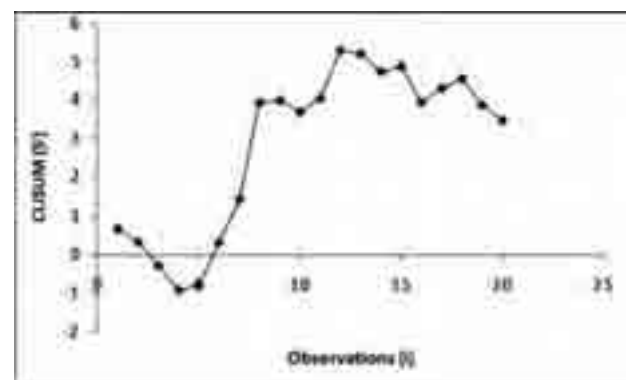


Figure 4.1: CUSUM control chart

The graph in Figure 4.1 is not a control chart because it lacks control limits. There are two general approaches to devising control limits for CUSUMS such as V-mask and tubular CUSUM. The older of these two methods is the V-mask procedure.

4.2 V-Mask used to determine if process is out of control

A visual procedure proposed by Barnard in 1959, known as the *V-Mask*, is sometimes used to determine whether a process is out of control. More often, the tabular form of the *V-Mask* is preferred. A *V-Mask* is an overlay shape in the form of a V on its side that is superimposed on the graph of the cumulative sums. The origin point of the *V-Mask* (see Figure 4.2) is placed on top of the latest cumulative sum point and past points are examined to see if any fall above or below the sides of the V. As long as all the previous points lie between the sides of the V, the process is in control. Otherwise (even if one point lies outside in Figure 4.2) the process is suspected of being out of control [10].

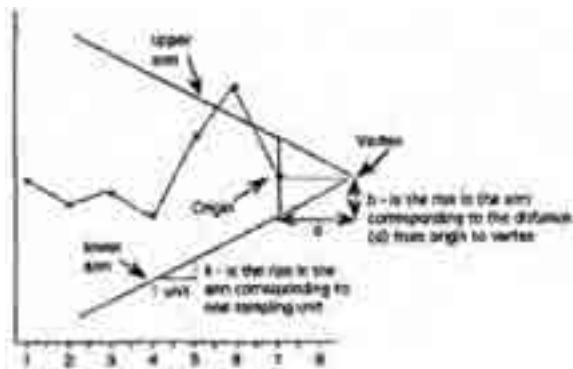


Figure 4.2: Illustration of V mask of CUSUM chart

In figure 4.2, the *V-Mask* shows an out of control situation because of the point that lies above the upper arm. By sliding the *V-Mask* backwards so that the origin point covers other cumulative sum data points, we can determine the first point that signaled an out-of-control situation. This is useful for diagnosing what might have caused the process to go out of control. From the diagram it is clear that the behavior of the *V-Mask* is determined by the distance *k* (which is the slope of the lower arm) and the rise distance *h*. These are the design parameters of the *V-Mask*. Note that we could also specify *d* and the vertex angle (or, as is more common in the literature, $\theta = 1/2$ of the vertex angle) as the design parameters, and we would end up with the same *V-Mask*.

In practice, designing and manually constructing a *V-Mask* is a complicated procedure. A CUSUM spreadsheet style procedure shown below is more practical, unless you have statistical software that automates the *V-Mask* methodology. Before describing the spreadsheet approach, we will look briefly at an example of a *V-Mask* in graph form.

We can design a *V-Mask* using *h* and *k* or we can use an *alpha* and *beta* design approach. For the latter approach we must specify

- α : the probability of a false alarm, i.e., concluding that a shift in the process has occurred, while in fact it did not,
- β : the the probability of not detecting that a shift in the process mean has, in fact, occurred, and
- δ (delta) : the amount of shift in the process mean that we wish to detect, expressed as a multiple of the standard deviation of the data points (which are the sample means).

The values of *h* and *k* are related to α , β , and δ based on the following equations:

$$k = \frac{\delta\sigma_x}{2}$$

$$d = \frac{2}{\delta^2} \ln \frac{(1-\beta)}{\alpha}$$

$$h = dk$$

Generally, we choose $\alpha = 0.0027$ (equivalent to the ± 3 sigma criteria used in a standard Shewhart chart), and $\beta = 0.01$. Finally, we decide we want to quickly detect a shift as large as 1 sigma, which sets $\delta = 1$. A general rule of thumb if one chooses to design with the *h* and *k* approach, instead of the α and β method illustrated above, is to choose *k* to be half the δ shift (0.5) and *h* to be around 4 or 5.

4.3 Illustration 4

Same dataset of Illustration 3 is used here for CUSUM chart with V-mask for target value of mean GSM equal to 40. General *h* and *k* approach is adopted here with *k* equals to half the δ shift (0.5) and *h* equals to 4.

Texttreasure

I have not failed. I've just found 10,000 ways that won't work."

- Thomas Alva Edison

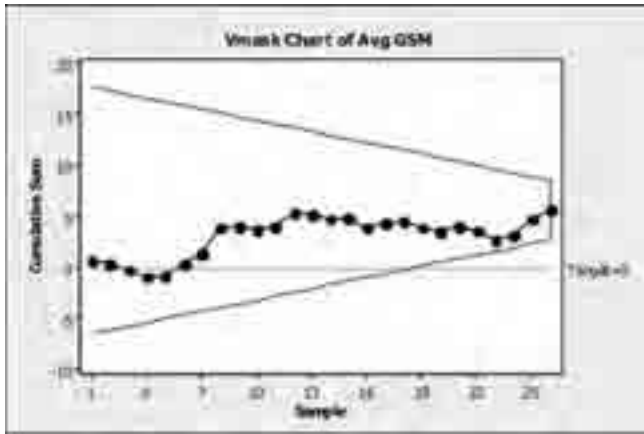


Figure 4.3: CUSUM chart with V-mask of nonwoven GSM, process means drift in lower side

The origin point of the V-Mask (see Figure 4.3) is placed on top of the latest cumulative sum point and past points are examined to see if any fall above or below the sides of the V. As all the previous points lie between the sides of the V, the process is in control.

4.4 Illustration 5

Another study of the same nonwoven line is illustrated here for Lot No. O-119201, Product code-PV3565P1050. Test result of average GSM of 12 samples has been shown in table 4.2. 10 observations were made for each case and average GSM was evaluated for each samples. A CUSUM chart has been constructed with V-mask for target value of mean GSM equal to 50.

Table 4.2: Nonwoven GSM measurement

Sample no.	Nonwoven GSM
1	49.42
2	48.85
3	49.68
4	47.74
5	49.66
6	50.34
7	49.51
8	49.87
9	49.88
10	49.46
11	51.26
12	51.50

The CUSUM control chart with V mask of Nonwoven GSM has been constructed by Minitab 15 software as shown in Figure 4.4. It can be seen that though the process means drift below the target value, the process is in control, as none of points are outside the control limit.

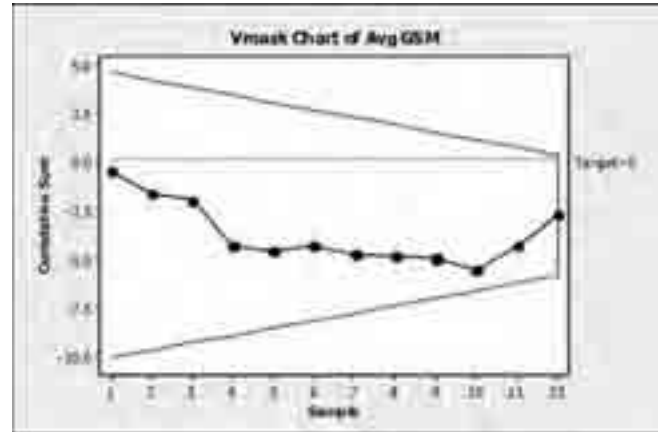


Figure 4.4: CUSUM chart with V mask for nonwoven GSM, process means drift in lower side

4.5 Tabular CUSUM

The other approach to CUSUM control, the tabular CUSUM, is superior. The tabular procedure is particularly attractive when the CUSUM is implemented on a computer [10].

Let $S_H(i)$ be an upper one-sided CUSUM for period i and $S_L(i)$ be a lower one-sided CUSUM for period i . These quantities are calculated from:

$$s_H(i) = \max [0, (x_i - \mu_0) + s_H(i-1)]$$

$$s_L(i) = \max [0, (\mu_0 - x_i) + s_L(i-1)]$$

Where, the starting values $s_H(0) = s_L(0) = 0$
 K is called the reference value, which is usually chosen about halfway between the target $\hat{\mu}_0$ and the value of the mean corresponding to the out-of-control state, $\mu_1 = \hat{\mu}_0 + \Delta$ That is, K is about one-half the magnitude of the shift, $\Delta/2$.

4.6 Illustration 6

The tabular CUSUM is illustrated by applying it to the below data of nonwoven GSM measurement. The process target is 99, and we will use $K= 1$ as the reference value and $H=10$ as the decision interval.

The observations of CUSUM are
 $s_H(1) = \max [0, \bar{x}_1 - 100 + s_H(0)] = \max [0, 102.0 - 100 + 0] = 2.0$
 $s_L(1) = \max [0, 98 - x_1 + s_L(0)] = \max [0, 98 - 102.0 + 0] = 0$

Table 4.3: Test result and analysis of Tabular CUSUM

Observation	Upper Sum				Lower Sum		
	(i)	Xi	Xi-100	SH(i)	nH	98-Xi	SL(i)
1	102	2	2	1	-4	00	
2	94.8	-5.2	0	0	3.2	3.2	1
3	98.3	-1.7	0	0	-0.3	2.9	2
4	98.4	-1.6	0	0	-0.4	2.5	3
5	102	2	2	1	-4	00	
6	98.5	-1.5	0.5	2	-0.5	00	
7	99	-1	0	0	-1	00	
8	97.7	-2.3	0	0	0.3	0.3	1
9	100	0	0	0	-2	00	
10	98.1	-1.9	0	0	-0.1	00	
11	101.3	1.3	1.3	1	-3.3	00	
12	98.7	-1.3	0	0	-0.7	00	
13	101.1	1.1	1.1	1	-3.1	00	
14	98.4	-1.6	0	0	-0.4	00	
15	97	-3	0	0	1	11	
16	96.7	-3.3	0	0	1.3	2.3	2
17	100.3	0.3	0.3	1	-2.3	00	
18	101.4	1.4	1.7	2	-3.4	00	
19	97.2	-2.8	0	0	0.8	0.8	1
20	101	1	1	0	-3	00	

Notice that the CUSUMS in this example never exceed the decision interval H=10. We would therefore conclude that the process is in control.

4.7 Utility and limitations of CUSUM Chart

CUSUM control charts are better than Shewhart control charts when it is desired to detect shifts in the mean that are 2σ or less. Small shifts in the control chart can be detected easily by change in the slope of the V-mask [10].

5. EWMA Control Charts

The Exponentially Weighted Moving Average (EWMA) is a statistic for monitoring the process that averages the data in a way that gives some importance to old data as they are further removed in time. For the Shewhart chart control technique, the decision regarding the state of control of the process at any time, *t*, depends solely on the most recent measurement from the process and, of course, the degree of 'trueness' of

the estimates of the control limits from historical data. For the EWMA control technique, the decision depends on the EWMA statistic, which is an exponentially weighted average of all prior data, including the most recent measurement. By the choice of weighting factor, λ, the EWMA control procedure can be made sensitive to a small or gradual drift in the process, whereas the Shewhart control procedure can only react when the last data point is outside a control limit. The statistic that is calculated is:

$EWMA_t = \lambda Y_t + (1 - \lambda) EWMA_{t-1}$ for $t = 1, 2, \dots, n$. where

$EWMA_0$ is the mean of historical data (target)

Y_t is the observation at time *t*

n is the number of observations to be monitored including $EWMA_0$

$0 \leq \lambda \leq 1$ is a constant that determines the depth of memory of the EWMA.

The parameter λ determines the rate at which 'older' data enter into the calculation of the EWMA statistic. A value of λ = 1 implies that only the most recent measurement influences the EWMA (degrades to Shewhart chart). Thus, a large value of λ = 1 gives more weight to recent data and less weight to older data; a small value of λ gives more weight to older data. The value of λ is usually set between 0.2 and 0.3 although this choice is somewhat arbitrary.

The estimated variance of the EWMA statistic is approximately

$$s_{ewma}^2 = (\lambda / (2 - \lambda)) s^2$$

when *t* is not small, where *s* is the standard deviation calculated from the historical data.

The center line for the control chart is the target value or $EWMA_0$. The control limits are:

$$UCL = EWMA_0 + k s_{ewma}$$

$$LCL = EWMA_0 - k s_{ewma}$$

where the factor *k* can be set equal to 3 for 3σ limit. As with all control procedures, the EWMA procedure depends on a database of measurements that are truly representative of the process. Once the mean value and standard deviation have been calculated from this database, the process can enter the monitoring stage, provided the process was in control when the data were collected. If not, then the usual Phase 1 work would have to be completed first [10-11].

5.1 Utility and Limitations of EWMA Chart

The exponentially weighted moving average (EWMA chart) is an alternative to the individuals or X-bar chart that provides a quicker response to a shift in the process average. The EWMA chart incorporates informa-

tion from all previous subgroups, not only the current subgroup. By the choice of weighting factor, λ , the EWMA control procedure can be made sensitive to a small or gradual drift in the process, whereas the Shewhart control procedure can only react when the last data point is outside a control limit[7,10, 15].

5.2 Illustration 7

EWMA chart of online gsm measurement data of spunlace nonwoven fabric (table 5.1) has been shown in figure 5.1.

To illustrate the construction of an EWMA control chart, consider a process with the following parameters calculated from historical data:

$$EWMA_0 = 102$$

$$s = 1$$

with λ chosen to be 0.2 so that $\lambda/(2-\lambda) = 0.2 / 1.8 = 0.1111$ and the square root = 0.3333. The control limits are given by

$$UCL = 102 + 3 (0.3333) \times 1 = 103$$

$$LCL = 102 - 3 (0.3333) \times 1 = 101$$

Table 5.1: nonwoven GSM data of 25 samples

Sample no.	GSM
1	100.00
2	100.75
3	101.00
4	102.75
5	103.50
6	100.50
7	100.75
8	106.25
9	101.00
10	100.50
11	101.25
12	102.00
13	101.75
14	101.50
15	103.50
16	102.75
17	101.50
18	102.00
19	101.50
20	102.00
21	100.00
22	102.00
23	103.75
24	104.75
25	102.25

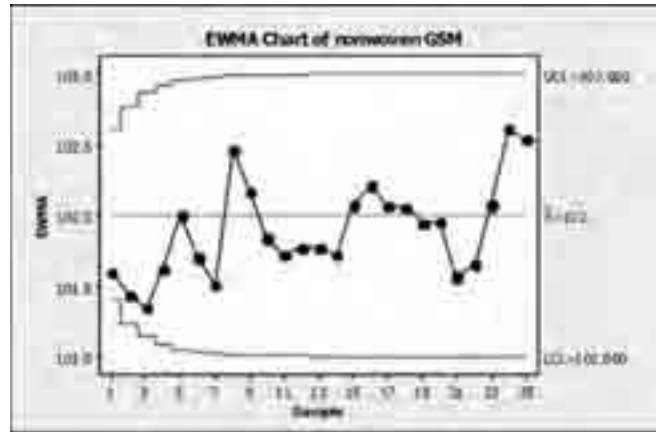


Figure 5.1: EWMA chart of nonwoven GSM

The chart tells us that the process is in control because all EWMA_t lie between the control limits.

6. Conclusions

Shewhart Control charts for attributes and variables which were used by traditional basis are not efficient of detecting small shift of variability in the process. Advanced control charts with some new features are able to detect small shift of variability in the process. The individual control chart is very useful for monitoring processes where data are not available on a frequent basis. This chart examines variation in individual sample results over time. This chart is a method of looking at short term and long term variation. This chart is useful where automated inspection and measurement technology is used. Every unit manufactured can be analyzed. It is also used where no basis for rational sub-grouping is available. The concept behind the zone control chart is to allow for automatic signaling of the following out-of-control indicators in the Shewart chart. The shift of process mean and variability can be detected more efficiently and categorically. This chart is little complicated to study and interpret the process. CUSUM chart is more efficient in detecting small shifts in the mean of a process. They are better than Shewhart control charts when it is desired to detect shifts in the mean that are 2σ or less. Small shifts in the control chart can be detected easily by change in the slope of the V-mask. EWMA control chart is a statistic for monitoring the process that averages the data in a way that gives some importance to old data with recent data. This chart is an alternative to the individuals or X-bar chart that provides a quicker response to a shift in the process average. By the choice of weighting factor, λ , the EWMA control procedure can be made sensitive to a small or gradual

drift in the process, whereas the Shewhart control procedure can only react when the last data point is outside a control limit

References

1. Anwar A., Rochman D.D., Proceeding, *International Seminar on Industrial Engineering and Management*, Inna Kuta Beach Hotel, Bali, December 10th-11th, A20, (2009).
2. Beckwith O.P., *Textile Research Journal*, **14**, 319, (1944), doi:10.1177/004051754401401005
3. Ahmad M.S., Javed I., Ahmad M., Naem H.M. & Sarwar M., *Pak. J. Agli. Sci.*, **29**(1), 25, (1992).
4. Engin A.B., *Quality Engineering*, **16**(4), 625, (2004), DOI:10.1081/QEN-120038023.
5. Montgomery, D.C., *Introduction to Statistical Quality Control*, John Wiley & Sons, Inc., Sixth Edition, USA, (2009).
6. Anon, Online Available at : <http://www.spcforexcel.com/individuals-control-charts>.
7. Spiegel, M.R., Stephens, L.J., *Theory And Problems of Statistics*, Fourth Edition, Schaum's Outline Series, Mcgraw-Hill, New York, pp 481-490, (2008).
8. Cézová E., Zone Control Chart, *ROBUST, JÈMF* (2008).
9. Davis R.B., Homer A., Woodall W.H., *Statist.-Theory Meth.* **19**(5), 1581, (1990).
10. Montgomery, D.C., Runger, G.C., *Applied Statistics and Probability for Engineers*, John Wiley & Sons, Inc., USA, Third Edition, pp 596-644, (2002).
11. Lucas J.M., Saccucci, M.S., *Tec Hnometrics*, **32**(1), 1, (1990).
12. Walpole, R.E., Myers, R.H., Myers, S.L., & Ye K., *Probability & Statistics For Engineers & Scientists*, Pearson Education Ltd., London , 8th Edition, pp 697-722, (2007).
13. Lee P.H., Huang Y.H., Kuo T.I., Wang C.C., *Qual Quant*, **47**, 1803, (2013) DOI 10.1007/s11135-011-9627-6
14. Leaf G.A.V., *Practical Statistics for the Textile Industry*, Part II, The Textile Institute, Manchester, pp 30-49, (1987).
15. Maroš T., Vladimír B, Caner T. M., *Textile Research Journal*, **81**(13), 1344, (2011).



TEXTTEST INSTRUMENTS			
COMPUTER TECHNOLOGY BASED AIR PERMEABILITY TESTER, ONLINE AIR PERMEABILITY TESTER, PORTABLE AIR PERMEABILITY TESTER, AIR BAG TESTER, DIGITAL ELMENDORF, PICK COUNTER, MOISTURE METER			
 NEW MODEL Air Permeability Tester	 Portable Air Permeability Tester	 Online Air Permeability Tester, GSM	 NEW MODEL Hydrostatic Tester
Manufactured by TEXTTEST AG Switzerland Email : info@texttest.ch		Exclusive agent for India : Thymas Email : thymasindia@bans.in & wp200@yaho.com	
 Elmendorf Digital Tear Strength Tester	 Portable Moisture Meter		 Portable Pick Counter
Thymas Electronics Pvt. Ltd. Post Box No. 3744, Vadodara-390007 Ph.: 2351034/2312730 Fax: 0265-2335561			

Quantitative and Qualitative Requirements of Cotton in the 12th Five Year Plan Period

K.P. Chellamani*, R.S. Vignesh Balaji & J. Sudharsan
The South India Textile Research Association (SITRA)

Abstract

The anticipated total textiles and clothing exports from India in the year 2016-17 will be around \$45 billion. With this in view, the cotton yarn requirements for export and domestic consumption and the corresponding cotton requirements have been projected for the 12th five year plan period (2012-13 to 2016-17). Projections are also made with reference to cultivated area and yield per hectare that will be needed to produce the required quantity of cotton. The quality requirements of cotton to produce yarns meant for high speed looms are also briefly touched upon in this report.

Key words

Clothing exports, Cotton yarn, Domestic consumption, Cultivated area, Quality requirements and Yield per hectare

1. Introduction

Globalisation has yielded better opportunities for increasing the export of Indian cotton yarns (with quality attributes meeting the requirements of foreign buyers). In the light of this, the future requirements of cotton and the extent of increase in cotton yield required for India to become self-sufficient assume significance. In this report, an attempt has been made to project the cotton requirements in the 12th five year plan period (2012-2017). The report is divided into two parts. Part I deals with quantitative requirements of cotton in the year 2016-17 and Part II covers the qualitative requirements of cotton. The quality requirements of cotton for different count groups are also illustrated in this report.

2. Quantitative Requirements of Cotton by 2016-17 (Part I)

2.1 Cotton requirements for the year 2016-17

2.1.1 Cotton yarn requirements for domestic consumption

The total production of cotton yarn in the year 2009-10 was 3080 million kg [1] of which (about 589 million kg) was exported (in the form of yarn) (Table 2.1).

Table 2.1: Cotton yarn for export during 2009 - 10 (Million kg)

Sr.no.	Export in the form of	Quantity
1.	Yarns	589.02
2.	Fabrics	247.19
3.	RMG*	441.03
4.	Made-ups	281.63
Total		1558.87

*RMG- Readymade garments

During 2009-10 the cotton yarns meant for the domestic consumption amounted to about 1521 million kg. Due to globalisation and the anticipated increase in the purchase power of the consumers, the domestic consumption of cotton yarns (in the form of yarns, fabrics, RMG, etc) could be expected to increase at the rate of 6% - 8% per year. However, a part of this will be met by the imports. Therefore, as a conservative estimate, the domestic consumption of cotton yarns & fabrics made out of indigenous, cottons, could be assumed to exhibit a moderate increase of 5% - 6% per year. Hence, the total cotton yarn requirement for the domestic consumption in the year 2016-17 will amount to 2247 million kg.

* Refer Appendix I.

2.1.2 Cotton yarn requirements for export

In the year 2009-10, the total value of export of yarn and fabrics (cotton, man-made and other materials) was around Rs. 30,409 crores [1]. Of this, the value

* All correspondence should be addressed to,
 Dr. K.P.Chellamani
 The South India Textile Research Association (SITRA),
 Coimbatore - 641014
 Email: kpc@sitra.org.in

of export of cotton yarn and cotton fabrics alone worked out to roughly 40% [Rs. 12,086 crores: cotton yarn: 25%; cotton fabric: 15%]. The value of export of made-ups (all inclusive) and RMG (all inclusive) in the year 2009-10 was around Rs. 62,495 crores. Of this, the value of cotton RMG / cotton made-ups alone amounted to around 70% (Rs. 44,480 crores). Of the total volume of cotton RMG / cotton made-ups, cotton RMG alone worked out to 80%. The total textiles and clothing exports during 2009 - 10 was around \$23.4 billion. It is anticipated that in 2016-17, this will be roughly doubled i.e. the total textiles and clothing exports will be in the region of \$45 billion (in the terminal year of the 12th five year plan period). Of this, yarns / fabrics exports will be for \$15 billion and RMG / made-ups will be for \$30 billion. (A ratio of 1: 2 for yarn/fabrics export and RMG / made-ups export, since the RMG / made-ups export is expected to increase at a faster rate for obvious reasons). Therefore, by the year 2016-17,

- ◆ The value of cotton yarn export will be \$3.75 billion (25% of total yarn / fabrics export)
- ◆ The value of cotton fabrics export will be \$2.25 billion (15% of total yarn / fabrics export) and the value of cotton RMG / made-ups export will be \$21 billion (70% of total RMG / made-ups export). Of this, the value of exports of cotton RMG alone will be \$16.8 billion and cotton made-ups \$4.2 billion.

On the above basis, the quantum of cotton yarn that will be required for manufacturing export items in the year 2016-17 has been worked out.

2.1.2.1 Cotton yarn requirements for yarn export
The anticipated value of cotton yarn export by 2016-17 will be \$3.75 billion. Assuming a conversion factor of 1240* between the value and quantity of cotton yarn exported, the anticipated quantity of cotton yarn export by 2016-17 will be 1512 million kg.

2.1.2.2 Cotton yarn requirements for cotton fabric export

The anticipated value of cotton fabric export by 2016-17 will be \$2.25 billion. Assuming a conversion factor of 1.8** between the value and quantity of cotton fabric export, the anticipated quantity of cotton fabric export by 2016-17 will be 625 million kg.

2.1.2.3 Cotton yarn requirements for cotton RMG export

The anticipated value of cotton RMG export by 2016-17 will be \$16.8 billion. Assuming a conversion factor of 1640# between the value and quantity of cotton RMG export, the anticipated quantity of cotton RMG export by 2016-17 will be 5122 million pieces. Assuming an average weight of 200 g/piece, the anticipated quantity of cotton RMG export by 2016-17 will be 1025 million kg.

2.1.2.4 Cotton yarn requirements for cotton made-ups export

The anticipated value of cotton made-ups export by 2016-17 will be \$4.2 billion. Assuming a conversion factor of 2400@ between the value and quantity of cotton made-ups export, the anticipated quantity of cotton made-ups export by 2016-17 will be 875 million kg.

* Refer Appendix II-A, ** Refer Appendix II-B, # Refer Appendix II-C, @Refer Appendix II - D

Hence, the total projected cotton yarn requirement for the domestic consumption as well as for the exports in the year 2016-17 will be around 6284 million kg, the break-up of which is given in Table 2.2.

Table 2.2: Quantum of cotton yarn requirements during 2016-17

Particulars	Quantity (in million kg)
(i) Export in the form of	
- Yarn	1512
- Fabrics	625
- RMG	1025
- Made-ups	875
Total	4037
(ii) Domestic consumption	2247
Overall total	6284

2.1.3 Cotton requirements for 100% cotton yarn production

The ratios of cotton yarn production in different counts on the overall cotton yarn production are given in Table 2.3.

Table 2.3: Cotton yarn production in different count groups (keeping 2009-10 figures as base)

S. no.	Count groups	% on total production
1.	1s - 10s	17.7
2.	11s - 20s	17.7
3.	21s - 30s	26.0
4.	31s - 40s	25.4
5.	41s - 60s	8.0
6.	61s - 80s	3.5
7.	81s and finer	1.7

On the above basis, the yarn production in different counts and the corresponding cotton requirements for the year 2016-17 are calculated and given in Table 2.4.

Table 2.5: Combed yarn production as a % of total cotton yarn production in different count groups

S. no.	Count groups	% of combed yarn
1.	1s - 10s	10
2.	11s - 20s	25
3.	21s - 30s	40
4.	31s - 40s	45
5.	41s - 60s	60
6.	61s - 80s	70
7.	81s and finer	90

Details given in Table 2.5 were used to work out the quantity of carded and combed yarns in different count groups, as given in Table 2.4. The other assumptions made for working out the cotton requirements for carded

Table 2.4: Yarn production in different count groups and the corresponding cotton requirements in the year 2016-17 (Quantity in million kg)

Count Particulars	Count							Total
	1s-10s	11s-20s	21s-30s	31s-40s	41s-60s	61s-80s	81s & finer	
Total cotton yarn production	1112.27	1112.27	1633.84	1596.14	502.72	219.93	106.83	6284.00
Carded Yarn	1001.04	834.20	980.30	877.88	201.09	65.98	10.68	3971.17
Combed Yarn	111.23	278.07	653.54	718.26	301.63	153.95	96.15	2312.83
Cotton requirements for Carded Yarn	715.0	999.1	1160.1	1032.8	233.8	76.3	12.2	4229.3
Combed Yarn	158.9	380.4	928.1	1013.9	431.6	219.0	138.7	3270.6
Total cotton requirement In million kg	873.9	1379.5	2088.2	2046.7	665.4	295.3	150.9	7499.9
In lakh bales (1 bale = 170 kg)	51.4	81.1	122.8	120.4	39.1	17.4	8.9	441.1

Note : For counts 1s - 10s, the mixing will consist of 50% waste and 50% cotton; the yarn realization is assumed as 70%.

The ratios of combed yarn on the total cotton yarn production in different count groups have been worked out based in the details provided in SITRA's earlier report on "Qualitative and Quantitative Requirements of Cotton in 2009-10" [2] and the same are given in Table 2.5.

and combed yarns for different counts (as given in Table 4) are given in Appendix III.

2.1.4 Cotton requirements for blended yarn production

Cotton blended yarn production in the year 2009-10 was around 305 million kg. During the last 10 year period from 1999-2000 to 2009-2010, the growth rate was around 4% [1, 3-5]. Assuming a higher growth rate of 6%, the cotton blended yarn production in the year 2016-17 has been projected at 435 million kg of

this, cotton/polyester will be about 80%, cotton/viscose will be around 10%, and the remaining will be cotton/acrylic, cotton/wool etc. The quantum of cotton required for the cotton blended yarn production is given in Table 2.6.

Table 2.6: Cotton blended yarn production and the quantum of cotton required for the same in the year 2016-17
(Million kg)

Particulars	Type of Yarn			Total
	Cotton / Polyester	Cotton / Viscose	Cotton/Acrylic Wool etc.	
Total yarn production	348.0	43.5	43.5	435.0
Proportion of cotton in the yarn (%)	50	80	80	-
Weight of cotton in the blended yarn	174.0	34.8	34.8	243.6
Yarn realisation of cotton component (%)	77.0	88.0	88.0	-
Total cotton requirement Million kg	226.00	13.29	39.54	2.33
Lakh bales (1 bale = 170 kg)	39.54	2.33	305.08	17.95

Note: Keeping the 2009-10 figures as base.

2.1.5 Cotton requirements for manufacturing technical textiles

Of the total textile goods manufactured at present, the quantum of technical textiles accounts for 7% to 8%. However, in view of the higher demand that is expected to crop up for the technical textiles in the years to come, more manufactures in India could be expected to go in for the production of technical textile products. This segment is expected to grow by 11% per year till 2012-13 and is likely to grow at 6% to 8% per year till 2020 without any policy interventions.

If the government intervenes by way of regulatory push, the growth of the technical textiles industry can

be in the region of 12% to 15% per year till 2020. Therefore, the technical textile manufacturing in India by 2016-17 could be expected to be around 20% of the total textile manufacture. Of this, the technical textiles made out of cotton/cotton blended yarn can be expected to be around 5% (in the technical textile manufacture, the major share is from man-made fibres). Hence, the cotton requirement for the technical textiles manufacture will be around 22 lakh bales.

2.1.6 Total cotton requirement

The total quantum of cotton requirement for manufacturing yarn (100% cotton yarn and cotton blended yarn) as well as technical textiles in the year 2016-17 will be about 481 lakh bales. Year-wise break-up of cotton requirement during the 12th five year plan period is given in Table 2.7.

Table 2.7: Year-wise break-up of cotton requirement during the 12th five year plan period

Sr.no.	Year	Cotton requirement (lakh bales)
1	2012-13	381
2	2013-14	406
3	2014-15	432
4	2015-16	456
5	2016-17	481

Cotton requirements for different count groups are given in Table 2.8.

Table 2.8: Cotton requirements for different count groups during the 12th five year plan period

Sr. No	Count groups	Quantity required (lakh bales)				
		2012-13	2013-14	2014-15	2015-16	2016-17
1.	1s - 10s	40.6	43.3	46.0	48.5	51.4
2.	11s - 20s	64.1	68.3	72.6	76.8	81.1
3.	21s - 30s	97.5	104.0	110.5	116.4	122.8
4.	31s - 40s	111.0	118.3	125.7	133.0	140.4
5.	41s - 60s	47.0	50.0	53.2	56.3	59.1
6.	61s - 80s	13.8	14.7	15.9	16.7	17.4
7.	81s and finer	7.0	7.4	8.0	8.4	8.9
Total		381.0	406.0	431.9	456.1	481.1

Of the 40 lakh bales required for producing technical textiles and blended yarns, the count groups 31s - 40s

and 41s - 60s will account for 20 lakh bales each.

2.1.7 Cultivated area and yield per hectare required to produce the projected quantity of cotton

In order to meet the projected yarn production in the year 2016-17, the cotton production has to be increased by about 63% from 295 lakh bales in 2009-10 to 481 lakh bales. The area required and the yield per hectare to be realised to meet the projected cotton requirements are given in Table 2.9.

Table 2.9: Cultivated area and the yield per hectare required to meet the projected cotton requirements for the year 2016-17

Yield per hectare (kg)	Cultivated area (million hectares)
500	16.35
550	14.87
600	13.63
650	12.58
700	11.68

3. Qualitative Requirements of Cotton (Part - II)

3.1 High speed looms in the weaving industry

Weft insertion rates of around 5000 m/min. in the case of multiphase looms and around 2500 m/min. In the case of airjet looms are attained today in practice which represents a 5 to 10 fold performance increase in the past 60 years (Figure 3.1) or so.

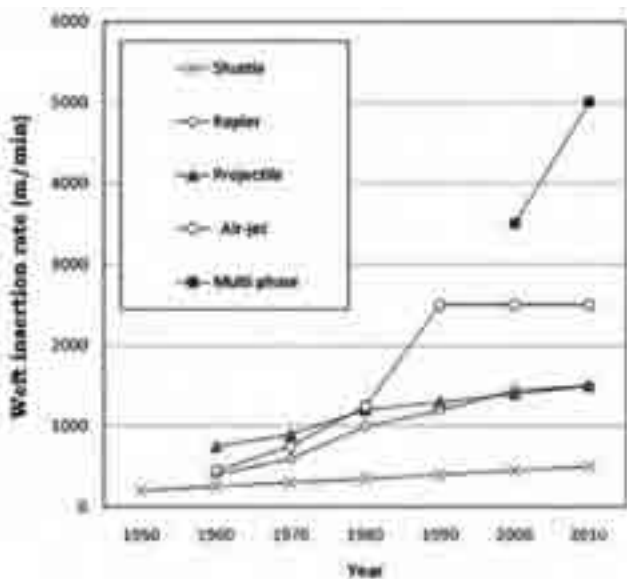


Figure 3.1: Maximum weft insertion rates in different types of looms

The pace of introduction of hi-tech looms (automatic high speed shuttle looms and shuttleless looms) in the Indian weaving industry is gaining momentum in view of the fact that the fabric quality requirements are stringent and the market competition is stiffer [6].

Hi-tech weaving parks are being set-up in different pockets of the country as a means to accelerate the introduction of hi-tech weaving machines, which are vital for the manufacture of long length of fault-free fabrics at competitive prices.

Major factors contributing to higher weaving speeds are,

1. Yarn quality (improved regularity with fewer weak spots).
2. Warp preparation (more uniform yarn tension).
3. Sizing (improved sizing agents, wet splitting, etc).
4. Weaving machine (acting gentler on the yarn, smaller sheds, improved weft guiding and braking, electronic warp let-off and back-rest roller systems).
5. Air-conditioning of the loom shed and provision for appropriate dust extraction systems.

3.2 Quality requirements of cottons to produce yarns meant for high speed looms

As per studies conducted at SITRA [7] and other research laboratories, yarn quality requirements for high speed looms (cone yarns) are give in Table 3.1.

Table 3.1: Suggested values of yarn quality requirements for high speed looms (cone yarns)

Sr. no.	Quality characteristics	40s C	60s C	80s C
1.	RKM (g / tex)	18	20	20
2.	CV of RKM (%)	8.50	9	10
3.	Breaking elongation (%)	5.25	5.00	4.75
4.	Normal imperfections /km.	125	150	300
5.	Extra sensitive imperfections/km.	1000	1200	1500
6.	S3 Value	750	700	650
7.	Objectionable faults /lakh m	← 1.0 or below →		
8.	Long thick faults /lakh m	← 1.0 or below →		
9.	Long thin faults/lakh m	10	15	22

Note: S3 - No. of hairs with length of 3mm & above per 100 m length of yarn measured using Zweigle hairiness tester.

A Comparison of the values given in Table 3.1 with the average quality of yarns that are being achieved by the SITRA member mills (leaving exceptions), shows the following:

1. The breaking elongation of Indian yarns is lower by 0.75 to 1.0% (absolute values).
2. Hairiness (S3value) of Indian yarns is higher by 25 to 50%.

3.2.1 Measures to improve the average quality of Indian yarns

3.2.1.1 Breaking elongation

Imported cottons generally exhibit higher elongation to the tune of 1.0% to 1.5% (absolute values) as compared to their Indian counterparts in a given count for a given process set-up. Values of elongation achieved in different counts for Indian and imported cottons as per the studies conducted at SITRA are given in Table 3.2.

Table 3.2: Values of yarn elongation for some of the Indian and imported cottons spun into different counts

Yarn count (Ne)	Elongation (%)	
	Indian cotton	Imported cotton
60	5.79	6.99
80	4.78	5.64
100	4.60	5.87

To understand the reasons for the same, an analysis of yarn elongation and fibre quality was carried out for some of the imported and Indian cottons and the values are given in Table 3.3.

Table 3.3: Yarn elongation and CPIYE for imported and Indian cottons

Yarn count (Ne) : 60
Spindle speed (rpm) : 18,000

Sr. no.	Cotton	Yarn elongation (%)	CPIYE value	Difference in yarn elongation between imported and Indian cottons (%)	Difference in CPIYE between imported and Indian cottons (%)
1.	Russian (Imported)	5.99	621	22.0 (1 ~ 2)	22.0 (1 ~ 2)
2.	DCH 32 (Indian)	4.60	485		
3.	Russian (Imported)	5.00	580	16.0 (3 ~ 4)	12.0 (3 ~ 4)
4.	DCH 32 (Indian)	4.20	515		
5.	US Pima (Imported)	5.84	519	32.0 (5 ~ 6)	32.0 (5 ~ 6)
6.	Brahma (Indian)	4.00	354		

CPIYE is defined as the cotton propensity index for yarn elongation and the same is given by,

$$CPIYE = \left[\frac{FL \times FS \times FE}{Mic. \text{ value } \times SFC(W)} \right]$$

Where,

- FL = 2.5% Span length of cotton (mm)
- FS = Bundle strength of cotton (g/tex)
- FE = Fibre elongation (%)
- Mic. value = Fibre fineness (µg/inch) and SFC(W) = Short fibre content by weight in comber sliver measured using AFIS instrument

It is clear from Table 3.3 that the difference in yarn elongation between imported and Indian cottons in a given count and in a given process situation is fully explained by the respective difference in CPIYE values. For any two cottons (whether indigenous or imported), when spun into a given count using same process parameters, the difference in yarn elongation values exhibited by them could be explained by the respective difference in CPIYE values.

Texttreasure

"Take up one idea. Make that one idea your life - think of it, dream of it, live on that idea. Let the brain, muscles, nerves, every part of your body, be full of that idea, and just leave every other idea alone. This is the way to success."

- Swami Vivekananda

Therefore, in order to improve elongation of Indian yarns, cottons with higher elongation, higher strength & lower short fibre content are to be developed.

3.2.1.2 Hairiness

Imported cottons exhibit lower hairiness as compared to their Indian counterparts, by 25 to 50% in different counts. The difference in yarn hairiness values (S3 value) and the corresponding difference in CPIYH values are given in Table 3.4 for some of the Indian and imported cottons.

Table 3.4: Yarn hairiness and CPIYH values of some Indian and imported cottons

Yarn Count (Ne) : 60
Spindle Speed (rpm) : 18,000

Sr. no.	Cotton	Yarn hairiness (S ³ value)	CPIYH value	Difference in yarn hairiness between Indian and imported cottons (%)	Difference in CPIYH between Indian and imported cottons (%)
1.	Brahma (Indian)	1201	0.61	46% (1 ~ 2)	43% (1 ~ 2)
2.	Russian (Imported)	645	0.35		
3.	Brahma (Indian)	1258	0.93	32.0 (3 ~ 4)	42.0 (3 ~ 4)
4.	US Pima (Imported)	858	0.54		
5.	MCU 5 (Indian)	955	0.57	20.0 (5 ~ 6)	23.0 (5 ~ 6)
6.	US Pima (Imported)	763	0.44		

CPIYH is defined as the cotton propensity index for yarn hairiness and the same is given by,

$$\text{CPIYH} = \left[\frac{\text{Mic. value} \times \text{SFC (W)}}{\text{FL}} \right]$$

Where,

FL = 2.5% Span length of cotton (mm)

Mic. value = Fibre fineness (µg/Inch) and

SFC (W) = Short fibre content by weight in comber sliver measured using AFIS instrument

Table 3.4 indicates that the difference in yarn hairiness between Indian and imported cottons in a given process situation is largely explained by the respective difference in CPIYH values. For any two cottons (whether indigenous or imported), when spun into a given count using same process parameters, the difference in hairiness values exhibited by the yarns could be largely attributed to the respective difference in CPIYH values. Therefore, in order to reduce hairiness in Indian yarns, cottons with lower short fibre content are to be developed.

At present, the short fibre content in Indian cottons is higher by 10% to 20% as compared to their imported counterparts (Table 3.5).

Table 3.5: SFC (n) in some of the Indian and foreign cottons

Indian cotton		Imported cotton	
Variety	SFC (n)	Variety	SFC (n)
V 797 S4	42.0 32.3	Giza 88	19.5
MCU 5 Brahma	30.8 35.3	Giza 86	22.3
DCH 32	29.5	Russian	24.2

3.2.2 Quality of cottons for different count groups
SITRA's tentative suggestions for the quality of cottons for different count groups (with a view to produce yarns for high speed looms) are given in Table 3.6.



Table 3.6: Quality of cottons for different count groups

Sr. no.	Count group	2.5% Span length (mm)	Short fibre content (SFC (n) - tested using AFIS Instrument)	Tenacity (g/tex) -ICCMODE in HVI Test system	Breaking elongation (%)	Mic.value (µg/inch)
1.	1s - 10s	21 -22	24-26	18 - 20	6.0 - 6.5	4.5 - 5.5
2.	11s - 20s	22 - 25	24-26	20 - 22	6.0 - 6.5	4.0 - 5.0
3.	21s - 30s	25 - 27	24-26	23 - 24	6.0 - 6.5	3.8 - 4.2
4.	31s - 40s	28 - 29	22-24	25 - 26	6.5 - 7.0	3.8 - 4.2
5.	41s - 50s	29 - 31	22-24	26 - 27	6.5 - 7.0	3.8 - 4.2
6.	51s - 60s	31 - 33	22-24	28 - 29	6.5 - 7.0	3.8 - 4.2
7.	61s - 80s	33 - 35	18-20	29 - 30	7.0 - 7.5	3.7 - 4.0
8.	81s and finer	35 - 38	18-20	30 - 32	7.0 - 7.5	3.5 - 3.8

Guide line values for trash content in different varieties of Indian cottons are given in Table 3.7.

Table 3.7: Guideline values for trash content in different varieties of Indian cottons

Category	Trash content (%)
Extra long staple (2.5% span length above 32.5 mm)	2 to 3
Long and medium long staple (2.5% span length 25-32 mm)	3 to 5
Medium staple (2.5% span length 20 to 24.5 mm)	4 to 6
Short staple (2.5% span length less than 20 mm)	6 to 8

4. Summary of Conclusions

- ◆ The value of total textiles and clothing exports from India in the year 2016-17 is expected to be around \$45 billion.
- ◆ The total cotton yarn requirement for the year 2016-17 will be 6284 million kg of which will be for domestic consumption alone 2247 million kg. For export in the form of yarn and fabrics it will be 2137 million kg. The requirement of cotton yarn for RMG / cotton made-ups exports will be 1900 million kg.
- ◆ The cotton requirement for the manufacture of yarns for domestic consumption as well as for the export of cotton goods both will amount to 441 lakh bales during the year 2016-17. The cotton requirement for producing cotton blended yarns

like cotton/polyester, cotton/viscose, cotton/acrylic, etc. will be around 18 lakh bales; whereas for the production of technical textiles, the requirement will be another 22 lakh bales.

- ◆ The cultivated area required to meet the projected cotton requirements will be around 14.87 million hectares for an yield of 550 kg/hectare or 11.68 million hectares for an yield of 700 kg / hectare.
- ◆ The quality requirements of cottons to produce yarns suitable for high speed looms as well as measures to improve the quality of Indian yarns are dealt with in this report.

5. Acknowledgement

The authors are thankful to Dr. Prakash Vasudevan, Director, SITRA for his keen interest in this study.

References

1. Official Indian Textile Statistics, published by The Textile Commissioner, Ministry of Textiles, Government of India, Mumbai 2010.
2. Chellamani K.P., Ratnam T.V, and Indra Doraiswamy, *SITRA Research Report*, **50** (2), (July, 2005).
3. Official Indian Textile Statistics, published by The Textile Commissioner, Ministry of Textiles, Government of India, Mumbai (2007).
4. Compendium of Textile Statistics published by The Textile Commissioner, Ministry of Textiles, Government of India, Mumbai, (2003).
5. Compendium of International Textile Statistics, published by The Textile Commissioner, Ministry of Textiles, Government of India, Mumbai, (2004).

6. Chellamani K.P., Debasis Chattopadhyay and Ramesh Kumar T.P, Yarn Quality Requirements & Techno-Economics of *Shuttleless* Looms. SITRA Publication, Coimbatore,(2004)
7. Chellamani K.P., Kumar V.J and Vitopa M.K, *SITRA Research Report* , **51** (4), (June, 2006)

APPENDIX - I

ASSUMPTIONS MADE FOR ARRIVING AT THE COTTON YARN REQUIREMENT FOR EXPORT IN THE YEAR 2009-10

- ◆ For cotton yarn, the exact quantity exported is available in published literatures.
- ◆ For cotton fabric, the value of export and the quantity in terms of length (sq.m) are available in the literature for the years from 2003-04. Using the figures of cotton fabric export in terms of value (Rs in lakhs) and quantity (tons) for the years 1999-2000, 2000-2001, 2001-2002 & 2002-2003, SITRA has arrived at a ratio of 1.8 for converting the value of export of cotton fabrics (Rs in lakhs) into quantity (tons) of export. This has been used to arrive at the quantity of cotton fabric export in year 2009-10.
- ◆ For cotton RMG, the value of export (Rs in lakhs) and the number of pieces exported are available in the literature. Assuming an average weight of 200 g/piece of RMG, the quantity of cotton RMG export has been calculated.
- ◆ For cotton made-ups, the exact quantity exported is available in the published literature.

APPENDIX - II

Assumptions Made for Arriving at the Cotton Yarn Requirement for Export in The Form of Yarn/Fabrics, RMG and Made-Ups

A) Cotton Yarn Requirement for Export in the Form of Yarn

The ratio between the value of cotton yarn export (Rs in lakhs) and the weight of cotton yarn export (million kg) has been worked out for the last 7 years and they are given in Table A.

Table A: The ratio between the value of cotton yarn export and the weight of cotton yarn export

Sr.no.	Year	Ratio
1	2003-04	1286.7
2	2004-05	1258.2
3	2005-06	1189.1
4	2006-07	1234.1
5	2007-08	1156.70
6	2008-09	1243.70
7	2009-10	1296.46
	Average	1237.85

A ratio of 1240 has been assumed for converting the value of cotton yarn export (Rs in lakhs) into the weight of cotton yarn export (million kg).

APPENDIX - II (Cont...)

B) Cotton Yarn Requirement for Export in the Form of Cotton Fabric

The ratio between the value of cotton fabric export (Rs in lakhs) and the weight of cotton fabric export (tons) has been worked out for 4 years and they are given in Table B.

Table B: The ratio between the value of cotton fabric export and the weight of cotton fabric export

Sr.no.	Year	Ratio
1	1999-2000	1.82
2	2000-2001	1.77
3	2001-2002	1.80
4	2002-2003	1.81
	Average	1.80

A ratio of 1.8 has been assumed for converting the value of cotton fabric export into weight of cotton fabric export.

APPENDIX - II (Contd.)

C) Cotton Yarn Requirement for Export in the Form of Cotton RMG

The ratio between the value of cotton RMG export (Rs in lakhs) and the number of pieces of cotton RMG export (million nos.) has been worked out for the past 6 years and they are given in Table C.

Table C: The ratio between the value of cotton RMG export and the number of pieces of cotton RMG export

Sr.no.	Year	Ratio
1	2004-05	1636.29
2	2005-06	1575.01
3	2006-07	1680.45
4	2007-08	1652.52
5	2008-09	1619.58
6	2009-10	1678.60
	Average	1640.41

A ratio of 1640 has been assumed for converting the value of cotton RMG export in to the number of pieces of cotton RMG export.

APPENDIX - II (Cont...)

D) Cotton Yarn Requirement for Export in the Form of Cotton Made-Ups

The ratio between the value of cotton made-ups export (Rs in lakhs) and the weight of cotton made-ups export (million kg) has been worked out for the past 6 years and they are given in Table D.

Table D: The ratio between the value of cotton made-ups export and the weight of cotton made-ups export

Sr.no.	Year	Ratio
1	2003-04	2143.08
2	2004-05	2620.45
3	2005-06	2503.85
4	2006-07	2239.56
5	2008-09	2175.02
6	2009-10	2712.77
	Average	2399.12

A ratio of 2400 has been assumed for converting the value of cotton made-ups export into the weight of cotton made-ups export.

APPENDIX - III

Assumption made for working out cotton Requirements by 2016-17

1. For calculating the cotton requirements, the % trash values assumed in cottons meant for different count groups are given in Table E.

Table E: Trash (%) in cottons for different count groups

Sr. no.	Count groups (Ne)	Trash (%)
1.	1 - 10	7.0
2.	11 - 20	6.0
3.	21 - 30	5.0
4.	31 - 40	4.5
5.	41 - 60	4.5
6.	61 - 80	4.0
7.	81 & Finer	3.0

2. The assumed values of the comber noil extracted from cottons meant for different count groups are given in Table F.

Table F: Comber noil (%) for different count groups

Sr. no.	Count groups (Ne)	Comber noil extraction (%)
1.	1 - 10	10.0
2.	11 - 20	12.0
3.	21 - 30	16.0
4.	31 - 40	16.0
5.	41 - 60	18.0
6.	61 - 80	18.0
7.	81 & Finer	20.0

APPENDIX - III (Cont..)

3. In the case of carded counts and combed counts, the yarn realization (YR) is taken as follows:

$YR\% = 97.5 - t - W_k - W_h$ for carded counts and

$YR\% = (100 - t - W_k) [1 - C/100] - W_h - 2.5$ for combed counts

Where,

- t = % trash in mixing,
- W_k = % card waste,
- C = % comber noil, and
- W_h = % yarn waste




S. Srinivasan

Mr. S.Srinivasan was born on 15th August 1952, currently lives in Chennai. He is an expert in Cost Reduction through effective utilization of resources with a wide work experience. His educational qualifications include FCMA, MBA (Finance), M.Tech (Textile Technology). He has a vast experience of thirty years in Textiles Manufacturing and two years parallel experience in Plastic Manufacturing.

He is engaged as a Practising Cost and Management Accountant since 2010. His last post held was that of a Director (operations) at Bhojraj Chanrai Group, Lagos, Nigeria. His past experience includes, G.M (Technical) in Utehrwa-Rwanda(Central Africa) from May 2002-March 2003, G.M. in IPS Ltd-An Aga Khan Group Co.(Tanzania) from May 1996-April 2002, G.M. in Ace Knit Ltd (Nairobi) from Feb 2005-April 2006, Project Manager in Sunflag, Arusha, Tanzania from Feb1989-Dec1991, Production Management cum Management Services Officer in Rustom Mills Ahmadabad in 1983-1989. He has also worked in NTC (MP) Ltd (1979-80) as Dy. Manager (M.I.S), ATIRA (1976-79) as Sr. Scientific Officer, Binny Ltd (Technical Trainee).

He has improvised M.I.S, Budgetary Control System, Cost Records, Product Mix Selection, Short Term Profit Planning, Inventory Control System and Input-Output Reconciliation of Raw Material in Textile Mills. He is good at application of Operations Management tools like, Linear Programming, PERT/CPM, Transportation Model, Equipment Replacement Model, Control Charts, Capital Investment Analysis etc.

He is a certified Cost Auditor in practice (ICAI Membership No: 7250). He has an experience as a Cost Auditor for Vardhman Textile Group of Mills-Ludhiana, Rustom Mills,Ahmedabad, two textile mills in Ahmedabad, the "Annadhanam" Complex of Tirumala Tirupati Devasthanam (TTD) in Tirupati(A.P), IOB-Annur Br, Coimbatore.

Input-Output Reconciliation (A case study)

A Composite textile unit had 'Sewing Thread Division (STD)' as an independent unit. The input for the STD is 'doubled dyed yarn' on 'Cones' and the output is doubled-dyed-yarn on Sewing Thread (S.T) packages.

The processes involved in the S.T.unit were:

(a)Rewinding of dyed yarn into normal(hard) packages in the previous unit and issuing the same to the S.T.Unit(Measurement in Kg), (b)Winding on S.T package(STP)-output measured in terms of number of STPs made,(c)Receipt at S.T.Godown-measurement in number of STPs and (d) Issue from S.T. Godown for sales as per invoices.-measurement in **number of STPs**. Each STP of any colour should have a standard weight of 160gm (S.T.yarn weight only).

All the issuing departments get acknowledgement from the receiving depts. for the quantity transferred.

The STD entity has under its control the activities said above in items (b) to (d) and it reconciles its input-output for those activities.

The method adopted by the STD for the Input/Output i.e. (I/O) reconciliation is given below with some illustrative figures.

Month: Feb 2012:

Stage (A) (On floor)

Op.stock in S.T.Winding Dept
=200 Kg (waiting for S.T.Winding)
Receipt in Feb 2012 from the supplying unit
=1,500Kg

Cl.Stock in S.T.Winding
=100 Kg (waiting for S.T.Winding)
Actual Issue to S.T.Winding
=1,600Kg

Stage (B): On S.T.Winding M/c itself.

Op.Stock (equivalent to std.full package)
=100 STP

Receipt
=1,600 Kg =10,000 STP (@160gm/STP)

Cl.Stock (equivalent to full package)
=600 STP

Actual Issue to STP Go down
=9,400 STP(=100+10,000-600- in process loss)

Stage(C): At STP Go down

Op.Stock=200 STP

Receipt
=9,400 STP

Cl.Stock
=600 STP

Stage (D): The invoiced quantity
= 9,000 STP.

There have been complaints for the past a few months from the buyers of the STP that the STP when used for stitching, gets finished faster-meaning the length received on STP has been less. The approximate estimation of shortage was by about 10% .There was also a secret feedback from insiders of STD that Page-2

some STPs are stolen. But the integrity of the Security Guards posted just at the Gate of the STP Go down and checking the items moving out of it- was never in doubt.

The matter was brought to the knowledge of the Head of STD who denied the allegation as the I/

O reconciliation statement does not reflect shortages. The loss in process is 1.05% while the standard is 1%- So it is NOT abnormal.

The loss of 1.05% is arrived as follows:

Stage (A) : Should be- Issue to STWinding=200+1600-100=1600=Actual Issue i.e there is no loss before S.T.Winding

StageB: Should be issue to STP Go down=100+10,000-600=9,500 STP .But actual Issue is 9.400 STP i.e. loss of 100 STP=100/9500=1.05%

StageC: Should be issue from STP Godown (for sales)=200+9400-600=9000 STP which matches with the Invoiced quantity and so "No Loss" at the STP Go down.

The I/O Statement gave the HOD a feeling that everything going on in STD is in order.

Investigation:

How can there be "stealing" when the I/O statement does not reflect abnormal loss in the process?

One possibility of stealing the S.T.Yarn is to wind more yarn and offer more than 160gm/STP (say 10% more i.e. 176gm/STP) which the security guards can NOT find out as the Guards check only the no: of STP going out.

But then as per I/O statement, for Stage-B, the qty received from the supply unit must be:

Using the formula "Opening stock+Receipt-Cl.stock = Issue) we get

Cl.stock of 600STP@ 176gm
=105.6Kg,

Plus, Issued to STP Godown of 9,400STP
=1,654.4Kg (@176gm/STP),

Less Op.Stock of 100STP
=17.6Kg(@176gm/STP),

Net=1,742.4Kg which is more than actual Kg (of 1600 Kg) received.

The surplus is not possible as no supplier will supply more and bill for lesser amount. Further additional weight of STP will result in longer length from STP which contradicts the complaint of shorter lengths on STP.Thus extra weight on STP is ruled out as only a remote possibility when the supplier has really been making mistakes.

This made the investigator to weigh the actual weight of the yarn wound on the STP. It was found that the average actual gm/STP was only 144 as against the 160gm.It was also noticed that the actual weight was

rarely checked as the monthly I/O statement did not brought out any abnormal situation for several months and therefore there was complacency. How this explains the "Stealing"-if any?

The correct I/O statement should read as follows based on actual gm/STP:

Stage (B) : On S.T.Winding M/c:

Op.Stock (equivalent to full package) =100 STP

Receipt =1,600 Kg=11,111 STP(@144gm/STP)

Cl.Stock(equivalent to full package)=600 STP

Actual Issue to STP Go down=9,400 STP

Should be issue to STP Go down=100+11,111-600=10,611----Item-X

Shortage=(10611-9400)=1,211= (11.4% on Item-X)

This indicates that about 1,200 STP (i.e 1,211 STPs less about 1.0% normal loss i.e 12 STP) were stolen from the S.T.Winding dept. itself with not anybody's knowledge.

The lesson learnt was that when measurements are done in number of pieces the Input/Output reconciliation should be based on actual and not standard weight per piece, This is applicable to all I/O reconciliation where number of items is used in the reconciliation using their Std.wts. and the input to the dept.is in Weight measures say Kg .

Examples of cases where std,wts are used per piece are:

Gms/towel, Gms/Saree, Gms/Dhoti, Gms/Plastic Bucket etc). The error occurs while converting from wt.measure to equivalent no: of items using std weights instead of actual weights.

Did the S.T.D lost any money in accepting the faulty I/O Reconciliation Statement?

No! The customer is to get 160gm/STP but got 144gms/STP but they paid the full amount/STP assuming std wt.on the STP. Thus, STD did not lose any money. But the loss is for the customer.

But, complaints on short length arising due to less gms/STP have started coming in. Ultimately, there will be loss of customer as they get "cheated" in weights to be put on each STP for which STD will be held responsible.

Chapter 2. Bio-based products and their applications in Textile

Manasi A. Damle, Madhura P. Nerurkar, Ravindra V. Adivarekar

In the last 20 years a dramatic rise in the innovations in biotechnology is leading to an escalating number of low-cost and effective biotechnology solutions in textile production and processing. To achieve this, a range of bio based products are into pipeline and some are even commercialized. Use of biotechnology based products in textile industry serves in reducing the pollution. This approach is more environmental friendly so as to get three fold market appeal; one is that the products are derived from a natural renewable resource, are more earth-friendly than synthetics and are far less dependent on petroleum-based ingredients. Right from fibre manufacturing up to finishing, bio based products make their way in textile processing.

Cotton, wool, silk and other natural fibres account for well over 50% of all world textile production but their

realistic timescale. The synthetic fibre industry is also facing comparable challenges, ranging from its current dependence on non-renewable oil resources to the need for improved performance and recyclability or biodegradability of its products.

1. Biofibres

Biotechnology through use of genetic engineering and biosynthesis is offering enhanced routes to modify production and properties of existing fibres and also it helps in development of new fibers known as Biofibres. Few novel fibers and their area of application are enlisted in table below:

2. Use of polysaccharides

The interest in polysaccharides has increased considerably in recent years, as they are candidates for many

Sr. No	Fibre	Mode of manufacture	Applications
1.	Corn fibre	fermentation, distillation and polymerization of a simple plant sugar; maize detrose	Apparel wear, home textiles and varied other areas; can be used as both woven and non-woven fabrics.
2.	Soyabean fibre	Soyabean protein	Undergarments, baby outfits, towels, quilts and apparels
3.	Artificial spider dragline silk	By transferring silk-producing genes from spiders E. Coli, yeast, silkworm, goats and alfalfa	Various technical textile applications like, bullet proof clothing, medical textiles, ropes, parachutes, seat belts, etc.
4.	Polylactic acid fibres	Polymerization of lactic acid obtained through fermentation of wheat, maize and other hydrocarbons	Used in sanitary products such as diapers, etc
5.	Bacterial Cellulose	Gluconacetobacter, Rhizobium, Agrobacterium, Rhodobacter and Sarcina	Specialty papers and nonwovens which are used to make specialised filters, odour absorbers and reinforcing blends with aramids.
6.	Sea cell fibre	Lyocell fibre + finely ground sea weeds	Home textiles

production process has various drawbacks like; pressures on land use, growing concern about the environment and the need to provide today's high-speed textile industry with economic and consistent supplies of raw materials. These have thrown up challenges that it is difficult for the conventional methods to meet the varied and changing needs of the industry, at least on a

commercial applications in different industrial sectors like Textiles, food, petroleum, and pharmaceuticals. Polysaccharides are natural, non-toxic, and biodegradable polymers. These are either extracted from higher plants or from microbial cultures through mode of fermentation. Principle bacterial and fungal polysaccharides are as listed below,

Polysaccharide	Bacteria
Alginate	Azotobacter vinelandii
Curdlan	Alcaligenes faecalis
Dextran	Leuconostoc mesenteroides
Gellan	Sphingomonas paucimobilis
Hyaluronan	Pseudomonas aeruginosa
Levan	Bacillus subtilis
Xanthan	Xanthomonas Campestris
Polysaccharide	Fungi
Pullulan	Aureobasidium pullulans
Scleroglucan	Sclerotium glutanicum

In the textile field, polysachharides are used in sizing, as thickeners in case of print paste formulation, as emulsifier biosorbent, biofloculant in case of effluent treatment, etc. Polysaccharides are also used as a suspending agent and stabilizer for both water based and emulsion inks it can also be used for dye pigments providing controlled penetration during printing. Also besides textile field, polysachharides find applications in other fields such as thickener or gelling agent in food, drug delivery vehicle, component in controlled release system, pharmaceutical applications include use in tablet coating, ophthalmic solutions, photographic, lithographic and electronic applications.

3. Enzymes

Textile wet processing consists of processes which employ large amount of chemicals in order to increase hydrophilicity of fabric and enhance its comfort properties. Enzymes are considered to be a boon to textile industry as they have the capability of replacing the conventionally harsh chemicals used for various processes. Enzymes being target specific they do not hamper the fabric properties keeping them intact. Following are list of enzymes that are being studied for fabric preparation.

4. Microbial dyes

Synthetic dyes have been extensively used in textile industries due to their ease and cost-effectiveness in synthesis, high stability towards light, temperature and technically advanced colours covering the whole colour spectrum. However, this has resulted in the discharge of large amount of highly coloured waste water that not only affects water transparency in water bodies but also creates problems for photosynthetic plants and algae since light absorption is hindered by synthetic dyes. In addition, many synthetic dyes are toxic, mutagenic and carcinogenic leading to several human health problems. Thus, the worldwide demand for colourants of natural origin is increasing in textile sectors.

Sr. No.	Enzymes	Processes	Conventional chemicals used
1	Amylase	Desizing	Acid/ Alkali
2	Pectinase, Lipase	Scouring	Alakli
3	Glucose oxidase	Bleaching	Hydrogen Peroxide
4	Catalase	Bleach clean up	Neutralisation with acid
5	Protease	Degumming of silk	Soap
6	Laccase	Biobleaching of lignin containing fibers and effluent treatment	---
7	Cellulase	Biopolishing, Biostoning, Carbonization of wool	---
8	Protein disulphide isomerise	Antishrink finish to wool	Halogen derivatives
9	Transglutaminase	Antishrink finish to wool	Halogen derivatives
10	Lipase	Wet reduction of PET	Alkali
11	Nitrile hydratase	Improved dyeability and hydrophilicity to polyacrylonitrile fibres	---
12	Amidase	Improved dyeability and hydrophilicity to polyacrylonitrile fibres	---

Nature is rich in colours (minerals, plants, etc.), and pigment-producing microorganisms (fungi, yeasts, bacteria) are quite common. However use of plants in production of natural colourants is not sustainable due to their low yields and production of large amount of biomass. To overcome this limitation, microorganisms such as bacteria and fungi are considered as a valuable source for production of natural colourants. Pigment yielding molecules by microorganisms include carotenoids, melanins, flavins, quinones, and more specifically monascins, violacein or indigo. The success of any pigment produced by fermentation depends upon its acceptability on the market, regulatory approval, and the size of the capital investment required to bring the product to market.

Microbial pigments find their application in food and pharma industry. Some of the food grade pigments that are in market include Monascus pigments, astaxanthin from *Xanthophyllomyces dendrorhous*, Pink Red from *Penicillium oxalicum*, riboflavin from *Ashbya gossypii*, b-carotene from *Blakeslea trispora*. In pharmaceutical industries, Canthaxanthin from *Haloferax alexandrinus*, Violacein from *Chromobacterium violaceum* and *Janthinobacterium lividum* find applications because of their properties like antioxidant, immunomodulatory, antitumoral, antiparasitic activities. Xanthomonadin from *Xanthomonas oryzae* is being used as diagnostic marker.

Extensive research work has been done and is still going on in obtaining colourants from microbes. Microbial pigments are being used to dye textiles. Some of these are enlisted below,

5. Finishing agents

Textile finishing provides a method whereby specific properties can be introduced onto the substrate. Today's consumer is more finicky, demanding enhanced aesthetics and comfort in apparel, as well as higher levels of protection, performance and easy care properties.

One of the most important finishes that helps to provide protection and maintain better hygiene is antimicrobial finish to the fabric. This finishing involves application of antimicrobial agent to the fabric such that it provides protection against a range of bacteria, fungi etc. Antimicrobial compound can range from natural dye, natural extract or secondary metabolite from plant or bacteria. Few examples are as follows: Pigments from *Chromobacterium violaceum*, *Alteromonas luteoviolacea* have been known to possess Antiviral, antibacterial properties. Pigments from *Serratia marcescens*, *Pseudomonas*, *Pseudoalteromonas*, *Alteromonas denitrificans*, *Hahella*, *Vibrio* show antibacterial, antifungal, antimalarial activity.

Molecules from Chitosan, Sericin, Neem, Aloe vera, Pomegranate, Tea tree, Azuki beans, prickly chaff flower, etc have been reported to possess broad spectrum antimicrobial activity.

Enzymes are also used as finishing agents. Cellulase has been applied at commercial level for biopolishing and biostoning of fabrics. Study on lipases for polyester weight reduction is underway. Amidase and Nitrile hydratase are used for surface modification of polyacrylonitrile fabrics in order to increase its dyeability. Protein disulphide isomerase, Transglutaminase are used

Sr. No.	Chromophore	Colour obtained on fabric
1.	Anthroquinone compounds obtained from <i>Fusarium oxysporum</i> .	Wool dyed with reddish orange shade
2.	Rubrapunctamine obtained from <i>Monascus purpureus</i>	Silk fabrics dyed with Red shade
5.	Carotenoid pigment from different species of Mushrooms such as <i>Ganoderma applanatum</i> , <i>Coriolus versicolour</i> and <i>Amanita muscaria</i>	Pigments showed dyeability towards silk and cotton fabrics
6.	prodigiosin from <i>Vibrio</i> spp	Dye wool, nylon, acrylics and silk with red shade
7.	Pigment from <i>Serratia marcescens</i>	Acrylic, polyester microfiber, polyester, silk and cotton using tamarind as mordant
8.	<i>Janthinobacterium lividum</i>	Bluish-purple colour on silk, cotton and wool Dark blue colour on Nylon and vinylon

to give anti shrink finish to wool fabric.

The development of unique fabric and garment finishes comes with a host of challenges. Finishes must be durable during the fabric finishing process, stable in the presence of other chemicals, wash-fast, and evenly and consistently applied. Moreover, they also need to be financially feasible and environmentally friendly.

Biotechnology also ventures into development of fabrics that contain micro-fabricated bio-environments and biologically activated fibres. These fabrics have genetically engineered bacteria or mammalian cells incorporated into them that enable them to generate and replenish chemical coatings and chemically active components. Niche applications for bio-active fabrics exist in the medical and defence industries, e.g. drug producing bandages or protective clothing with highly sensitive cellular sensors, but biofabrics may form the basis of a whole new line of commercial products as well e.g. fabrics that literally eat odours with genetically engineered bacteria, self - cleaning fabrics, and fabrics that continually regenerate water and dust repellents.

6. Bio-based products for effluent treatment

Microorganisms used in wastewater treatment feed on the complex substances in the wastewater, converting them into simpler substances, improving treatment. Biological wastewater treatment offers major advantages over alternative treatment strategies:

- ◆ Lower operating costs compared
- ◆ Efficient degradation and removal of organic and inorganic compounds
- ◆ Improved flexibility to handle a wide range of wastewater characteristics

Bacteria are the most populous of the micro-organisms used in waste water treatment; these single-celled organisms directly break down the polluting matter in waste waters. Heterotrophic bacteria break down organic material like carbohydrates, fats and proteins; Nitrifying bacteria oxidise ammonia which is either present in the waste water or is produced from the breakdown of proteins and other nitrogen rich organic compounds) to nitrite and nitrate under aerobic conditions. Higher life forms in the waste water treatment include protozoa and rotifers. They consume any loose suspended material thus ensuring a clear outflow. Bacteria that have been studied for effluent treatment include *Brocadia anammoxidans*, *Nitrosomonas* spp., *Nitrobacter* spp., etc. Fungi like *Rhizopus oligosporus*, *Phanerochaete chrysosporium*, *Panus tigrinus*, *Aspergillus oryzae*, *Rhizopus oligosporus*, etc. are used for the

same. A bacterium belonging to *Kurthia* sp. was reported to decolorize dyes belonging to the triphenyl-methane group. The Gram-negative *Shewanella* spp. and *Pseudomonas luteola* are reported to decolourize reactive dyestuffs.

Enzymes are also used for effluent treatment. Laccases are applied for decolourization of dyes in waste water. Specifically azo reductase have been employed for discolouration of azo dye effluent. *Streptomyces* also produce extracellular peroxidases and have the ability to degrade various xenobiotic compounds, including dyestuffs.

Thus a varied range of bio based products find their application in textile sector. Products obtained from animals and plants are tedious to extract and purify as compared to microorganisms. Also cultivation of microorganisms is much easier as compared to plant and animal cell culture. Harvesting product from microorganisms is less tedious. According to recent market reports, growing environmental concerns and increasing demands from end-use sectors are expected to increase the global market for microbial products to about 250 billion US dollars by 2016.

In the upcoming series, focus will be thus made on techniques involved in cultivation of microorganisms, fermentation and purification of products.

References

1. Sinha T. K. , Agrawal Y. , Mohanta R. and Kapoor R. , <http://www.fibre2fashion.com/industry-article/textile-industry-articles/fibres-of-21st-century/fibres-of-21st-century1.asp>
2. Mishra A. and Rani A, .The Indian textile journal (2008)
3. Sutherland W. , Biotechnology of microbial exopolysaccharides, Cambridge university press, 137
4. Kulandaisamy C., Z. A. Zakariab, Ahmada W. A., Process Biochemistry, 48 (2013) 1065-1079
5. Safety Assessment of Microbial Polysaccharide Gums as Used in Cosmetics Cosmetic Ingredient Review 2012
6. Babu V., Choudhury B., Colloids and Surfaces B: Biointerfaces, 89, 277- 282, (2012)
7. Dufossé L., Food Technol. Biotechnol. 44 (3), 313-321, (2006)
8. Pandey A. , Concise encyclopedia of bioresource technology, Food products press, 167-180, (2004)




The Textile Association (India)

TAI - Delhi

One to one 'Interaction' with Union Textile Minister in TAI Delhi's Seminar

The Textile Association (India) - Delhi successfully organized a seminar on Saturday, 21st September 2013 in PHD House, New Delhi to commemorate the Platinum Jubilee Year Celebration of the Textile Association (India). Union Minister of Textile, Dr. Kavuru Sambasiva Rao inaugurated the seminar in a glittering function and assured full support to TAI for resolving industry issues.



Dr. K.S. Rao, Union Textile Minister lightening the lamp during Seminar inauguration

Important functionaries of the seminar included Dr. Anil Gupta, National Vice President, TAI; Mr. Sudhish Aggarwala, President, TAI - Delhi; Mr. D.K.Singh, Vice President, TAI - Delhi; Mr. Pankaj Sharma, Chairman - Seminar; Mr. Navin Goyal, Chairman, TAI - Delhi; Mr Prashant Agarwal of Wazir Advisors & Knowledge Partner of the Seminar; Mr. Vikas Chachra, Vice Chairman, TAI - Delhi; Mr. Vikas Bhargava, Editor, TAI - News Letter and Mr. Ritesh Gupta, Hon. Secretary, TAI - Delhi.

During one to one interaction with an impressive gathering of more than 100 senior industrialists and stakeholders of the textile industry from renowned organizations and academic institutions, Dr. Rao promised to take forward concern of textile sector and assured for review of existing government policies for the benefit of industry. He advised the participants to route their

problems and possible solutions through the Textile Association (India) - Delhi and also agreed to consider favourably the long pending request of TAI Delhi for association's representation in major policy making bodies of the central government like the Cotton Corporation of India and Central Silk Board etc.

In response to the points raised by Dr Anil Gupta, National Vice President, TAI, Hon'ble Minister further assured the delegates for review of hank yarn obligation policy for the benefit of industry. Regarding NREGA scheme, he informed the audience that he has already taken up the matter with Prime Minister for linking the scheme with textile industry.

Dr. Rao emphasised over the need of meaningful research in the field textile machinery manufacturing & other area of textile manufacturing & assured all the help from the ministry for the same. Issues such as, our incapability to export value added products, skill development for the man power working in textile units, low yield of cotton were also raised by Dr. Rao with a concern.

Themed "Textile Industry Today - Opportunities & Challenges" the seminar started with a Welcome Address by Mr. Sudhish Aggarwala, President, TAI - Delhi who expressed his immense pleasure and extended a warm welcome to all the delegates, speakers and the guests present at the event with special thanks to Prof. R.C.D. Kaushik and Dr. Rishi Jamdagni, Director, TIT&S. Mr. Aggarwala informed the gathering that the Textile industry has an overwhelming presence in the economic life of the country and apart from providing one of the basic necessities of life; the textile industry also plays a vital role through its contribution to industrial output, employment generation and the export earnings.

Dr. Anil Gupta, National Vice President, TAI highlighted the various objectives and activities of The Textile Association (India) emphasizing on different activities which TAI organizes for the benefit of textile industry. At the end of his speech, Dr. Gupta urged the Hon'ble Union Textile Minister to link Govt's NAREGA scheme with the employment in textile industry so that Indian textile industry could survive ongoing labour crisis. Dr. Gupta also requested the Hon'ble Minister to abolish Hank Yarn obligation as over the years Handloom sector has shrunk whereas spindleage in the country has increased manifold; hence Hank yarn requirement is very less.

Thereafter, Mr. Prashant Agarwal, Founder & Partner, Wazir Advisors and the Knowledge Partner for the seminar provided the background of seminar to the audience. He appealed to all speakers and delegates to be open in their presentation and views to bring out fruitful conclusion from the deliberations of the seminar enabling a road map for further planning.



Mr. R. L. Kapoor, Past President, TAI - Delhi presenting a memento to Mr. Prashant Agarwal, Founder & Partner, Wazir Advisors, Knowledge Partner of Seminar

Meritorious students of different institutes were felicitated subsequently with merit cum means scholarships worth Rs 50,000/- instituted by Mr. J. P. Saria of Spintex Group.



Hon'ble Minister along with Mr. J.P.Saria, Trustee, TAI Delhi presenting scholarship awards sponsored by Spintex Group to meritorious students of renowned textile institutions

Mr. Pankaj Sharma, Seminar Chairman while expressing his views on today's textile scenario, gave an elaborate introduction of the Hon'ble Union Textile Minister amidst thunders from the audience.

Towards the end of the inaugural session, Mr. D.K. Singh, Vice President, TAI - Delhi while proposing the Vote of Thanks, conveyed his heartiest regards for all the support provided by the delegates, guests, media and Knowledge Partner, without whose support putting together this seminar would have been a distant dream.



Prof. R.C.D.Kaushik, Ex-Director, TIT&S, Bhiwani presenting a memento to Mr. Vijay Mathur, Acting Secretary General, AEPC

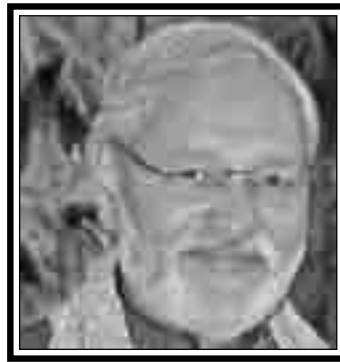
Topics of interest in current scenario like "What stops Indian Garment Industry from being the Global Leader?", "Policy Framework for Accelerated Growth of Indian Textile Industry", "Compliance as a Key Requirement for Business Growth", "Margin Improvement through Product Development" and "Can India become a Hub for Textile Machinery Manufacturing?" were touched at length during the technical session of the seminar by eminent speakers Mr. Vijay Mathur, Acting Secretary General, Apparel Export Promotion Council; Mr. Ravi Shankar Singh, Business Head, Blue Blends India Limited; Mr. Rajendra Singh Cheema, Compliance Head - Trident Group (Terry Towel Unit); Mr. Ajay Sardana, Vice President (Customers & Market Intelligence), Birla Cellulose and Mr. Laxmikant Rathi, Vice President, ATE Enterprises Private Limited.



Mr. Navin Goyal, Chairman, TAI Delhi proposing vote of thanks at the conclusion of Seminar

Technical Session was moderated by Mr. Vikas Bhargava, Editor - News Letter, TAI Delhi, and the proceedings were summarized by Mr. Vikas Chachra, Vice Chairman, TAI- Delhi. In the end, Mr. Navin Goyal, Chairman, TAI - Delhi proposed the Vote of thanks to Speakers, Delegates and Organizers for untiring efforts in making the Seminar a great success.

OBITUARY



Shri VIJAYKUMAR A. TRIVEDI

Hon. Secretary, The Textile Association (India) - Ahmedabad Unit

20-10-1948 - 04-11-2013

It is a regret to inform that a very dynamic member & Hon. Secretary of The Textile Association (India) - Ahmedabad Unit, Shri Vijaykumar A. Trivedi had very severe heart attack and passed away on Monday, 04th November, 2013 at the age of 65 years at Ahmedabad. It was a shock for TAI which never thought such an early departure.

Shri Trivedi was a Patron Member of Association and was working for more than three decades at various position of Ahmedabad Unit. Mr. Trivedi organized successful Textile Conferences during his secretary ship in 1998 and an International Conference with exhibition in 2008 and was instrumental in getting Best unit trophy 6 times with two hatric.

He has been conferred with several awards like Best Representative, Best Committee Chairman, Service Memento of Unit as well as he was honored with Service Memento of TAI -Central.

Shri Trivedi attended many textile conferences at national level and visited ITMA'05 Singapore, ATME-I '06 Atlanta, USA, ITMA-2007 Munich Germany, ITMA-ASIA '2008 Shanghai, China also ITMA 2011, Barcelona, Spain, 11th Asian Textile Conference at South Korea and ACTA-2012, Dhaka, Bangladesh.

Shri Trivedi, B.Sc., DTC, ATA (TAI), has more than 15 year's of vast experience in Bharat Vijay Mills (Sintex Industries) in Textile testing. He started his own business in 1983 in the name of M/s Jyoti Laboratory, which has completed 25 years. He has also another business started in 1990 on manufacturing of

specialty chemicals in the name M/s Alchem Enterprises.

Shri V.A. Trivedi was active in various trade & charity organizations. He was well known in the textile circles of Gujarat & National level due to his prominent and dynamic role in the Textile Association. He was a guiding force to TAI, always helping others with a smile without any tension.

His main object was promoting knowledge, technology and consultancy in the Textile field like; Dying, Printing and Finishing of Fabrics and Garments. He has distinct leadership in the Textile testing in Ahmedabad.

The BESNU (Condolence) was organized by the family members of Mr. Trivedi in the premises of the Textile Association on 10th Nov, 2013 (Sunday) was attended by all family relatives and friends along with many textile technicians.

The Textile Association (India), Ahmedabad Unit also paid SHRADDHANJALI to Late Shri V. A. Trivedi on 13th Nov, 2013 by organizing the condolence meeting at Dinesh Hall, of the Textile Association. Well-known Textile Technicians, Textile Co-owners as well as other textile related Govt. and Semi Govt. Organization personalities attended in big numbers and paid tribute to Late Shri V.A. Trivedi,

The Textile Association (India) offers heartfelt condolence to his family and prays almighty to bestow eternal peace to the departed soul.



DKTE and Rieter jointly extend Indian textile technology support

DKTE and Rieter have agreed on an exclusive cooperation which will result in the establishment of a "Rieter Spin- and Training Center" in spinning technologies on the DKTE premises. The Center will create a platform to conduct trials and train executives as well as operators from Indian spinning mills and will offer technical competence to youngsters in their academic training.



Handing-Over Ceremony

The state of the art Spin- and Training Center will have Rieter's latest end spinning machines with a competent team to draw up the test trials to respond to the technological questions of the industry. The center will undertake common research projects in various spinning technologies most suitable for Indian mill conditions. Both Rieter and DKTE value this cooperation and will combine their strengths to support the development of these technologies in India.

To mark this memorable occasion, DKTE organized a "Cooperation Agreement handing-over ceremony" on 29th July 2013 at its center in Ichalkaranji. This was attended by the entire management team of the DKTE Society, including Mr. K.B. Awade (Chairman), Mr. P.K. Awade (Director), Prof. Dr. P.V. Kadole (Principal) and remaining team members, while Rieter was represented by Mr. Dinabandhu Mahapatra (Head Technology), Mr. Pankaj Dangra (Head Marketing) and Mr. Sridhar Swami from the Field Technology Department.

Rieter, a leading textile machinery manufacturer and systems supplier, cooperates with DKTE, an educational institute with excellent infrastructural facilities and a highly qualified staff that serves the industry and society through excellent education and high quality research. The Rieter Spin- and Training Center will create benefits for both the stakeholders who will conduct trials and development work resulting in valuable advantages for the Indian spinning mill industry.

DKTE enjoys the strong support of the textile industry and corporate houses and will function as a showcase for the versatility and flexibility of Rieter spinning machines to spin different products.

With this cooperation, Rieter will be making a substantial contribution to hands-on training for youngsters in the textile branch in India. Well-founded theoretical and practical tuition at DKTE will optimally prepare students for playing a key role in managing spinning plants.

The Textile Association (India) adding new features of career building / job recruitment services on www.textileassociationindia.org

For offering fresh / skilled experienced personnel to the Textile, Garment, Fashion and Retail sectors

Resumes are invited from the candidates to avail the best job to the right candidate for Top Managements, Executives, Managers, Engineers, Supervisors, Research Analysts, Designers, Merchandisers, Fresher and other

For more details write to : taicnt@gmail.com

SHIBORI, BAGRU PRINTING AND SOOF EMBROIDERY WORKSHOPS

By **PARAMPARIK KARIGARS**

Organized by Textile and Fashion Technology Specialization, Nirmala Niketan, Affiliated to the University of Mumbai

The Textile and Fashion Technology Specialization had the proud privilege of organizing workshops by National Awardees of Paramparik Karigars on 3rd and 4th August, 2013. Informative beautiful workshops were conducted by the karigars sharing their rich aesthetic and creative experiences of the different Indian traditional art and crafts namely on Shibori & Bandhani and Bagru Printing & Soof Embroidery hailing from the western regions of Gujarat and Rajasthan. The artisans and participants were welcomed by Dr. Ela Dedhia, Head of the Specialisation who introduced the artisans to the participants along with Dr. Vishaka Karnad, faculty of the department.

Mr. Naushadji Khatri, an expert karigar of Bandhani, shared his traditional exquisite craft of tie and dye. It is a complicated, sophisticated and versatile method of decorating cloth by manipulating the method of tying and the use of dyes. Varieties of effects were produced by using different techniques of tie and dye. Creativity with the riot of colours enthralled all of the participants. The accuracy and precision in intricate tying to produce elaborate designs was commendable.



The Shibori workshop was conducted by the master craftsman Badshahji Miyan of Jaipur. He is internationally acclaimed for his beautiful craft of Leheriya and Shibori. The participants learnt in-depth knowledge and understanding of colours with intricacy of his work and appreciate his fervour for promoting the traditional skill of colouring fabrics.

Smt. Dayaben Dohat, with her experience of forty years, has created a number of table cloths, cushion covers, wall hangings, dress and children's wear saris using Soof embroidery. The attire she wore was ornately embellished with the classic Soof embroidery. A close look on her creations showed her mastery over her finesse and intricacy in craft. Each embroidered triangle was filled in with a kind of satin stitch. She demonstrated and explained these stitches to the participants who were enlightened by her work and humble approach towards sharing her expertise.

The Bagru printing workshop was conducted by Rambabuji Chippa. Bagru is known for natural dyes and hand block printing, indigo dyeing and wooden hand block printing on textile articles. The brilliance of the craft was shown by the artisan and everyone enjoyed the hands on experience of the art. The true essence of using different techniques for printing was realized through this workshop.

Immense knowledge from the great artisans, enormous skill and down to earth attitude is admirable and is a constant binding source of inspiration. It gave firsthand experience into understanding and appreciating the vibrancy of the traditional art and craft of our beautiful country. The participants look forward to such face to face interactions with the village artisans as a small step towards sustaining our beautiful traditional crafts of heritage. The artisans were thanked by Mrs. Pratima Goyal and Mrs. Ritu Madan, faculty of the department for sharing their knowledge and skills.

Textsmile

*Bus conductor: Why are taking two tickets?
Passenger: Because if i lose one that second ticket will save me.
Conductor: what if you lose both?
Passenger: Listen, I am not a fool. I already have my Pass with Me !!!*



GOTS LABELLING AND TRADEMARK PROTECTION

"GOTS augments its commitment against logo misuse; Indian company banned for two years for misconduct"

With the increased recognition and value of GOTS logo and certification program, GOTS is also facing an increase in the number of trademark violations, false references to GOTS (certification) and fraudulent presentation that a company or its products are GOTS certified.

The International Working Group investigates such transgressions and is concerned to take appropriate actions such as corrective and/or legal action and/or publication of the transgression so as to safeguard the credibility of the GOTS program and its labelling system. A company in Tirupur, India was banned for two years starting 10th July 2013. The reason was continued use of GOTS logo, certification reference and license number after being resigned from certification and ignoring corresponding notifications and deadlines. Its GOTS certificate expired on 20th March, 2012 and has not been renewed since then.

In order to avoid such implications and considering that most cases of unauthorised trademark use or false references are obviously based on lack of knowledge about (certain aspects of) the GOTS labeling system and the related certification requirements we would like to clearly state the following key features:

- ◆ Correct and complete GOTS labelling shows the trademark registered GOTS logo (or the lettering 'Global Organic Textile Standard'), the GOTS label grade ('organic' or 'made with organic'), a reference of the certification body and the license number and/or name of the certified entity (see labelling sample).
- ◆ Only a GOTS certified entity is authorised to apply the GOTS label to a product following approval and release by their assigned GOTS certifier.
- ◆ To avoid confusion and misleading consumers the GOTS labelling conditions do not offer use of the GOTS label (or reference to GOTS certification) on the garment / final textile product if the GOTS

certification is only valid for intermediates (such as yarn or fabric). A precondition for on product label use is that the whole value chain and the final product are certified. Accordingly, claims used on textile products such as 'this garment is made from GOTS certified cotton or yarn or fabric' are self-claims of the seller and are neither verified nor allowed in the GOTS certification process.

- ◆ B2B traders must participate in the inspection and certification program before final products can be labelled as GOTS certified. Traders having an annual turnover with GOTS Goods less than 5.000• do not need to become certified but must register with an Approved Certifier.
- ◆ Retailers who do not have a B2B trade activity and do not (re)pack or (re)label the GOTS Goods do not need to become certified but must assure that their seller (a trader or manufacturer) of the ready packed and labelled GOTS Goods is certified. In this case the labelling must include the license number of the certified trader or manufacturer supplying the GOTS Goods.
- ◆ The conditions also apply for identification of any GOTS Goods presented (for sale) in catalogues, on web pages or other publications (e.g. by mail order companies). In any case the user of GOTS labelling must ensure that no confusion arises between certified and non-certified products in any marking, publications and advertising.

The complete licensing and labelling conditions including the provisions for product marking and the related design specifications are defined in the 'Licensing and Labelling Guide', which can be downloaded from the GOTS website
<http://global-standard.org/images/gots%20licensinglabelling%20guideissue%2002june09.pdf>.

About GOTS :

Supported by the growth in consumption of organic fibres and by the remarkable demand for unified processing criteria from the industry and retail sector, the Global Organic Textile Standard (GOTS) Has already gained universal recognition and support of major brands worldwide. It enables processors and manufacturers to supply their textiles made from organic fibres with one certification accepted in all major selling markets.

GOTS was developed by leading international standard setters - the GOTS international working group. It is comprised of four reputed member organisations, namely OTA (USA), IVN (Germany), Soil Association (UK) and JOCA (Japan). They define worldwide

recognised requirements that ensure organic status of textiles, from harvesting of the raw materials, through environmentally and socially responsible manufacturing up to labelling - in order to provide credible assurance to the consumer.



COLORANT LIMITED RECEIVES CHEMEXIL AWARD

Colorant Limited, a leading Reactive dyes manufacturer and exporter based in Ahmedabad received the Award for the outstanding performance in Export Market by a SME for the year 2010-2011 organized by Basic Chemicals, Pharmaceuticals & Cosmetics Export Promotion Council, Mumbai held on 30th August, 2013 at Hotel Trident, Mumbai. Colorant is an ISO 9001:2008 & ISO 14001:2004 certified Company and one of the leading Manufacturers and Exporters of Dyes in India. Most of the products are "GOTS" Certified and Pre-registered with "REACH". The Company also enjoys status of Government recognized "Export House". Colorant has become the first Indian Company to offer it's clients in India and overseas a range of Fluorine based Reactive dyes in the name of COLRON "CN" series. Colorant recently concluded a MoU with the Color Root of China - the biggest manufacturer of Fluorine based Reactive dyes in the world

by more than 650 customers (including Corporate Houses) in India and well accepted in Bangladesh, China, Turkey, Pakistan, Iran, Egypt, Costa Rica, Brazil, Nigeria, Gautemala and many other countries for its quality, cost-effectiveness and timely supply.



Mr. Subhas Bhargava, MD of Colorant India Ltd. receiving the Award from Chief Guest Mr. Anand Sharma, Minister of commerce, Industry and Textile, INDIA

Under the agreement, Colorant is having an exclusive marketing rights for these dyes in India enabling the company to offer most modern and environmentally green chemistry to it's customers for the first time in India thereby revolutionizing the dyeing industry due to the energy saving and emission reduction. Colron High Performance Reactive dyes like SD series, GLX series, CN series and SF series are already being used



**Contact us to
know more about
JTA:**

Publisher

Tel.: 022-2446 1145,

Fax: 022-2447 4971

Mobile: +91-22-9819801922

E-mail :

taicnt@gmail.com,

taicnt@mtnl.net.in



INDIAN TEXTILE ACCESSORIES & MACHINERY MANUFACTURERS' ASSOCIATION

ITAMMA organized a seminar on "**Challenges & Opportunities for Indian Textile Engineering Industry in Domestic Market through Innovations in Technology & Marketing**" on 19-09-2013.

In the introductory speech, Mr. N.D. Mhatre, Director General (Tech), ITAMMA, informed that based on the outcome of the meeting held with the Hon'ble Dr. K.V.S. Rao, in his office at New Delhi, it was decided to organize this Seminar on immediate basis. He added that during the discussions, it was stressed upon the improvement of R&D Infrastructure and Marketing in order to meet the domestic requirement of our textile machines which is only 45% today. It was also mentioned that the figures of the technological gap in the Textile Engineering Industry states that only 12.17% of the units were operating under CNC systems. The presentation of Mr. Navdeep. S. Sodhi, Textile Industry Economist and Partner of Gherzi Textile Organisation, Switzerland, shall be helpful in knowing the possibilities of Applied Research through Joint Ventures, Tie-ups and Collaborations with European manufacturers for transfer of technologies.



Shri N. D. Mhatre, Director General (Tech) ITAMMA, delivering introductory speech

The initiative taken by M/s. Renaissance Infra Realty Pvt. Ltd., Mumbai, appointing ITAMMA as a Nodal Agency for establishing the Common Facility Centre (CFC) shall help in improving the basic research through indigenization of imported spares / special finishes, processes, etc.

Mr. Naresh A. Mistry, President, ITAMMA, in his welcome speech informed that "Today, we are con-

cerned with the figures of the Import of Textile Machineries which has risen from Rs.7,500 crores during 2011-12 to Rs.8,558 crores during 2012-13; and at the same time Export figures have reduced from Rs.1,523 crores (2011-12) upto Rs.1,462 crores during 2012-13.



Shri Naresh Mistry, President ITAMMA, delivering his Welcome Speech.

The major hurdles in the development of the indigenous Hi-tech Textile Machines especially Weaving & Wet Processing being the lack of R & D infrastructure. To encourage the R & D of Machines & Accessories at National level, Government has made a provision of funds for establishing Common Facility Centres - CFCs, for carrying out facilities like indigenization of high value imported spares, special finishing processes like Plasma & Nano treatments, etc. and testing; with the help of State-of-the Art instruments. Needless to say that ITAMMA has already taken active steps in this regard and will be establishing a CFC at Ahmedabad very shortly, which will be followed by that at Mumbai.

Also for those members who wish to develop at their own, ITAMMA is organizing Lean Manufacturing, Design Clinic programmes under its Cluster Development initiatives. These efforts of ITAMMA are helping the members to develop through basic R & D, and of course will take some time for the results.

However, considering the today's scenario of European Manufacturers being eager to do business with Indian Industrialists, we feel that this is the right time and opportunity to improve upon our technological

development at Rocket speed through Joint Ventures / Collaborations and Tie-ups for Technology transfers.

We all know that Marketing plays a vital role and is the need of the hour even to sell a very good product in this Competitive Market. And so today, we are coming across various innovations in Marketing skills / systems and so on."

Mr. Hemant Wanelkar, Dy. Manager, Marketing Head, The National Small Industries Corporation Ltd., Mumbai Branch, through his Power Point Presentation and a Video Film conveyed the audience the various schemes available by NSIC Ltd., benchmark, small & medium entrepreneurs of textile engineering industry.

Ms. Reema Ray, Investments Counselor, Citibank, Mumbai, gave a complete insight on "Outlook on Investments" where she covered the various important topics related to Markets, Underlying and Benchmarks, Bonds, Stocks, Real Estates, Commodities, Equities, Deposits, Mutual Funds, etc.

The Seminar was clubbed with an important event of signing a MoU between M/s. Renaissance Infra Realty Pvt. Ltd., Mumbai and ITAMMA. Before the execution of MoU, Mr. Veerasha Rao, Business Head, M/s. Renaissance Infra Realty Pvt. Ltd., Mumbai, gave the detail insight of the Project of Industrial Park at Vashere, Bhiwandi Taluk, Thane District, Maharashtra. He also gave the availability of space, the various Union & State Government facilities and subsidies available for Textile Engineering Industry and Textile Manufacturing Industry. The details about the proposed Common Facility Centre (CFC) in this industrial space was also explained by him and declared that ITAMMA has been a Nodal Agency for establishing the Common Facility Centre (CFC) for the benefit of the entrepreneurs of the textile industry investing in this project. Thereafter the execution of MoU between M/s. Renaissance Infra Realty Pvt. Ltd., Mumbai and ITAMMA took place. Mr. Mayur Suchak, Managing Director of M/s. Renaissance Infra Realty Pvt. Ltd., Mumbai and Mr. Naresh A. Mistry, President, ITAMMA signed the MoU whose content are as below:

Renaissance will provide 10,000 sq. ft. area, in Renaissance Industrial & Warehousing Park situated at, village -Vashere, Taluka- Bhiwandi to ITAMMA for setting up CFC for a period of 3 + 22 years on Leave &

License basis for a consideration of INR. One only P. A as Licensee fee in its CFC designated building. Till commencement of aforesaid Leave & License period Renaissance will provide approx 4700 sq. ft. furnished area in its Industrial Gala building - A1, in Sector 3 on first floor on Leave & License basis for INR. One only as licensee fee and no Common area Maintenance Charges (CAM) for a period of 3 years or till such time of handing over of 10,000 sq. ft. space in CFC building. Renaissance will provide a furnished office of about 500 sq. ft., a Conference Room of about 750 sq. ft. and about 1250 sq. ft. of Seminar Hall so that balance area of approximately 2200 sq. ft. area can be used for carrying CFC's activity on prima face basis.

Mr. Navdeep S. Sodhi, Textile Industry Economist, and Partner of Gherzi Textile Organisation, Switzerland, in his Power Point Presentation covered three topics, viz. Global trends, Challenges & opportunities, Innovations in technology & marketing.

He informed 10 key messages in regard with Indian Textile Engineering Industry; where he covered the share of Global textile machinery; the contribution of China; developed countries; the demand for fiber, yarn and fabric. He also stressed on the resource conservation (energy, water) and automation will be the key areas for future innovation and said that this is the right time that acquisition of know-how from Western OEMs should be pursued strategically and on war foot basis. The statistics with the total World-wide demand for textile machinery from all categories, i.e. ginning, finishing, spinning, weaving, etc. were also explained by him comparing with the textile production during the last 20 years. As per his analysis, Asia leads Rotor Spinning expansion at 7% p.a. while Ring Spinning expansion at 6% p.a. and at the same time, Turkey grows in Long Staple Spinning. He also gave the statistics of Shuttleless Looms, Dyeing Machines as well as World - Fiber Valued Added Chain. He informed the gathering through the graphs and statistical figures that the World is shifting towards the man-made fibers. It was stressed by him that invention in energy efficiency is not only in terms of water & fuel conservation, but also in the production of fiber, yarn, fabric and finishing processes.



Shri Navdeep S. Sodhi, Textile Industry Economist, and Partner of Gherzi Textile Organisation, Switzerland, delivering his Power Point Presentation

In his concluding session he explained the forecast of the fiber demand in the next 20 years which will grow at a CAGR at 3% p.a. reaching 137 mn tones in the year 2030. Various opportunities especially, in weaving, knitting and garmenting were highlighted by him.

Mr. Rahul Mehta, President, Clothing Manufacturing Association (CMAI) & Managing Director of M/s. Creative Casual Wears, in his speech as the Chief Guest mentioned that in the case of industrial product, a sewing machinery manufacturer when says that he is in the business of stitching garments, the scope of his enhancing the business reduces. However, when he says he is in the business of making garment manufacturing machines, the scope of development of his business increases which gives him vast avenues of manufacturing machines upto finishing machines.

In the same way, a textile machinery manufacturer especially, loom manufacturer would restrict his scope of business when he thinks that he is manufacturing a machinery for weaving. But he gives a wide scope to his business enhance when he says that he is manufacturing equipments for textile manufacturers. At that time he may also think of manufacturing Knitting, Garment Machinery, etc.

He also gave an example of a Garment Machinery Supplier (Mr. Madhu Kapoor), who proved to be a successful supplier by changing his theme of business from increasing the supply of machinery to increasing the consumption of machinery by creating a demand of such machines through training in schools and colleges where he was able to completely change the face of

garment machinery manufacturer in the country which was further followed by his principals in China.

One has to keep in mind that adopting the highest technology or manufacturing a hi-tech product does not mean enhancing business through marketing but manufacturing the product as per the needs of the user always enhances the business and that is Marketing. Here, he gave an example that an installation of Hi-tech Cutting Machines in his factory having a capacity of cutting 4000 pieces per day proved to be a white elephant when the requirement was only 1000 pieces per day. This was very well explained through two examples of Paint Industry; where the need of the product in small quantity was the main requirement of the customer (i.e. the customer being farmer needing the paint to paint the horns of their bullocks and cows that too during a particular season.

So, their requirement was not more than 50-100 ml paint in Tin container) which was taken care by changing the size of the Tin of the product and in other case, the requirement of the customer (shopkeeper) was at every Diwali Festival, i.e. every year; where the quality of the product or the durability of the product for more than one year was not required (i.e. the aluminum boards which were used to paint the names of the shop at every new year considered to be Diwali Festival) and so the product was changed as per the requirement of the end-user with a provision in small quantities.

He, further, mentioned about the After-sales-Services needed to be given to the customers which not only help us to retain our customers but also help in getting the assistance of these customers in the development and improvement of our product quality and quantity.

He added the importance of ways and systems of communicating with the customers and the others in the market; where he mentioned that just by displaying our products in the 9 sq. mtr. Stall in any of the International Exhibitions will not always help us to communicate to the proper customers. Also, if we are producing a very high technology and very high quality product our communication system and the procedure should also be maintained with that quality. Just by putting stickers or posters, conveying the customers about the high quality product will not always be able to convince the customers. He supported his views of his with an example of Asian Paints concentrating on

end-users, i.e. residential people for enhancing their business while the other paint industry concentrated their advertisements with the painters. In the same way, he also gave an example of the two brands, one of Anita Dongre's brand 'AND' and of his own being '109F'. The yarns used in both the brands were having similar physical characteristics. However, because of psychological characteristics, the brand 'AND' scored over the brand '109F'. Thus, this is one of the ways to communicate with your actual users the strength of your product.

He concluded with the statement that Marketing understands what your customer's needs are. It is positioning your product to suit the requirements of your customers and to communicate with them. If you do not communicate with them nobody is going to know about what the features are.

Thus, Marketing is important; as important as technology and so is not only for consumer products but for your customers and users.



Bhiwandi to have its own textile machinery exhibition ITMACH 2014

The booming powerloom mega cluster Bhiwandi to host its first textile machinery exhibition in January 2014. ITMACH 2014 scheduled from January 22-24 will showcase wide range of latest textile machinery and technology at Indian Corporation premises in Bhiwandi on the National Highway 3 at the periphery of India's commercial capital Mumbai. Bhiwandi, in spite of being among India's largest weaving cluster have not received its due importance due to its unorganized structure in the past. However, with the change in business dynamics in textile trade, the cluster has taken up huge modernization of technology off late, thanks to the entrepreneurial skills of the business community and government support in terms of Technological Upgradation Fund Scheme (TUFS). The growth of the textile manufacturing in Bhiwandi has also helped developing textile industry in the surrounding areas like Ulhasnagar, Badlapur, Ambernath, Dombivli, Tarapur etc that house knitting, processing, embroidery, garmenting, and specialty yarn industry. Also, the area got boost in manufacturing as the industry moved out of the erstwhile textile manufacturing powerhouse Mumbai.

customers face to face. The event would be the meeting place for business discussions for a wide spectrum of potential and existing customers from western India covering Bhilwara in the north and Belgaum in the south which includes large textile clusters like Ahemadabad, Surat, Malegaon, Dhule, Burhanpur, Ichalkaranji, Islampur, Kolhapur, Sholapur and covers entire textile manufacturing value chain.

ITMACH 2014 will be hosted in a modern warehouse of Indian Corporation that will be converted to a state-of-the-art exhibition facility. Being located on the Mumbai-Nashik highway (NH-3) or Eastern Express highway, exhibitor and trade visitors would have easy access to the venue from Mumbai and Navi Mumbai. Further, visitors would be able to use the Mumbai suburban rail networks.

The event is organized by Textile Excellence and supported by leading industry associations, industry stalwarts and industry journals. Further details of the event can be found in the website: www.ITMACH.com

For any further information:
Mr. Henry D'souza
info@itmach.com
www.ITMACH.com
Tel: 0091 22 22017061/2/3

With the TUFS being on the avail again after the Cabinet Committee's approval on late August, the industry is again on the upbeat mood for investment. ITMACH 2014 would offer a platform for the technology suppliers to showcase their products and to meet potential

**Grow your organization's business share through
JOURNAL OF THE TEXTILE ASSOCIATION**



75 Years of Lenzing - 75 Years of Innovation A world market leader celebrates its birthday

This week Lenzing AG is celebrating the 75th anniversary of its business operations together with 3,000 invited guests - employees, customers, business companions, politicians and partners. The company presented the book "75 Years of Innovation" published on this occasion, which honors Lenzing's role as the driving force of innovation in the industry.

The global market leader with fibers made of wood

Several decades ago there were more than 30 viscose fiber production plants in Europe. Today there are only two, one of which is the headquarters of the internationally operating Lenzing Group. The Austrian company has emerged as a global player as well as the market and technology leader for man-made cellulose fibers. Lenzing fibers were once a cheap substitute for cotton. In the meantime, they are highly sought-after premium products which are valued due to the renewable raw material of wood and the environmentally-compatible production.

Thanks to its innovative strength Lenzing has helped the more than 100-year-old viscose technology to reach new heights. Ultimately innovations to minimize the environmental burden of the production process have made Lenzing the best practice model in the industry. At the same time the company developed TENCEL®, a completely new and forward-looking technology which will shape the cellulose fiber industry in the coming decades.

75 years ago Lenzing manufactured 30,000 tons of fibers per year. In the meantime the fiber production volume of the Lenzing Group will soon reach a level of 900,000 tons.

Innovation as the key to success

For decades Lenzing boasted above-average expenditures in research and development, thus establishing the company as the pacemaker in the entire sector. Today the Lenzing Group is the undisputed innovation leader in the man-made cellulose fiber industry.

The Lenzing Group operates the world's leading research center for cellulose and fiber chemistry at the Lenzing site. About 170 employees work there to further develop products and production technologies.

Some 1,400 patents and patent applications in 57 countries demonstrate the effectiveness and performance of this team of specialists. Research expenditures of about USD 30 mn annually underline the importance the Lenzing Group attaches to research and development. An important objective of research projects is to develop ecological production methods and sustainable products with increasingly specialized areas of application.

TENCEL® - the fiber technology of the 21st century

The further development of TENCEL® technology remains the main focal point of Lenzing's research efforts. In addition to three TENCEL® plants, Lenzing also operates three pilot facilities in which new applications for TENCEL® fibers are developed and tested on a semi-industrial scale. The fourth TENCEL® factory, involving investments of more than EUR 130 mn, is currently under construction at the Lenzing site in Upper Austria. It will commence operations in 2014 and mark the next technological step for TENCEL®.



TENCEL® Jumbo line construction Site

Short summary of history of site in Lenzing

As early as the 1930ies of the previous century, one of the at that time most modern pulp factories in Europe was in operation. The construction of fibre production was commenced in 1938 under the national Socialist regime. Following the end of the war, the factory changed its owners who were now three large Austrian banks. In 1969 the company was merged with the Lenzing pulp factory. In 1983 the first foreign production site of the Lenzing group was set up in Indonesia.

In 1985 Lenzing shares were introduced to the Viennese Stock Exchange. In 1997 Lenzing started the large-scale production of Lyocell fibers. In 2004 Lenzing took over their British competitors, Tencel, with sites in the USA and Great Britain. One year later the whistle was sounded for the start of construction of the first Chinese viscose fiber factory. In 2010, Lenzing bought the pulp factory, Biocel Paskov (Czech Republic). In 2012, construction work was started on a TENCEL® production factory with its company headquarters in Lenzing.

The Lenzing Group

The Lenzing Group is a world market leader with headquarters in Austria, production sites in all major markets as well as a worldwide network of sales and marketing offices. Lenzing supplies the global textile and nonwovens industry with high-quality man-made cellulose fibers and is the leading supplier in many business-to-business markets. The portfolio ranges from dissolving pulp, standard and specialty cellulose fibers to engineering services.

Lenzing quality and innovative strength set global standards for man-made cellulose fibers. With 75 years of experience in fiber production, the Lenzing Group is the only company worldwide combining the manufacturing of all three man-made cellulose fiber generations

on a large industrial scale under one roof - from the classic viscose to modal and lyocell (TENCEL®) fibers. The success of the Lenzing Group results from a unique combination of consistent customer orientation together with its leadership in innovation, technology and quality. Our successful specialization strategy and an outstanding cost position are the basis for our economic strength.

Lenzing is committed to the principle of sustainable management and very high environmental standards. Lenzing's core business fibers are complemented by our activities in the business field engineering.

Key Figures Lenzing Group 2012:

Sales: EUR 2.09 bn
 Export share: 91.1%
 Fiber sales volumes: 810,000 tons
 Staff: 7,033

For more information please contact:
 Lenzing Aktiengesellschaft, Werkstraße 2
 4860 Lenzing, Austria
www.lenzing.com
 Phone +43 (0) 7672 701-2331
 Fax +43 (0) 7672 918-2331
 E-mail press@lenzing.com

THE TEXTILE ASSOCIATION (INDIA)

Introducing TAI Website Banner Ads

Now, reach a wider virtual audience and **MAXIMIZE** your revenue!

- ◆ The Textile Association (India) website (www.textileassociationindia.org) has been redesigned with several advanced features and re-launched in January 2013, and is constantly updated
- ◆ The website has up-to-date information of TAI activities, Daily updated industry news, Press releases, Expert talks, consumer interaction, e-journal, a blog with Textiles, Clothing and Garment related technical articles, trending apparels and textiles, Calendar of forthcoming events, Photo gallery, useful quick links and many other useful features
- ◆ It has become very popular with textile & garment lovers all over the world: 37,400 page views and over 10,500 visitors have been recorded from 1st January 2013 to 30th September 2013
- ◆ The Ad window will host banner ads on a rotation basis with each advertisements shown for 10 seconds
- ◆ Visitors can click on advertisement and reach website / e-commerce site: A powerful brand building and revenue generating tool
- ◆ Banner Ads are moderately priced at Rs. 36,000/-, Rs. 24,000/- and Rs. 20,000/0 for 12 months
- ◆ Textile professionals, Industry captains, Machinery manufacturers, Trade associations /councils, Designers, Exporters / Importers, academic institutes, students and direct marketers through internet etc can now enjoy a wider virtual platform

Download form and agreement from www.textileassociationindia.org/banner

taicnt@gmail.com +91-022-2446 1145



New R 60 Rotor Spinning Machine - Technological Progress

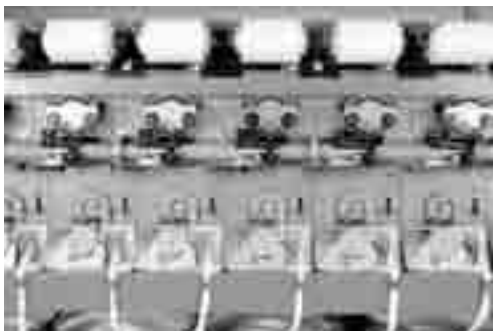
The innovative spinning technology of the new automatic R 60 rotor spinning machine from Rieter ensures better, more uniform and softer yarns. The R 60 sets new standards for speed, low energy consumption and high efficiency. At the ITMA 2011 in Barcelona, our customers clearly recognized how easy, operationally reliable and clearly designed this rotor spinning machine is compared to other machines.

High yarn quality is the basis for the success of a spinning plant

The new S 60 spinning box of the R 60 features all the proven advantages of its predecessor the SC-R version and has been further improved.

Noticeable is the absence of a delivery tube. The new TWISTunit of the R 60 unites delivery nozzle, TWISTstop and channel insert in one construction. The unit and its elements are very easy and quick to replace, even without tools.

The new construction prevents fiber accumulations or spinning vacuum from changing the spinning conditions. The box no longer has any covers under which fibers can accumulate. The optimized spinning geometry reduces the spinning tension and improves the spinning stability. This can clearly be seen with critical applications such as soft-turned yarns or with the increased use of short fibers such as comber noil, card and blowroom waste. Thanks to the "cool nozzle technology" heat dissipation to the nozzle is good which leads to a cooler surface. This provides further potential for higher productivity with synthetic fibers and their blends.



New R 60 Rotor Spinning Machine

New spinning technology for superior yarns and lower energy consumption

Several customers could already experience the technological benefits of the new spinning box in the form of better yarn strength and evenness. In direct comparison to the latest competitor models, the innovative spinning technology of the R 60 is already a step ahead by up to 0.75 cN/tex and by 20 % higher IPI values. In the example shown (Fig. 2) - Ne 17 weaving yarn of 100 % cotton - this advantage in strength can be transformed into a productivity increase of 9 %. The originally required yarn strength can be achieved by a constant rotor speed with appropriately lower twist. This additionally results in a further reduction of the energy consumption per kg of yarn to an equivalent of 9 %.

Savings with raw material

Again the further developed Rieter spinning technology proves its strength, particularly with a high proportion of short fibers or with a high trash content in the feed sliver. The adjustable bypass, the reduced spinning tension and the new automatic, individual centering of the exit nozzle and rotor improve the spinning stability. The mechanical rotor cleaning by the robot with the unique VARIOclean is effective with every piecing and doffing cycle. This ensures that the spinning position subsequently continues production at the highest quality level with thoroughly cleaned rotor grooves.

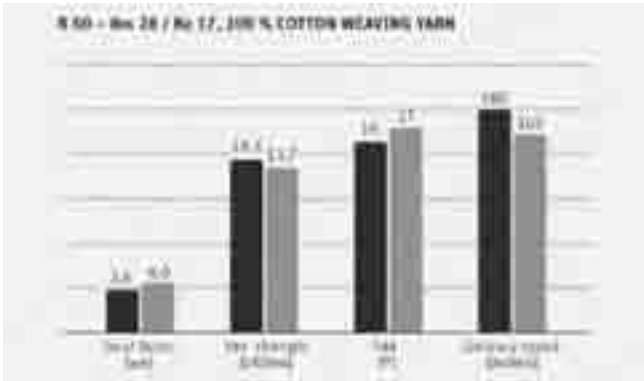
Piecing quality is particularly important with a high rate of yarn breakages

The ends down rate when spinning with the R 60 is reduced by lowered spinning tension. The 25 % quicker robot, in comparison to the R 40, can deal with a far greater number of ends down and maintain the high efficiency of the machine. The robots need only 20 seconds for the complete cycle including complete rotor cleaning and doffing. With the unique AEROpiecing® technology, almost yarn-like piecings in mass and strength are achieved. Only this can prevent more piecings generating substantial costs in downstream processing.

Faulty piecings create high costs

A sample calculation shows the following: a typical Ne 12 denim weaving yarn contains around 0.5 piecings per kg of yarn. Just one yarn break in the weaving plant today costs - worldwide - approx. 2 EUR, as alongside the efficiency, the fabric quality is very quickly

also influenced. Such faults in the fabric are paid for by the buyers with expensive compensation. Under these circumstances, with only a 1 % lower rate of faulty piecings in the weaving plant, already 0.01 EUR per kg of yarn can be saved. This leads to significant savings or even better, to higher profits for the spinner.



Central drive consumes less energy

The modern concept of the R 60 was specifically optimized for low energy consumption. The greatest energy consumers of the rotor spinning machine are the drives for rotor, suction and opening rollers. For the rapidly turning rotors and opening rollers, optimized tangential belt drives have continued to prove energy saving. For the central suction the R 60 exhibits advan-

tages, as the electronically-controlled vacuum combined with the automatic filter cleaning avoids unnecessary losses.

The life cycle of the electronic components can be extended by specific heat dissipation. For instance, in the R 60 the drive inverters were concentrated in an area that is specifically cooled by innovative heat dissipation.

Measurements taken at customers have, in comparison to competitive machine concepts, confirmed energy consumption at least 10 % lower.

The longest machine offers flexibility with independent sides

With up to 540 rotors, the R 60 is the longest rotor spinning machine on the market. With independently producing machine sides, it can still be as flexibly operated as a short machine.

Producing two different yarn qualities on one machine could create the risk of confusion. On the R 60 this is excluded by the double tube loaders, the two package transport belts and the clear allocation of the machine sides on the display.



Oerlikon Neumag with an Extensive Nonwoven Plant Portfolio at the SINCE 2013

Oerlikon Neumag will be presenting their Nonwoven Portfolio with emphasis on technical applications in hall 1, stand H20, at this year's SINCE from 23 - 25 October in Shanghai, People's Republic of China.

Oerlikon Neumag's Nonwovens Technology for a strongly growing market

More than 3 million tons of technical nonwovens were produced last year. An increasing demand for these materials, in particular from emerging nations, results in great chances for the manufacturers. "Thinner, lighter, more efficient materials are demanded by the market. For this reason, the trend is obviously setting towards nonwovens", explains Dr Ingo Mählmann, product manager for nonwovens at Oerlikon Neumag, with regard to the growing chances on the building sector. Oerlikon Neumag offers an efficient one-step spunbond process which considerably lowers the manufacturing costs. The company supplies the complete process,

from spinning to the rolled goods, for bitumen roofing, roof-ing underlayment and geotextiles.

Oerlikon Neumag's Meltblown Technology as a Plug & Produce solution

Oerlikon Neumag is expanding their nonwovens product line and, apart from their stand-alone plants, they are now also offering their meltblown technology to be subsequently integrated into existing or new, outside vendor SXS plants. "This enables a cost-efficient upgrading of new or existing spunbond plants and offers nonwoven producers access to markets with high quality demands", explains Ed McNally, Sales Director Nonwovens at Oerlikon Neumag, with regard to the customer benefits. Due to the numerous processible polymers and producible fiber finenesses, a wide product spectrum can be covered with the Oerlikon Meltblown Technology.

Airlaid: more homogeneity with thin webs

With the newly developed forming head, Oerlikon Neumag is setting new standards in the production of extremely thin airlaid webs. A high uniformity and homogeneous web formation today enables the production of high-quality, light airlaid webs with economically attractive production speeds and plant throughputs. With the new forming head, not only very light airlaid materials, but also combination webs, fully utilizing the plant capacity and simultaneously saving raw materials, can be produced.

For further information : Claudia Henkel
Marketing and Corporate Communications

Tel. +49 4321 305 105

Fax +49 4321 305 368

claudia.henkel@oerlikon.com

André Wissenberg

Marketing and Corporate Communications

Tel. +49 2191 67 2331

Fax +49 2191 28 447 2331

andre.wissenberg@oerlikon.com

About Oerlikon

Oerlikon (SIX: OERL) is a leading high-tech industrial group specializing in machine and plant engineering. The Company is a provider of innovative industrial solutions and cutting-edge technologies for textile manufacturing, drive, vacuum, thin film, coating, and advanced nanotechnology. A Swiss company with a tradition going back over 100 years, Oerlikon is a global player with more than 17 000 employees at over 150 locations in 38 countries and sales of CHF 4.2 billion in 2011. The Company invested in 2011 CHF 213 million in R&D, with over 1 200 specialists working on future products and services. In most areas, the operative businesses rank either first or second in their respective global markets.

About Oerlikon Segment Manmade Fibers

Oerlikon Manmade Fibers with the product brands Oerlikon Barmag and Oerlikon Neumag is the world market leader for filament spinning systems used for manufacturing manmade fibers, texturing machines, BCF systems, staple fiber spinning systems and artificial turf systems and - as an engineering services provider - offers solutions along the entire textile value added chain. As a future oriented company, the Oerlikon Group segment's research and development is driven by energy-efficiency and sustainable technologies. With the expansion of the product range to include polycondensation systems and their key components, the company now caters to the entire process - from the monomer all the way through to the textured yarn. The primary Oerlikon Barmag markets are in Asia, with Oerlikon Neumag's main markets in the US, Turkey and China. Correspondingly, the companies - with almost 2500 employees - have a worldwide presence in 120 countries as part of the Oerlikon Manmade Fibers network of production, sales and distribution and service organizations. At the R&D centers in Remscheid, Neumünster and Chemnitz, highly-qualified engineers and technicians develop innovative and technologically-leading products for tomorrow's world.

About Oerlikon Neumag

Oerlikon Neumag is the worldwide market and technology leader for complete plants for the production of BCF carpet yarn as well as manmade fibers. Moreover, Oerlikon Neumag is also one of the leading suppliers of a wide range of nonwoven technologies: from the spunbond and meltblown to the airlaid technology.

For further information: www.oerlikon.com/manmade-fibers

TAI BOOK PUBLICATIONS

Book your orders with:

THE TEXTILE ASSOCIATION (INDIA) - Central Office

**Pathare House, Next to State Bank of India,
67, Ranade Road, Dadar (W), Mumbai - 400 028**

Tel.: 022-2446 1145, Fax: 022-2447 4974

Orders accepted by E-Mail: taicnt@mtnl.net.in



2013

9TH International Conference on Apparel & Home Textiles

The 9th International Conference on Apparel & Home Textiles ICAHT 2013 with the Theme "**Creative Thinking**" was organized as annual conference, by Okhla Garment Textile Cluster (OGTC) on 20th & 21st September, 2013 at India Habitat Centre, New Delhi.

With a theme that was focused on innovation in garment sector, the conference successfully achieved its objective with the assistance of eminent speakers from India as well as abroad that graced the dais. The conference included both presentations and workshops.

The first day was allocated for three sessions comprising three to four presentations in each session and the second included one session for presentation and two sessions for workshops. The event was attended by industrialists, manufacturers, research institutes etc. During the event, the speakers and delegates shared their views about the current status of apparel sector in India and its stand in global industry. Steps to address various challenges that industry faces today were discussed.

The first session on the first day was chaired by Mr. HKL Magu (MD Jyoti Apparels) which included presentations of Mr. Vijay Mathur (Acting Secretary General AEPC), Mr. Mark Astley (General Manager Hardlines, Tesco International Sourcing (UK)), Dr. Rajesh Bheda (Principal & CEO, Rajesh Bheda Consulting Pvt. Ltd.) and Mr. Vivek Pandit (Vice President, IL&FS Skills Development Corporation).



Invited Speakers M/s Vivek Pandit, Dr. Rajesh Bheda, HKL Magu Session Chairman, Vijay Mathur and Mark Astley

The session focused on :

- ◆ Need for specific skill drivers in garment industry
- ◆ Thinking holistically and creatively about each of the 4 parts of the business process to enjoy competitive success
- ◆ Manufacturing as competitiveness enhancement strategy for unparalleled market growth
- ◆ Creating and effective skill development ecosystem for textile & apparel industry through various Government policies and private sector initiatives

The second session was headed by Mr. Vivek Gupta (MD, Team Krian) which comprised the presentations of Mr. Jean Michele Glasman (Secret Service Style Consultants Marketing & Mode, France), Mr. David Birnbaum (Consultant, Hong Kong) and Mr. Kiran Kotheekar (Director, Vector Consulting Group, India).

The session highlighted on:

- ◆ Using fashion trend to come out with winning model
- ◆ Competitiveness in Indian Apparel Industry
- ◆ Rapid response supply chain to unlock the hidden potential

Inaugural Session followed the second session which was presided by Mr. Madhav Lal, IAS, Sec. MSME, Govt. of India, Ministry of MSME who was also the Chief Guest of the conference. Inaugural session started with welcome address by Mr. R.C. Kesar (Director General, OGTC) and presidential address by Mr. PMS Uppal (President, OGTC).



Mr. Madhav Lal, IAS Chief Guest delivering the Inaugural address at ICAHT-13

Late Mr. Parveen Nayyar has been awarded with OGTC Path Breaker Award for 2013. Mr. Madhav Lal gave the inaugural address followed by the award

ceremony. The inaugural session was wrapped up by Mr. M.K. Mehra (Director, OGTC) who delivered vote of thanks.



Mr. Madhav Lal, IAS, Sec. MSME, Govt. of India, Chief Guest conferred OGTC Path Breaker Award 2013 on Late Mr. Praveen Nayyar being received by Mrs. Vandana Nayyar

The last session was chaired by Mr. Lalit Gulati (MD, Modelama Exports Ltd.) which included presentations of Mr. Mike Fralix (President & CEO, Turning Research In to Reality, USA), Ms. Reena Ahuja (Partner Director, HR Practice Smarthead Consulting) and Mr. Prashant Agarwal (Joint Managing Director, Wazir Advisors).

This session threw light on:

- ◆ Trends and Technologies in Supply Chains, Product Development, Manufacturing, Retailing, Sustainability, etc.
- ◆ Human Capital- Investment or Cost?
- ◆ The Road to 2025- Market, Trade and Investment Trends

The next day of the conference was started with three presentations by Dr. AK Merchant (General Secretary, The Temple of Understanding), Mr. P.M. Devadas (General Manager- Industrial Engineering,, Aditya Birla Nuvo Ltd.). This session was chaired by Mr. Gunish Jain (MD Royal Datamatics Pvt. Ltd.).

The topics for this session were:

- ◆ Changing for Better or Worse-Choice is Ours
- ◆ 3G train the trainer concept and system implementation

Eight workshops session followed the morning presentations on second day. Four workshop sessions were

conducted parallel at one time. First session which included two workshops on "Sewing Thread Fundamentals" by Ms. Neera Chandra (Shaping Industry Ready Professionals IAM) and "Industrial Engineering: New Thinking" by Mr. Prabir Jana was presided by Mr. Param Preet Singh (VP Operations, Pee Empro Exports). Another workshop session was chaired by Mr. Ram Sareen (Head Coach-Founder, TUKATECH) which included workshop on "Right Information Trends to Develop useful & Commercial Models" by Mr. Jean Michele Glasman (Secret Service Style Consultants Marketing & Mode, France). Third workshop was pertaining to "GST -Service Tax Specific to Apparel Industry" by Mr. V. K. Garg (Formal Joint Secretary (Tax Research Unit) Ministry of Finance) which was chaired by Mr. Vinod Kapur (MD Radnik Exports). The fourth session comprised of workshops on "Carbon Foot Print Labels for Competitive Advantage" by Mr. Kumar Vinod (Sustainability Manager Eco-Design Services-Global Sustainability Services) and "OGTC Project Learnings and Future benefits" by Mr. Anoop Sood (Director, Strategy Cool Earth Sustainability Services Pvt. Ltd.). The session chaired by Dr. Bimal Arora CEO, Centre for Responsible Business (CRB) GIZ.

The fifth workshop session was headed by Mr. Akshay Kapur (Radnik Exports) which included workshops on "Lean Experience Success & Failures in MSME's" by Mr. M. L. Suryaprakash (Director & Group Head (PM), National Productivity Council) and "Software linked Planning & Scheduling for optimum efficiency of plant" by Mr. Som Sekhar (Principal Consultant, Wazir Advisors). Another parallel session included workshops by Ms. Pooja Makhija (Director and Founder, Fashion Futures) on "Merchandising SOP Development" and by Mr. David Y. K. YIP (Department Head of the Garment Department of Huizhou University in China, Hong-Kong) on "Future Glimpse of Apparel Merchandising in the Next 5 Years and Onward" which was presided by Mr. Anil Peshawari (MD Meenu Creation). Seventh session included workshop on "Navigating the Managed Global Economy" by Mr. Kamal Sidhu (MD, Neetee Clothing Pvt. Ltd.) and a panel discussion on "Benchmarking for Cost Reduction". The last workshop session accommodated three workshops on "Weaving the Human Thread in Garments Industry" by Ms. Suruchi Mittar (Associate Professor NIFT) and "HR perspective & Policies" by Ms. Reena Ahuja (Partner Director, HR Practice Smarthead Consulting) and Change Management by

Mr. Rohit Rajput Director Bullet Proof Manager LCC.

In the end, conference was concluded with summing up remarks with the hope of accelerated growth in apparel industry in India in coming future.



Delegates at the Conference

The announcement was made that the 10th International Conference on Apparel & Home Textiles will be held at India habitat Centre, New Delhi on 12th & 13th September 2014.



Mr. David Birnbaum, Consultant (Hong-Kong) making presentation on Competitiveness in Indian Apparel Industry



Dress Display in Fashion Show format by Students of Lady Irwin College



E-COMMERCE IN FASHION

Organised by Specialisation of Textiles and Fashion Technology, Nirmala Niketan, Affiliated to the University of Mumbai

The specialisation of Textile and Fashion Technology, College of Home Science - Nirmala Niketan organised a half day seminar on "E-Commerce "on the 28th of August 2013 in the college premises. The Head of Specialisation, Dr. Ela Dedhia welcomed the speakers and the audience. Ms. Vrinda Udaiver, faculty of the Department introduced the speakers. The topic was one that has captivated the imagination of the present generation and catapulted the consumer market to new heights, - "E-Commerce".

There were two very young, dynamic and successful resource people, Ms. Nidhi Somani and Ms. Sai Vijaya Naidu, both having long and fruitful experience in fields of fashion retailing and E-Commerce. Ms Nidhi Somani is a competent Fashion Management Professional with long years of experience in retail. Presently is working with Orby Mart Marketing Pvt. Ltd., Mumbai, as the Head of E-Com Business (Fashion & Lifestyle).



Ms. Sai Vijaya Naidu after contributing as a Fashion Editor for several years, she went on to create 'Soulfulsai', a purely handmade fashion and lifestyle product brand. The product line created by her namely includes hair accessories, jewellery and artefacts. The talk started with Ms. Nidhi Somani explaining the concept of E-Commerce. Her talk covered the following topics:

- ◆ E-Commerce: What is it?
- ◆ Potential of E-Commerce
- ◆ E-Commerce - Benefits from IT
- ◆ Transaction Process in E-Commerce
- ◆ E-Commerce trend in India
- ◆ Future Trends in E-Commerce

◆ Case Study

She started by explaining the concept of E-Commerce, and elaborated by saying that:

- ◆ It is an "Anytime, Anything, Anywhere Market Place"- where one can sit in any corner of the world and buy anything from anywhere in the world.
- ◆ It is a type of industry where buying and selling of products or services is conducted over electronic system; and lastly
- ◆ Unlike Brick & Mortar Market place, E- Com is a 24 hrs shopping mall where, anyone can shop any time, buy almost anything from anywhere.

She then emphasized on the benefits that E-Commerce enjoys from IT and quoted Meg Whitman, President and CEO, eBay, who said "Internet is creating a worldwide community, grounded in commerce and enabling economic opportunity for millions of people all over the world. E-Commerce ensures that anyone can run a highly profitable business by spending only a few hours online each day". Thus it is beneficial to the manufacturer and most importantly to the consumer. Thus E-Commerce is beneficial in many ways.

- ◆ It is independent of geographical or language barrier as one need not go anywhere and also need not know the local language; as all that is available for sale is readily accessible on the internet.
- ◆ All transactions are just a click away and shopping can happen on the go from anywhere.
- ◆ It has the advantage of speed & convenience of shopping from home
- ◆ There is better variety and value enhancement through auctions, and finally
- ◆ It is operational throughout the day and all days of the week, without any holidays.

This was followed by a peek into the top E-Commerce categories; where the leading category was electronic gadgets followed by computer and peripherals, airline tickets, hotel bookings, home tools & products and finally by fashion and lifestyle products. She then went on to explain the five models in the E-Commerce business, namely:

- ◆ B2B (Business to Business) - eg. Trading: only for manufacturers

- ◆ B2C (Business to Consumer) - eg. Amazon
- ◆ C2C (Consumer to Consumer) - eg. ebay.com
- ◆ G2B (Government to Business) - eg. tender.gov.in
- ◆ G2C (Government to Citizens) - eg. Passport.gov.in, Tax online, Visas



This was followed by a step by step explanation of the E-Com transaction process. The popular E-Commerce site eBay was cited as an example. The first step would be to find a website where one wishes to sell; followed by getting registered and accepting all terms on the site, and then finally starting to upload products with all the required details. This would ensure that a buyer would be able to see the product and buy it. Ebay would then send mail on the sellers' registered id of the sold products, after which the seller would to dispatch the product in the stipulated time through any logistic partner. Ebay would then pay the seller in 30days followed by the seller who has to in turn pay commission & service charges to eBay after receiving the invoice of sold products.

To prove the popularity of this business and its great potential, she cited a market survey done on E-Com in India and said that:

- ◆ India has shown explosive growth in last 18 months.
- ◆ 75% of the total users are between age 15-34 yrs.
- ◆ In 2012, the female population contributed to almost 40% of total users.
- ◆ Among the BRIC Nations, India has been the fastest growing market adding over 18 billion users and growing @ 41%

- ◆ India is also among the top 3 fastest growing markets worldwide in last 12 months.
- ◆ Models like Cash on Delivery and other consumer centric payment options and improved service quality has boosted overall sales.

Emphasizing the fact that this is just the beginning, the future trends of E-Com were also discussed: In order to be successful

- ◆ e-Businesses must be willing to work with many different partners.
- ◆ Savvy businesses should make mobile phones a part of the E-Commerce mix from the start.
- ◆ Multibrand retailers should be ready to launch as soon as FDI constraints are lifted.
- ◆ One must be prepared to move beyond English to differentiate in the long run.

She concluded with a case study of Flipkart that was started by the Bansal brothers who were trained in IIT and took up jobs at Amazon and learnt the tricks of the trade. They came back to India and started with Flipkart, initially selling only books and then slowly and steadily to other products. Theirs is the biggest success story in India.

The ease and fluidity of explanation ensured that everyone enjoyed as well as understood the topic and were also set to think about how they could take full advantage of this great opportunity called E-Commerce.

The second speaker Ms. Sai Vijaya Naidu, a successful entrepreneur of brand "Soulful Saai" dealt with the procedure of creating handmade products and selling them online. She divided her topic into three aspects: Branding; Handmade; and Online. The first aspect of the topic, Branding was discussed along with its importance and the various advantages it gives a product, namely, Identification with trade name; Recall Value as we remember the name and call recall it whenever necessary; Differentiate as it helps us differentiate a particular product of one company from a product of another company.

Thus for the manufacturers it helps further, assisting in

- ◆ Advertising: since consumers need to know what is available in the market
- ◆ Marketing: comparison of various products in order to promote their own
- ◆ Sales: all this will definitely increase sales

The next part dealt with the characteristics of hand-made products, such as

- ◆ Every piece is Unique: since small variables may change when the product is made e.g. block printing, stitch length in embroidery or loop length in crochet
- ◆ Human Touch: Special feature unique to all hand-made products
- ◆ Can be Customized: that is made to order; as and when order is given (no need to make in bulk beforehand)

However, certain challenges were also highlighted, such as handmades cannot be mass produced since no machines are used; it is a time taking process as each product has to be crafted by hand and last but not the least that it needs skilled labour, which is firstly not easily available and if available it is expensive.

The third aspect of the topic dealt with Online Shopping and its advantages such as

- ◆ Shopping from anywhere: product need not be available locally
- ◆ Purchasing products from anywhere in the world: easily accessible; and finally
- ◆ Receiving the products at your doorstep: as we need not take the trouble of going anywhere to purchase a product, it is at your fingertips and finally at your doorstep

However, certain challenges were highlighted too, such as

- ◆ One cannot touch or feel the product, even though it is extremely important especially for apparel and household clothing
- ◆ There may be sizing issues as we cannot try the product before purchasing
- ◆ Waiting for the delivery, as it may be coming from a great distance thus we cannot buy and use the product immediately
- ◆ There are possibilities of damages during shipping, since it is transported from afar.

The three aspects were then put together Features of 'Handmade' products that are not 'Branded'?

- ◆ These are not mass produced because each product is made by hand, it is a time consuming process, and thus cannot be mass produced like mill products
- ◆ It is usually the un-organized sector, as each per-

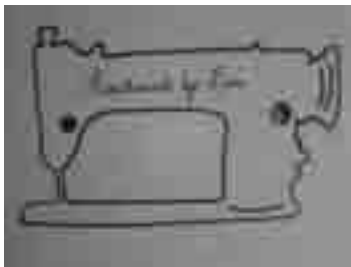
son is working individually or at the most in small groups, thus rules pertaining to organized sector do not apply. But this can be taken as an advantage, as problems arising due to organized sector is avoided.

- ◆ Since the artisans are far away from main markets they may not know the feedback for their products immediately or in person. So if a decision regarding some change in production aspect has to be done, it will take time; and finally that
- ◆ Branding is non-requisite, since the product will sell because it has been ordered.

However branding of handmade products is important for the same reason as they were cited before.

Thus, she emphasized that we need to learn how to brand our product in such a way that we too gain from the advantages of branding

1. Tagging a Handmade Product: Every product must be tagged with a label, so that it has a ready identity and can be differentiated from similar products. Tagging should be done in place that is easily seen, but yet does not mar the beauty of the product.
2. Branding the Handmade: The tag that is created should be attractive and should give the message we want to convey through our brand instantly and effectively. It should also be different than the other tags used, so that it is easily discernable.
- 3.



Once we have created our product and branded it, we now have to make it available to the clients, so that the basic purpose of creating the product is fulfilled.

Use of technology is the fastest method that is presently having far reaching results.

Then the advantages of "Handmade and Online" products were discussed:

- ◆ There is no need to maintain huge stocks: as the product has to be just advertised so that people can see it, manufacturing and stocking in bulk is not necessary. One product can be created, photographed aesthetically and uploaded with details as to colours or sizes available.
- ◆ It helps to reach out to people across the globe who are looking for handmade products: one is not restricted by geographical restrictions, but has access to what is available on the other side of the globe, with just the click of a button.
- ◆ There is tremendous scope for customization: since there is no bulk production, every product has the scope of being made exactly to order.
- ◆ It requires low investment: since there is no need of producing or stocking in bulk, one does not require a big capital investment to begin with, and can start off with what is available at home.

Ms. Sai Vijaya then gave a few examples of the websites where one can advertise:

Etsy, e-bay, Itshandmade, Craftsvilla, Indiebazaar, Mirraw

She also said that in addition to this, one can also create for oneself a Facebook page, a blog site or a web-site

This was followed by the steps one has to follow while working on these sites.

1. One needs to connect and exchange: build relationships in a marketplace that connects producers and consumers
2. Discover : what is already there and what is in demand
3. Converse: with different manufacturers, experts, shoppers; regarding what is needed, best sources to buy raw material etc.
4. Buy and sell: finally buy your raw material and sell your ready product, in a place that is already full of various products that will be competing with yours.

She then stressed on certain important aspects of Online Selling

- ◆ Photography: attractive and good photography that focuses on the product. Smart Pricing
- ◆ Since one is the direct seller one can offer a customer the best possible price.
- ◆ Thus encouraging the customers to purchase more
- ◆ Both parties benefit equally Computer Skills
- ◆ One has to be well acquainted with emailing,

- ◆ uploading and basic photoshop skills.
- ◆ Basic Copywriting to describe the product and it's features.

Advertising can also happen on various social media like, Facebook, Twitter, Whatsapp or Blog sites All the above could be effectively used to share, spread and market a product to prospective buyers. Packaging and Shipping should also be given importance:

- ◆ Research should be done on kind of packaging available: bubble packing, corrugated etc.
- ◆ Care to see that packaging has to be attractive yet durable till it reaches the customer
- ◆ The best possible shipping costs should be checked out, so that profit is maximum.
- ◆ Cost versus delivery time should be given utmost importance, so that one can start working well in advance

One also has to be able to perform online banking, by having an account in a nationalized bank, and encourage online transfers as it's quicker. Even though, cash or cheque deposits can be done one should realize that it takes longer and that payment by credit cards could be done through other sites She concluded her talk by encouraging all those present by saying that:

- ◆ Now is the time that is right
- ◆ Online is ideal medium for handmade products
- ◆ Branding them can create an identity for the product and also oneself, and
- ◆ Online advertising helps to reach out to customers all around the world at the click of a mouse.

Each aspect was dealt with in detail and made very interesting through the various examples she cited. After completing the basics, she gave her personal experience in which creating was explained and selling her products online. This proved to be an indepth study of the complete process from creating a product right upto the delivery.

The sessions concluded with a question-answer session. The interaction between the speakers and the listeners was proof enough that the session was very interesting and informative. The infectious enthusiasm of the speakers was instantly transferred to the listeners and all of them were left with something to take home and think about. The talk ended with a vote of thanks proposed by Ms. Neha Mulchandani, Faculty of the department. There was spread of lots of hope and positive energy about achieving success and contentment in our chosen fields.

ADVERTISEMENT INDEX

A.T.E. Enterprises Pvt. Ltd.	A-3	Lenzing AG - India Branch	A-1
Advertise Web Partner	A-14	Precision Rubber Ind. Pvt. Ltd.	A-16
All India Textile Conference	A-12	Premier Colorscan Instruments Pvt. Ltd.	A-9
Alpenol	A-4	Reliance Industries Ltd.	Cover 1
Aspire Chemicals Pvt. Ltd.	A-11	Rieter India Ltd.	A-5
Birla Cellulose	A-15	SSP Pvt. Ltd.	Cover 2
Global Textile Congress 2014	A-10	Thymas Electronics Pvt. Ltd.	P-125,139
InFasion	A-8	Truetzschler India Pvt. Ltd-	A-13
Introducing TAI Website	"	Unitech Techmech	Cover 4
ITMACH Exhibition	A-6	Veejay Lakshmi Engineering Works	A-7
Lakshmi Machine Works	Cover3	World Traders Mfg. Pvt. Ltd.	A-2

RIETER

St. Meer Becomes Rieter's Latest Com4® rotor Yarn Licensee in China

St. Meer is dedicated to yarn quality spun on Rieter R 60 rotor spinning machines. In order to optimally promote their yarns, the company decided to become a licensee for rotor yarns - and to benefit from the support of Rieter.



L to R: Michael Danielsson (Head Sales Rieter China), Mr. Sun Yang (President of St. Meer Group) during Ceremonial presentation.



Customers visit St. Meer's spinning plant

The complete Rieter rotor spinning mill, St. Meer International Industry & Trade Co., Ltd. belongs to Qingdao

St. Meer Group and is one of the leading manufacturers of rotor yarns in North China.

The first fully automatic Rieter rotor line in north China

The plant is located on the west coast in the Qingdao Export Processing Industrial Park with the rotor spinning mill covering an area of 10 000 m² and the modern cotton bonded warehouse also occupying 10 000 m². With the introduction of the world's most advanced fully automated spinning equipment R 60, the plant is able to produce high quality Ne 7 to Ne 40 rotor yarns. The Rieter yarn license for high-quality Com4® rotor yarns thus offers St. Meer the optimal promotion platform to win new customers for rotor yarns in future and to develop customer relationships.

Successful with the R 60 rotor spinning machine

St. Meer set up its spinning mill in 2010 with the installation of 3 R 60 rotor spinning machines. To date, 6 complete R 60 rotor lines have been installed. By the end of 2013, the number of R 60s will be increased to 12.

The reference mill ceremony of the Rieter rotor line in China took place on 19 July 2013 during the group visit to the St. Meer spinning mill. More than 70 customers from Shandong Province participated in this visit which was the concluding activity of the Rieter Customer Day in Qingdao.

License package from Rieter

Rieter actively supports and promotes the supply sources of licensed yarns, one of the measures being a direct link on the Rieter website to the licensee. Licensed customers have the opportunity to profit from the expertise of Rieter specialists and to participate in Rieter Com4® yarn further training courses. Over and above these activities, Rieter supports licensed customers with the implementation of their own marketing actions.

Attention

All Members of

THE TEXTILE ASSOCIATION (INDIA)

Please update their contact information by Sending us e-mail to update our website
taicht@gmail.com, taicnt@mtnl.net.in

The 12th Asian Textile Conference



Oct.23-26,2013 Shanghai

ATC-12

The Federation of Asian Professional Textile Associations (FAPTA) was established in 1991 and it is now composed of eight professional textile organizations in Asia. Asian Textile Conference (ATC) is the sole official event of FAPTA. The initial purpose of this conference is to discuss the latest achievement on textile science and engineering and to build up a global network between Asian textile scientists and engineers. ATC is held every two years and hosted by FAPTA members in turn.

12th Asian Textile Conference (ATC-12) was held at Donghua University in Shanghai City, China from October 23rd to 26th, 2013. The Donghua University (DHU) in Shanghai City is located in the middle of China's east coastline. Shanghai is a global city, with influence in commerce, culture, finance, media, fashion, technology, and transport. DHU, formerly China Textile University, was founded in 1951. DHU is one of the state-key universities directly under the Ministry of Education of China. Its feature disciplines, such as Fashion Design, Textile Engineering, International Trade, Material Science, and Information Technology have received high reputation both domestically and abroad.



Dr. Anil Gupta, National Vice President and Mr. V.N. Patil, Hon. Treasurer, TAI along with other members of FAPTA Board

The conference was attended by about 900 delegates from 23 countries. The main theme of ATC-12 was "New Prospects on Textiles", with a focus on the latest developments and trends, as well as future outlook of textile and other convergence technology field. The conference program is rather dense and rich, offering

a considerable variety of topics covered (session code under bracket) as follows:

- ◆ Fibrous and Low Dimensional Materials (G1).
- ◆ Fiber to Fabric Processing (G2).
- ◆ Eco-Dyeing/Finishing and Green Chemistry (G3)
- ◆ Clothing and Accessories (G4).
- ◆ Textile Performance-Testing and Evaluation (G5).
- ◆ Advanced Polyester Fibers and Materials (S1).
- ◆ Nanotechnology in Textiles (S2).
- ◆ High Quality Technical Textiles (S3).
- ◆ Modern Textile Equipment Technique (S4).

ATC-12 provided 7 plenary lectures, 58 invited lectures, 137 general oral presentations and 348 poster presentations (the number of absentees is not known). Ruizhe Sun (China), Toshihiro Hirai (Japan), Chris Carr (UK), Jianyong Yu (Donghua University, China), Thomas Gries (Germany), Weilin Xu (Wuhan Textile University, China), Jae Ryoung Youn (Korea) presented in the plenary session. The conference ended with satisfaction of the participants.



Dr. Anil Gupta and Mr. V.N. Patil of TAI, along with Prof. Seyed Hajir Behrami, Iran



Dr. Anil Gupta along with other dignitaries on the dais

During ATC-12, Mr. M.K. Mehra, Past President of The Textile Association (India) was honored with offering a Memento by FAPTA for his outstanding contribution to FAPTA.

During the Board Meeting of FAPTA, it was decided to hold next ATC-13 at Australia in 2015. Mr. Ruizhe Sun, China Textile Engineering Society, China was appointed as new Chairman of FAPTA till ATC-13. Dr. Anil Gupta, National Vice President and Mr. V.N. Patil, Hon. Treasurer of TAI will be the FAPTA Member till ATC-13. It was discussed to invite other Asian Countries like Indonesia, Singapore, Pakistan, Bangladesh and Turkey to join FAPTA and the representatives

should be key scientific professionals. It was also decided to have a permanent base for FAPTA and the ownership will be with FAPTA and it will remain with Asian Countries.

Among eight professional Textile Organizations in Asia, The Textile Association (India) is one of the organizations and National President of the Association is one of the members of their International Advisory Committee. On behalf of The Textile Association (India), Dr. Anil Gupta, National Vice President and Mr. V.N. Patil, Hon. Treasurer attended this ATC-12 conference, FAPTA Board Meeting and other functions.



TIT&S Director invited in TEXSCI-2013 International Seminar

Dr. Rishi Jamdagni, Director TIT&S is a professor of global repute in the field of Textile education. A proud and ambitious director to his alma-mater, he has furthered the cause of Textile Education in the country by collaborating with leading global textile institutes. Awardees of the prestigious Italian Technology Award, he led The TIT&S to enter into a MoU with the Technical University of Liberec, Czech Republic. Due to his all out efforts, the member institutes have organized two international conferences at TIT & S in India.



Dr. Rishi Jamdagni presenting his paper

It is yet another feather to his cap that he has been specially invited from South Asia to Liberec to deliver the Inaugural Address at TEXSCI-2013. He has addressed textile professionals and scientists from across the globe. Dr. Jamdagni was the only single person from South Asia was among other country, who was invited for this seminar. During the seminar Mr. Sunny Pannu, student of TIT&S has presented his research paper "Study of Needle Punched Non-woven Polyester Filter Fabric for Dust Control". Every one appreciated him for his excellent presentation. Along with Dr. Rishi Jamdagni other faculty members have also presented "Application of Carbon Nano Tube (CNT) in Textile", "Characterization of Water Vapors Transmission Behavior of Woven Fabrics" and "Response of Thermal Physical Comfort Property of Polyester-Modal Blended Fabric to Chemical Finishing".

Dr. Jamdagni was also consulted by the Czech authorities on Indo-Czech co-operation in the field of education which has yet another conference in the pipeline. It's a matter of pride to his alma-mater TIT&S and Indian textile fraternity.

**Published regularly
since 1939**

Journal of the
TA TEXTILE Association

Subscribe Today



11th International & 69th All India Textile Conference



Theme: India Textiles - Global Prospects and Perceptions

The Textile Association (India) is the foremost leading and largest national body among other several professionals of textile in India. TAI was established in the year 1939 and now it is poised to cross 75 years of service to the textile industry. TAI is celebrating its Platinum Jubilee this year. To commemorate the function, The Textile Association (India) - South Gujarat Unit is organizing 11th International & 69th All India Textile Conference on 20th & 21st December, 2013 at the Taj Gateway Hotel, Surat. Conference Theme is "Indian Textiles - Global Prospects and Perceptions". There are 26 affiliated units at various textile centers in the country, accounting for member strength of over 23,000 from pan India. Since, 1939, TAI organizes an annual conference every year.

The South Gujarat Unit of The Textile Association (India) was established in the year 1967 and presently having more than 800 members. TAI - South Gujarat Unit had a very good experience of organizing successfully 3rd International & 42nd All India Textile Conference in the year 1985.



Mr. R.S. Bachkaniwala, announcing for 69th AITC

In Surat, there are over 8 lakh power looms producing over 30 million meters/day in 100 varieties of fabrics per day. Also there are over 500 process houses established to meet with their requirements of local and export market. About 1 lakh embroidery machines have been installed in Surat to help the fabric manufacturers in value addition. Surat Textile industries are also entering into different segments of technical textiles and garment manufacturing.

Surat is having about 50,000 wholesalers of grey and finished fabrics and therefore it has become a very big fabric producing and marketing hub.

The Indian economies as well as the earnings from exports are highly influenced by the textile industry. The Indian Textile industry is also considered to be the second largest producer of textiles across the globe. As per the Ministry of Textiles, the Indian Textile industry (valued at US \$ 7 bn in 2011) contributed about 14% to industrial production, 4% to the country's GDP and 12% to the country's export earnings in 2011. It provides direct employment to over 35 m people and is the second largest provider of employment.

Currently, Indian textile industry is expected to grow at an average annual rate of 11% between 2011 and 2020 to touch US\$ 140 bn. India's share of global textile exports is expected to increase from the current 4% to around 7% over the next three years. Also, the denim manufacturing capacity, which stands at 600-650 m meters per annum, is expected to add another 100 m meters in near future. India is rich in traditional workers adept at value-adding tasks, which could give Indian companies significant margin advantage.



Mr. R.S. Bachkaniwala meeting press conference

According to Mr. R.S. Bachkaniwala, Conference Chairman, the conference will provide a platform to all those stakeholders who are willing to enter into the competitive global textile markets. During the conference, it expects learned technocrats and experienced industrialists to share their valued experience and knowledge.

Foreign speakers like Mr. David Faini, Managing Director of MarzoliSpA, Italy. Dr. Christian Schumacher and Indian speakers like Dr. Kamat, Mr. Arvind Sinha, Mr. Sevalay, Mr. Saini and others have agreed to address the conference.



Mahlo Atmoset-12 - the key to optimizing steam savings - saves more than 20% steam in drying ranges!

Challenges facing Indian textile manufacturers

The rising cost of raw material, oil, power, and water have affected industries across the world and manufacturers are actively looking for ways to reduce operating costs. Intense competition is another factor added in the mix, which is forcing companies to employ measures needed to save on costs as well as to produce consistently good quality products.

Utilities form a major chunk of the costs involved in processing textiles. This is particularly true for vertical drying ranges - these machines utilise the maximum amount of steam in the entire wet processing line as they are designed with a high factor of safety to ensure that heavier GSM fabric are dried as well. Fabrics should be dried at speeds that are determined by several factors - the time required for treatment, the desired percentage of moisture, etc. But often, the speed of the dryer is kept constant for many different kinds of fabrics so drying times are set for these fabrics. Heavier textile requires more time to dry - which means that lighter textiles being run on a drying range could be over-dried.

This means that in continuous processing, due to the short length of the batches and different fabric qualities, often excess steam is consumed. This not only results in inconsistent fabric quality due to over drying, but higher energy costs as well.



Solution

The Mahlo Atmoset SMT-12 unit is a unique device that optimizes the heat output depending on the product being run on the drying range. Based on Mahlo's Optipac VMC-12 modular process control system, the Atmoset SMT-12 is designed to monitor and control drum dryers by controlling the dryer's heat output as a function of the product's residual moisture. It does this by calculating the amount of energy required for drying as a function of the deviation of the condensate temperature from a preset point - and accordingly adjusts the steam supply to the rollers. The optimal degree of drying is always reached, regardless of the weight of the product or the web speed. The result is better quality with less energy consumption.

Working

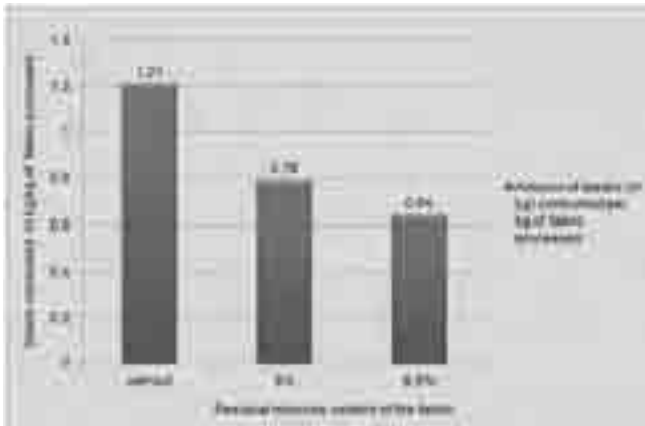
Vertical drying ranges are divided into control loops. The first control loop is used to measure and control the condensate temperature of the drum dryers. The second control loop measures the residual moisture of the fabric as it leaves the dryer, using special measuring sensors.

Intelligent controller algorithms provide a rapid but very stable control of the residual moisture while taking all input variables into account at the same time. To do this, The Atmoset uses a variety of sensors and controllers.

Advantages

Mahlo's Atmoset SMT-12 is a proven product that has a number of advantages, as follows:

- ◆ Consistent fabric quality is achieved due to constant residual moisture on fabric at the delivery
- ◆ Continuity of the production process and reproducibility of the product quality are ensured
- ◆ Energy consumption of the dryer drops significantly due to the optimized heat output
- ◆ Higher savings leading to faster payback
- ◆ The product design ensures that the central nervous system of the equipment works without interruption
- ◆ The optimal degree of drying is always reached, regardless of the weight of the product or the web speed
- ◆ The drum dryers can be optimally dimensioned during the initial project planning with the customers which results in reduced investment costs
- ◆ Easy to install and easy to retrofit with an in-built user interface.



Above graph shows the overall saving in steam consumption using Atmoset SMT-12. It can be seen that approximately 35-45% saving is possible. Residual moisture of the fabric is plotted on the horizontal x-axis and amount of steam in kg consumed per kg of fabric processed is plotted on the vertical y-axis.

Important tips

- ◆ Set the residual moisture value depending on the quality and construction of the fabric to be processed
- ◆ Once the values are set, run the machine in AUTO mode, so that the Textometer RMS can sense the moisture on the fabric and accordingly adjust steam consumption
- ◆ Run similar quality of fabrics in bigger lots to ensure uniform evaporation of moisture per kilo of steam consumed

Some key references where the Mahlo Atmoset SMT-12 is installed and working satisfactorily:

1. Alok Industries - 12 units
2. Auro Industries - 7 units
3. Premier Fine Linens - 1 unit
4. Premier Mills, Hosur - 1 unit
5. Welspun, Anjar - 8 units



Non-contact B92 EVO Pulse Generator

The non-contact B92 EVO pulse generator facilitates improved measuring accuracy - even with heavy soiling. The conversion kit is available for RSB-D 30, RSB-D 30c, RSB-D 35, RSB-D 35c, RSB-D 40, RSB-D 40c and now also for RSB-D 22 and RSB-D 22c draw frames.



The new B92 EVO pulse generator consisting of sensor and magnet ring

The magnetic measuring principle of the B92 EVO pulse generator is based on a magnet ring and sensor

head. With older draw frame models, an additional shaft is delivered to facilitate this non-contact measuring principle.

The high shock/vibration resistance and dustproof properties (Protection Class IP67) of the B92 EVO pulse generator allow a faultless application even under extremely dusty environmental conditions with fiber fly. The vibration resistance also ensures a high level of measuring accuracy and functional safety.

A longer life cycle compared to its predecessor is achieved by the new B92 EVO pulse generator through contact-free measuring. Bearings that could wear out no longer exist.

Advantages:

- ◆ Non-contact measuring system with B92 EVO sensor
- ◆ Significantly longer service life, since no bearings are required which could wear out
- ◆ The electrical connection can be made with the existing cable
- ◆ Removal and installation of the main drive shaft is only once necessary for fitting the magnetic ring
- ◆ Easy installation and thus rapid recommencement of production by the draw frame



Laser and Raising machines raise the attraction

Igmalex exhibition again served as a major focal point for the event, showcasing results and achievements with demonstrations.

The event organised from 18-20 October 2013 at Brijendra Swaroop Park, Kanpur (U.P.) brought together the idea and innovation for leather, footwear machinery and services. Decision makers representing industry, academic institution and Public Authorities from various cities registered for the three days viewing.

Exhibition was inaugurated by Sri Taj Alam, Managing Director King International and President CLE (North) and Sri Balram Narula, Managing Director, Jet knitwear, Kanpur along The Director of MSME (Min. of MSME, Govt. of India) Mr. Sanjeev Chawla, and Mr. H.P. Jaiswal Dy. director, among various representatives of associations viewed intelligent machinery and systems. According to him "this exhibition has set standards for co-operation and brought latest technology for industrialists in Kanpur. This exhibition complements them and brings an even wider range of possibilities and has enabled us to attract many. However we need to translate research into results and pool our resources.

This focus exhibition centered on serious buyers from various cities it saw good-quality visitors whose convinced technological choices meant many deals were

clinched at the event, or negotiations commenced on the stands; there was widespread satisfaction among the exhibitors from New Delhi, Ahmedabad, Ludhiana, Kanpur, Chennai, Ranipet, Bangalore, footwear, leather-goods and apparel manufacturers who visited the exhibition from Akola, Nagpur, Nepal, Kanpur, Lucknow, and the members of the official delegations from NTPC Unchahaar are also visited. Kanpur expect the world's leading technology to provide solutions that will guarantee not only their product quality but also an entire production phase compatible with the environmental and social equilibrium.

The Prominent exhibitors were from Kanpur Genius Traders, Khanna Pharmaceuticals, Global International, Jai sewing machines, ALT, Ruchi enterprises, Eco shoe accessories, Metro Sewing Machines, Shoe Mac, Servokon Engineers, from South India PR groups, TUV Sud south Asia, Ramsons garment Finishing Equipments, Gopi Engg. & Sons, from north India Mehala Machines, Optitex, Swati overseas, Magma technologies, Arun electronics, Arora Vinyl, M.A. enterprises, Narinder international, GSL Textiles, Wenli International, Golden Laser India, Vabhav Globalmach, Kamal sales, ATDC, and media partners were Indian Leather, The footwear news of India, Essential Media, Apparel Views and hosiery times, Once again, this year's expectations were satisfactory and the next show promised to bring more satisfaction.





INDIATEX 2013

Textile Exhibition - Fibre to Fashion

The Textile Association (India) Mumbai Unit successfully organized "INDIA TEX 2013" exhibition during 18th-20th October, 2013 at VIA Ground, Vapi Industrial Association, GIDC, Vapi, Gujarat.

This exhibition was organized in a very professional manner with around 90 distinguished exhibitors from all over the country exhibited at the event. This exhibition was supported by Textile Commissioner, Ministry of Textiles, Govt. of India and iNDEXTb, Govt. of Gujarat was the State Partner of this exhibition.

The inaugural function of the exhibition was organized in the VIA Auditorium. Dr. Chandan Chatterjee, Director, The Center for Entrepreneurs Development & Head (Project & Technology), iNDECb, Govt. of Gujarat was the Chief Guest for the occasion. Shri Rajnikant S. Bachkaniwala, Director Palod Himson Machines Pvt. Ltd., Surat and Shri Deven G. Dembla, President, ITAMMA & Managing Director, Precision Rubber Industries Pvt. Ltd., Mumbai were the Guest of Honour on the inaugural session of exhibition.

The Machinery Manufacturers and Technology Service providers under one roof provided a good platform for mutual advantage and commercial interaction. The expo was visited by technocrats and select entrepreneurs and owners from the Vapi, Silvassa, Umergam, Daman & Diu and other part of the country. It is reported that the fair provided an opportunity for business networking. INDIA TEX 2013 was the first attempt by TAI Mumbai unit and Mr. Hareesh Parekh, Exhibition Convenor and Mr. Anil Mahajan has worked tirelessly since last six months and organized the fair at the best possible way. It was really appreciable and memorable exhibition.

Mr. C. Bose, President of TAI, Mumbai Unit welcomed the gathering and said that Mumbai Unit was happy to organize this at Vapi which is the financial & industrial districts of the state of Gujarat.

Mr. G.V. Aras, Exhibition Chairman expressed his views about the industrial belt starting from Tarapur, Umargam right up to Surat, which is buzzing with manufacturing activities in different verticals textile value chain. He

said for these reasons the organizing committee took the decision to hold this exhibition at Vapi.



Dr. Chandan Chatterjee, Chief Guest lightening the lamp



Dr. Chandan Chatterjee, Chief Guest delivering his inaugural address

Mr. Hareesh Parekh, Convenor of this Exhibition said that IndiaTex 2013 is an exhibition for suppliers, buyers, distributors and manufacturers of fabric and textile producers. He said that organizing exhibition was a big challenge as the Mumbai Unit doing it for the first time. He thanked all the exhibitors and supporters for their kind support.

Mr. Rajnikant Backhaniwala congratulated Mumbai Unit for organizing this exhibition in the fastly growing industrial belt in the state of Gujarat. He also cautioned the organizers in respect of organizing exhibition as it is a very difficult task and needs lot of manpower and efforts.

Mr. Diven Dembla thanked Mumbai Unit for giving ITAMMA to be part of this exhibition. He explained the important role played by ITAMMA in the development of the textile industry at various levels from accessories to machineries.

Dr. Chandan Chatterjee, was remembering his college days since when he was associated with the Textile Association. He assured all the participants and the exhibitors for all kind of assistance from the Govt. of Gujarat in setting up their business in the state. He suggested that healthy competitions amongst the industries will change the scenario for the development of the country.

Mr. A. V. Mantri, Hon. Secretary proposed the Vote of Thanks.

The 3 day exhibition was visited by technocrats, entrepreneurs and owners from various parts of the country. The visitors and exhibitors appreciated Mumbai Unit for providing good opportunity for business networking.

The exhibition was managed by Green Apple Hub, Ahmedabad. Mr. Hasmukh Shah, Chairman, Vapi Industrial Association helped exhibitors to participate and invited industry to visit the expo.

At the evening of the first day, a Fashion Show and dance programme was organized. Audience of this show has enjoyed. During this show Mr. Vikas Sharan, A.T.E has presented a beautiful song of Kishore Kumar on a special request.



Dr. Chandan Chatterjee inaugurating the Exhibition



Dr. Chandan Chatterjee at A.T.E. Stall



View of iNDEXTb Stall



View of Exhibition Stalls

Texttreasure

"If you don't value your time, neither will others. Stop giving away your time and talents. Value what you know & start charging for it."

- Kim Garst



ITAMMA's successful participation at IRANTEX'2013

Textile Industry at IRAN

Textile exports from Iran reached US\$ 221.1 million during the first four months of the current Iranian calendar year that started on March 21, 2013. Where, fibre, fabric, garments, machine-made floorings and threads topped the export list during the period.

On the import side, the country's textile goods imports for the period plummeted by 6.65% over the same period of last year to US\$ 379.7 million. Where various types of threads and fibres, used by the textile industry as raw input to produce final products, constituted around 77 % of overall imports. Also, around 15,581 tons of cotton fibres worth US\$ 38 million and 106.7 tons of garments worth US\$ 937,000 were imported during the period. In addition, the sector *imported around US\$ 37.2 million worth of textile machineries* during the period.

Last calendar year, Iran exported around US\$ 560 million worth of hand-woven carpets to 50 countries, including Japan, Italy and Germany; whereas the global trade in handwoven carpets reached US\$ 1.35 billion. Iran's competitors in global handwoven carpet market are India, Afghanistan, Pakistan and China. Over 1.2 million weavers in Iran engage in carpet weaving and produce around five million square meters of carpets each year, 80 percent of which are exported.

'IRANTEX 2013', Tehran International Permanent Fairground, Tehran, Iran -- 28-31 October, 2013

'IRANTEX 2013' exhibition was held at Tehran International Permanent Fairground, Tehran, Iran during 28-31 October, 2013. It was grouped into three Halls, viz. 38, 38 A & 38 B. There were total 231 exhibitors from 16 countries. The details are given in Table-1 indicating the majority of 58.05% of Exhibitors from Iran followed by 15.05 % of Exhibitors from India. The categories of Exhibitors were 62.23%% from User Industry in the business of manufacturing and dealing of fibre, yarn, fabric & their finishing, etc.; while 37.77%% from Supply Industry in the business of manufacturers/dealers/agents, etc. of Machines & Spare

Parts of Spinning, Weaving, Wet Processing and Garment Industry.

TABLE-1

Country	No. of exhibitors	%
China	14	6.06%
Finland	1	0.43%
Germany	4	1.72%
Greece	1	0.43%
India	35	15.05%
Iran	135	58.05%
Italy	5	2.15
Japan	1	0.43%
Korea	2	0.87
Singapore	1	0.43%
Spain	4	1.72%
Switzerland	1	0.43%
Taiwan	5	2.15 %
Thailand	1	0.43 %
Turkey	21	9.03 %
Total	231	100 %

ITAMMA's Participation

1. Catalogue display scheme :-

Under this scheme Eighteen (18) ITAMMA members participated as per the details given in Table - 2 below :- (Refer photo of Mr Diven Dembla, President, ITAMMA at ITAMMA stall)

Table - 2

Aero Based Control Systems (P) Ltd., Coimbatore - 641 00	Blue Moon Engineering & Mfg. Co., Surat - 394 210
Continental Engineering Industries Pvt. Ltd., Gandhinagar - 382 028	Excel Industrial Gears Pvt. Ltd., Mumbai - 400 001
J.C. Tex-Mach Marketing Pvt. Ltd., Surat.	Jayantilal S. Gandhi & Co., Ahmedabad - 380 009

Kinarivala Machinery
Traders Pvt. Ltd.,
Ahmedabad - 380 006

Laxmi Textile Stores,
Ahmedabad - 380 004

Leomine Organics
Pvt. Ltd.,
Mumbai - 400 083

Sanjay Plastics &
Industrial Service,
Kota - 324 007, Rajasthan

Savio Texcone Pvt. Ltd.,
Hapur - 245 101,
Ghaziabad

Sheltronics Control
Systems Pvt. Ltd.,
Coimbatore - 641 025

SKAAT Machines
Works India Pvt. Ltd.,
Coimbatore - 641 062

Suprabhatam
Textile Equipments,
Coimbatore - 641 004

Technocraft Industries,
Ahmedabad - 382 350

Techno-Rub Industries,
Bhavnagar - 364 003

Texspares Machine
Works,
Mumbai - 400 001

Usha Industrial
Corporation,
Ahmedabad - 380 023



*Mr. Diven Dembla, Mr. N.D. Mhatre along
with ITAMMA Exhibitors*

2. Indian & ITAMMA's member Exhibitors: -

Total Thirty Five (35) Indian Exhibitors i.e. 15.05% of the total 231; participated in this exhibition (please refer Table - 1). Out of the same Ten (10) ITAMMA members, were present recording 28.57 % of Indian Exhibitors.

3. Meeting with the Honourable Ambassador of India in Iran Shri D.P. Srivastava, on 28th October, 2013 at his embassy in Tehran.

Honourable Ambassador of India in Iran Shri D.P. Srivastava invited the Indian Exhibitors & Visitors on 28th October, 2013 at his embassy in Tehran for a Hi-Tea & get-together.

This meeting was attended by the various Indian Exhibitors, while the team of ITAMMA exhibitor members was lead by the President, Mr. Diven Dembla. During this meeting valuable discussions were had on the challenges faced by the Indian exporters while promoting their textile machines and components to Iran.

Shri Bharat Babu, Counsellor shared his views regarding the economic and political scenario in Iran, giving us insights into the opportunities available for the Indian exporters to the Iran market. We also got clarifications regarding several issues related to banking, trade and commerce, which will help our members enhance their exports to Iran. The proceedings of the meeting encouraged us, and will help in the growth of the Textile trade between the two countries.

**Meet your potential
clients, boosting
your sales
and
marketing activities**



Mr. Sanjiv Lathia elected as Chairman of India ITME Society



Mr. Sanjiv Lathia

India ITME Society, the Organisation serving the Textile Engineering Industry and Textile Industry through Exhibitions held its 34th AGM on 27th September 2013 in Mumbai.

The Society organizes International Textile Technology Exhibitions which today is undisputedly the premier event in India and well accepted internationally with 61 countries participating. After the successful conclusion of India ITME 2012, the Society is gearing up for its next event in 2016 with a newly elected Team of Office Bearers and Committee Members.

Mr. Sanjiv Lathia, Director Lathia Group has been elected as the Chairman of India ITME Society for the term 2013-2015. Mr. Lathia completed his B.Tech. from IIT Delhi and M.S. from Stanford USA. He is heading the technical operations at family owned Lathia Rubber Mfg. Co. Ltd. Apart from sharp business acumen, Mr. Lathia also has deep sense of social responsibility and commitment to give back to the Society. He is an active Member of many Industrial and philanthropic Organisations. He has served many Associations in multiple roles. To mention few he was the President of BIA, President of Indian Textile Accessories & Machinery Mfrs. Association (ITAMMA). He is also associated with professional organisations like ASME, ISA. Despite his busy schedule Mr. Lathia is also active with Rotary Club Of Bombay West and various other Organisations for betterment of community and youth.

India ITME Society's governing body Chaired by Mr. Lathia has also other eminent and visionary Industrialists and Leaders. Vice-Chairmen elected for the term 2013 - 2015 are:



Group picture of incoming & outgoing members of the steering committee of India ITME Society captured on 27th September, 2013. Mr. Sanjiv Lathia chairman elected (center) flanked by immediate past chairman Mr. R. S. Bachkaniwala (Left) & Mr. G. T. Dembla, Past Chairman (2001-2005) (Right).

Mr. Sunil Soni, IAS, Director General, Bureau of Indian Standards, New Delhi.

Mr. Prakash K. Bhagwati, Chairman, Textile Machinery Manufacturers' Association (I) (TMMA), Chairman, Inspiron Engineering Pvt. Ltd., Ahmedabad.

Mr. Diven G. Dembla, President, Indian Textile Accessories & Machinery Mfrs. Association (ITAMMA), Managing Director, Precision Rubber Industries Pvt. Ltd., Mumbai.

Mr. Prem Malik, Chairman Confederation of Indian Textile Industry (CITI), Mumbai. Has 48 years experience and associated with Companies like M/s. Bombay Dyeing & Manufacturing Co. Ltd. and M/s. Mafatlal Industries Ltd.

Mr. D.R. Mehta, President The Textile Association (India), Mumbai, (Ex-Chairman NTC)

Mr. S. Hari Shankar, Whole-time Director, Lakshmi Card Clothing Mfg. Co. Pvt. Ltd., Coimbatore has been elected as **Hon. Treasurer**

While looking forward to a vibrant growth under the stewardship of new Chairman, India ITME Society also takes this opportunity to acknowledge with deep appreciation the valuable contributions of immediate past Chairman, Mr. R. S. Bachkaniwala (Director, Palod Himson Machines Pvt. Ltd.)

In this joyous moment, The Textile Association (India) congratulates Mr. Sanjiv Lathia for electing as Chairman, ITME Society and wishes him all the best for his future and endeavors.



Mr. M.K. MEHRA Feliciated By FAPTA



Mr. M.K Mehra

Mr. M.K. Mehra, Past President of The Textile Association (India) was honored with a Memento by FAPTA during ATC-12, held on 23-26th October, 2013 at Shanghai for his outstanding contribution to FAPTA and ATC.

Mr. M.K. Mehra is presently working as Director of Okhla Garment & Textile Cluster (OGTC) since 2004. He is an Alumni of TITS, Bhiwani, 1955 batch. He has wide working experience in Textile Mill organized sector for 45 year in Production / Management / Projects.

Mr. Mehra was Ex member on Government Bodies-

- ◆ Development Council for Textile Industry (Ministry of Textile)
- ◆ Council of Tech. Education (Ministry of Personal)
- ◆ Textile Task force for 9th five year plan of planning commission.
- ◆ Textile Task force for 10th five year plan of planning commission

Awards-

- ◆ TAI Service Gold Medal - 1980
- ◆ Golden Jubilee President Award - 1989
- ◆ Fellow of Chinese Institute of Textile Engineers China (Taiwan) - 1997
- ◆ Life Time Meritorious Service award at world conference Mumbai - 2011
- ◆ Life Time achievement award All India Textile Conference at Delhi - 2012

Contribution to the Textile Association (India)

- ◆ Vice president TAI - 1987-1989
- ◆ National President TAI - 1989-1991
- ◆ National President TAI - 1991-1993
- ◆ FAPTA - FAPTA - Federation Chairman - 1991-1993
- ◆ Patron member of Textile Association Since - 1965

Other activities

- Member of Indo French Tech Association
- SRD group organized 52 Seminars all over India & conducted Training programmes
- Member of Indian Delegation to Olympic in Moscow - 1980
- Attended Asian Textile Conference - South Korea, Hongkong, Taiwan, India, Iran

Mr. M.K. Mehra, was a founder President of FAPTA who was also a member of International Advisory Board and attended ATC 7 times on behalf of The Textile Association (India). Mr. M.K. Mehra has made outstanding contribution for the development of FAPTA & ATC.

ATC No.	Year	Date	Held At
1 st	1991	Jan. 17-19, 1991	India
2 nd	1993	Oct. 18-20, 1993	Korea
3 rd	1995	Sep. 19-21, 1995	Hong Kong
4 th	1997	Jun. 24-26, 1997	Taiwan
6 th	2001	Aug. 22-24, 2001	Hong Kong
7 th	2003	Dec. 01-03, 2003	India
8 th	2005	May 09-11, 2005	Iran

The Textile Association (India) congratulates him for this achievement.

Mr. K.L. VIDUR at DORNBIRN Man Made Fibers Congress

Mr. K.L. Vidur, G.C. Member of TAI was invited to participate as a Member-Press in the 52nd DORNBIRN MAN MADE FIBERS CONGRESS held in Dornbirn, Austria on 11th-13th September, 2013 and the International Press Conference on 12th September, 2013, convened by the Austrian Man Made Fiber Institute. The MFC covered various subjects, appropriate to the latest trends and technologies, in the field of man made fibers presented by 100 eminent speakers. The conference was attended by about 800 delegates from 30 countries.



Texttreasure

"Sometimes, if you want to change a man's mind, you have to change the mind of the man next to him first."

- Megan Whalen Turner



National Seminar on "Innovation & Technology Advancement - Growth Mantra for Textile Industry"

Friday, 2nd August, 2013

Government and Industry collectively responsible for deceleration of growth of textile sector: Textile Minister Dr. Kavuru Sambasiva Rao, Union Minister of Textile, Government of India said that Reluctance of both government and industry to invest in research and development in textile sector in India has led to its current state of affairs in which domestic industry is losing out its competitiveness to its competitors and counterparts, says The Minister, however, indicated saying that it is one of the primary reason that Indian textile industry's share in global world trade has declined.



Inaugurating a National Seminar on Innovations & Technological Advancements: Growth Mantra for Textile Industry here today, under the aegis of PHD Chamber of Commerce and Industry (PHDCCI), the Minister stressed that due to negligence of both government and industry had led to not invest in R&D textile sector. This has resulted in a passive growth of the textile industry which needs to be reversed.

Despite several government schemes launched by Union Textile Ministry under aegis of successive government the sector has yet to emerge for an economy of scale, pointed out Dr. Rao.

The industry should take the initiative along with government to improve the availability of skilled labour suggested Dr. Rao to various industrialists of PHDCCI attending national seminar.

Responding to a clarification, sought by one of the members of the PHDCCI during the deliberations on the seminar in regard to expansion of interest subvention scheme in textile sector to a rate of 3%, Dr. Rao hinted that the Chamber should come out with a specific proposal to the Ministry of Textile to enable it to

endorse to authorities concerned in the department of Commerce and Industry.



A Knowledge paper titled "Opportunities for India in an Evolving Textile & Apparel Industry" prepared by Technopak Advisors and PHD Chamber and Knowledge Paper titled "Innovation & Technology Advancement - Growth Mantra for Textile Industry" prepared by Department of Textile Technology, IIT Delhi and PHD Chamber was released by Dr. K.S. Rao, Hon'ble Union Minister, Ministry of Textiles, Government of India for its release for the seminar

The Minister was extremely liberal in asking the industry to list out the slippages of India inc. in textile sector to convenience the government to dole out packages for it in case such proposals have merits.

In his welcome remarks, Mr. Sharad Jaipuria, Sr. Vice President, PHDCCI, Jaipuria highlighted "the Indian Textile industry has an overwhelming presence in the economic life of the country. However there are many challenges in the form of Skilled Labour, Power Shortage, Obsolete Machinery, Lack of Information, Foreign Competition etc which hinder the growth of textile industry. We feel that the regulatory policies should be simplified and the clearance process should be enhanced to augment the growth"

In his key note address Mr. Mukund Choudhary, Chairman, Task Force on Textiles, PHDCCI stressed that innovation should become the only means of survival in textile industry as almost all the major players are engaged in research and development regarding raw materials and their applications.

Another speaker Mr. Ashish Bagrodia, Managing Director, Winsome Textile sought to impress upon the point that textile industry made a significant contribution to the national economy in terms of direct and indirect employment generation and net foreign exchange earnings as the textile industry is expected to reach at US\$ 220 billion by 2020.



A number of presentations on important topics were made at the Technical Session of the seminar which was chaired by Mr. N.D. George, Economic Advisor, in Ministry of Textiles. Mr. N.D George kicked off the technical session with a discussion on "Innovation as a Growth Mantra for Textile Industry". Other presentations were Science Based Sustainable Solutions for Dyeing and Finishing of Textiles" by Mr H.P Nanda, Director- Strategy & Growth Initiatives, Dupont India , "Challenges for Garment Export & Handloom Sector" by Mr. Vishwa Nath, Managing Director, Nath Bros Exim International Ltd., "Innovations in Textile & Clothing Sector : Key Growth Factors" by Mr. Avinash Chandra, Head -South Asia, Invista ltd ; "Nanofibres & Nanotechnology in Textiles" by Ms. Mangla Joshi, Prof., Department of Textile, IIT Delhi and "Modernization of Indian Texturing Industry with latest Automatic Energy Efficient eAFK machines" by Mr. D. Ghosh, General Manager South Asia, Oerlikon Textile India Pvt. Ltd., "New Trends in Textile Testing & Quality Control" by Ms. Monika Sharma, Head - Corporate Sustainability, SGS India Pvt. Ltd., "Meeting the Demands of Non Apparel Fabrics" by Mr. Raj Verghese, General Manager - Clariant Chemical India Ltd.

The event had enlisted participation of industry, academia, government officials, consultants, who spoke on various aspects of the industry. In an era when the textile industry is passing through a critical phase, with stiff competition both in the domestic as well as international markets, product diversification, innovation, technology advancement and value addition are the thrust areas for the textile industry to remain competitive in the years to come. The seminar was focussed on the emerging and cutting-edge advancements, innovations in order to increase the overall competitiveness of the industry and benchmarking the International Competitiveness of the India Textiles and Apparel Industry.

Advertisement Tariff

Attention

Journal of the **TEXTILE Association**

**reach your
target audience**

<input type="checkbox"/>	Cover Gate Fold	₹.	36,000
<input type="checkbox"/>	Front Cover	₹.	24,000
<input type="checkbox"/>	Back Cover	₹.	22,000
<input type="checkbox"/>	Front Inside - 2	₹.	20,000
<input type="checkbox"/>	Back Inside - 3	₹.	20,000
<input type="checkbox"/>	1 st Opening Page	₹.	18,000
<input type="checkbox"/>	Inside Double Spread	₹.	28,000
<input type="checkbox"/>	Full Page - 4 colour	₹.	15,000
<input type="checkbox"/>	Full Page - B/W	₹.	9,000
<input type="checkbox"/>	Half Page - 2 colour	₹.	8,000
<input type="checkbox"/>	Half Page - B/W	₹.	8,000
<input type="checkbox"/>	Quarter Page - 4 colour	₹.	4,500
<input type="checkbox"/>	Quarter Page - B/W	₹.	3,000



Technical specifications

Sole of Magazine	29 cm x 21 cm
Print Area	10 cm x 18 cm
Frequency	3x monthly
Page Count	5,000 copies -
Page Format	CTP



Mail at -

THE TEXTILE ASSOCIATION (INDIA)

Pathare House, R. No. 5, 2nd Floor, Next to State Bank of India, 67, Ranade Road, Dadar (W), Mumbai - 400 028.
Phone: (91-22) 2446 1145, Fax: (91-22) 2447 4971
E-mail: taicnt@mtnl.net.in, jb.soma@gmail.com, www.textileassociationindia.org

**Promote your brands
with smart way**

Connect with right audience

Advertise & be a web partner



- Global presence
- Perfect target audience
- Long term relationship with industry body
- Creative ways to utilize medium
- Staying ahead of competition
- E-mail marketing to all TAI members
- Press releases
- Knowledge articles
- Banner ad
- Company listing on members directory page

Login to

www.textileassociationindia.org

The Textile Association (India)

Tel. : +91 22 2446 1145.

Fax : +91 22 2447 4971.

M. : +91 9819801922

E-mail: taicnt@gmail.com,

pavitra1941@gmail.com

INDIA
Texfair 2013 - Largest Expo of Textile Machinery, Accessories & Spares

Date : 13th to 16th December, 2013
Venue : CODISSIA Trade Fair Complex, Coimbatore
Contact : The Southern India Mills' Association
 41, Race Course, Coimbatore - 641 018
Tel. : +91-0422 4225333, Fax: +91-422 422536
E-mail : texfair@simamills.org

The Textile Association (India) - South Gujarat Chapter hosting 11th International & 69th All India Textile Conference

Theme : "Indian Textiles: Global prospects and Perceptions"
Date : 20th & 21st December, 2013
Venue : The Gateway (TAJ) Hotel, Surat, Gujarat, India
Contact : Mr. Viren Jariwala, Hon. Secretary
 The Textile Association (India) - South Gujarat Chapter
 Kanjibhai Desai Hall, Samaj Shikshan Bhavan,
 Opp. Museum Chowk, Surat - 395 003, Gujarat, India
M. : +91-9099025253
E-mail : viren1001@yahoo.com;

InFashion - 4th Edition - Design + Trends + Sourcing

Date : 17th & 18th January, 2014
Venue : Hall No. 5&6, Bombay Exhibition Centre, Goregaon (E), Mumbai, India
Contact : Mr. Adarsh Verma
M. : +91-9999251621
E-mail : adarshverma@imagesgroup.in

ITMACH - International Textile Machinery & Accessories Exhibition

Date : 20th to 24th January, 2014
Venue : Indian Corporation Premises, Mumbai-Nasik Highway (NH-3), Anjurdive, Bhiwandi,
Contact : Mr. Arvind Semlani - M.: +91-9833977743
 Mr. Farid K.S. - M.: +91-9869185102
Tel. : +91-022-22017013/61
E-mail : info@itmach.com, services@itmach.com

The Textile Association (India) organizes in Association with Thailand Convention & Exhibition Bureau (TCEB) WORLD TEXTILE CONGRESS 2014

Theme : "Global Textile - Opportunities & Challenges in an Integrated World"
Date : 23rd to 25th May, 2014
Venue : Bangkok, Thailand
Contact : Mr. Arvind Sinha - Conference Chairman
 The Textile Association (India) - Central Office
 Pathare House, Next to State Bank of India,
 67, Ranade Road, Dadar (W), Mumbai - 400 028 India
Tel. : +91-022-24461145, Fax: +91-022-24474971
M. : +91-9820062612
E-mail : taicnt@gmail.com, lionasinha@gmail.com

Every effort is made to ensure that the information given is correct. You are however, advised to re-check the dates with the organizers, for any change in schedule, venue etc., before finalizing your travel plans.

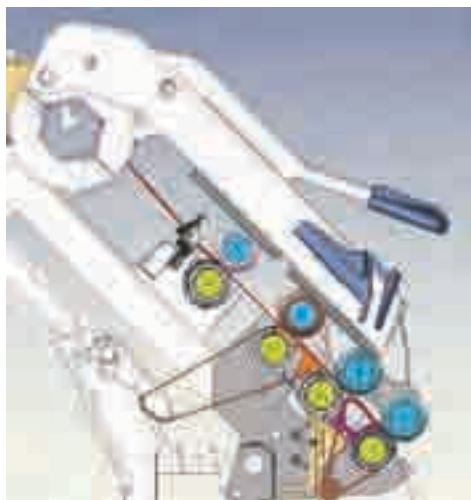
The views expressed in this journal are those of the authors. They are not necessarily the views of editor-publisher.

All rights reserved. Neither this publication nor any part of it may be reproduced in any form or by any means, nor may it be printed, photocopied or stored on microfilm without the written permission of the editor-publisher.



RING FRAME LRJ 9 SERIES

Hi-Tech, Unique Suction Compact Spinning System



Ring frame LRJ 9 Series with upto 1824 spindles are designed with a blend of cutting edge technologies and proven LR9 series features to cater to the needs of compact yarn spinners. The superlative features of these machines are configured in every facet to deliver high quality yarn.

Salient Features

- Hi-tech, Unique Suction Compact System with Ease of Handling
- Maximum number of spindles up to 1,824
- AC Servo Drive for compact drive rollers - Flexibility in fine tuning the tension draft through display
- Duo Compact Nozzle
- Unique Suction Arrangement
- Synthetic apron with perforations - Less Maintenance and Longer life
- 4 QM drive for drafting with T-Flex drive
- AC Servo drive for ring rail movement
- TPI change from display
- Maximum spindle speed up to 25,000 rpm (mechanical)
- Auto doffer and provision to link with winder

adsync

LAKSHMI MACHINE WORKS LIMITED

Perianaickenpalayam, Coimbatore - 641 020, India.
 Phone : +91 422 3022255 Fax : +91 422 2692541
 Email : sales@lmw.co.in / exports@lmw.co.in www.lakshmimach.com

Leadership through Excellence



Scan QR code for more details

Introducing New Range of Rings & Travellers

- UNI QC Hi-Pe
- UNI SX +
- UNI ULTIMA NG



Since 1976