

TechTex India

Sep - Dec 2019 Vol. 13, Issue 2, Rs. 20

Focusing on Technical Textiles, Nonwovens & Composites

BCH Newsline

www.bch.in



*Business, after all, is nothing more
than a bouquet of human relationships*

The Rangwala Group
(1920-2020)



100
Years of...



...Relationships to cherish

...Business that was worth it

...a Journey to remember

Inside the issue

Cover Story		Sector Focus	
	<p>➤ 100 Years of the Rangwala Group (1920-2020) 4 <i>An Enriching Journey...</i></p> <p>➤ Nonwovens & India 6</p>	<p>Industrial Textiles:</p> <p> ➤ Cleanroom Constructs to Boost your Bottom Line 36</p>	
		<p>Protective Textiles:</p> <p> ➤ Standardization of Bullet Resistant Jacket 40</p>	
Government Interface 16			
	<p>➤ Government's Initiatives...</p>		
Special Feature		In Every Issue	
	<p>➤ The Fiber Industry... 18 <i>...Addressing Sustainability</i></p>	<p>➤ Forthcoming Events 23</p>	
	<p>➤ The Launch of PWMAI Preventive Wear Manufacturers' Association of India 20</p>	<p>➤ Glimpses of Leading Industry Events 24</p>	
	<p>➤ EDANA Training Courses 48</p>	<p>➤ Show Preview 26</p>	
		<p>➤ Latest News 28</p>	
		<p>➤ Product in Focus 33</p>	
		<p>➤ Members' Column 45</p>	
ADVERTISERS INDEX			
Geosynthetics Conference 2020:	14	JEC WORLD 2020	35
CASE STUDIES		FILXPO™	38
index™ 20	22	IFAI EXPO	42
SAUERESSIG UNGRICHT Isurface solutions	31	CIDPEX20	44
7th NON WOVEN TECH ASIA 2020	34		

www.bch.in

 BUSINESS CO-ORDINATION HOUSE

If **Technical Textiles, Nonwovens & Composites** are an area of your interest...

Talk to us...

BCH links the industry through...

- Advisory & Consultancy
- Unique Product Displays
- Marketing Solutions
- Tie-ups & Alliances
- Training Workshops
- Publication: TechTex India
- Research & Development
- Informative Website
- Market Studies
- Symposiums



BCH... ...a platform in **INDIA** to 'explore' the 'unexplored'!

For further details contact :

Business Co-ordination House
UGF - 3 & 4, Arunachal, 19 Barakhamba Road,
New Delhi - 110001, India
Tel. +91-11-23328130/ 41520207
F: +91-11-23316008 E-mail: info@bch.in
Website: www.bch.in

If you have a product or service that you want to vend into this escalating global market place of Technical Textiles & Nonwovens, look no further. For the most effective way to show your presence through advertising in the BCH publication TechTex India & website, simply contact us at info@bch.in

From the MD's Desk



Mr. Samir Gupta, MD, BCH

“As India strives to reduce the gap between the urban and the rural, the rich and the poor, the literate and the illiterate, the local and the global, the young and the old, the right and the wrong and the list is endless, we feel happy to be a part of this beautiful but tedious journey that lies ahead.”

It is a matter of pride and gratitude that in 2020 we complete a journey of 100 years of service to the textile industry. The glowing flame ever since, has witnessed different lights and we feel happy to have transitioned along the way.

A family business that started under the family banner of 'Rangwalas' started through a humble beginning in the trading of textile dyes in 1920 through our company named Bakhtawar Mal Ramkishan Das (BR) has seen diversity through the years before the venturing into services as Business Co-ordination House (BCH) which was launched in 2005. I am extremely thankful to all the people who have been a part of this wonderful journey of 100 years.

Looking ahead, as India strives to reduce the gap between the urban and the rural, the rich and the poor, the literate and the illiterate, the local and the global, the young and the old, the right and the wrong and the list is endless, we feel happy to be a part of this beautiful but tedious journey that lies ahead. This journey, will as a result, eventually witness a lot of business growth across all sectors for all who are ready for the challenges and the opportunities.

Even though economic growth in India has scaled down in recent times, this is purely on account of long-term structural reforms and investment policies that have been tailored and crafted to achieve the goal of becoming a \$5 trillion economy by 2025 as set by our prime minister Mr. Narendra Modi and his government. If you look at the last 5 years of India's economy, on an average, India has grown at about 7.5%.

The government is on a spree of changing age old laws and bringing new ones conducive to the business environment of today. It is not an easy task to bring this diverse country to a common thought process which is beneficial to all. With the forex reserves at an all-time high and inching towards the half a trillion USD mark India must be doing something right.

We are constantly endeavouring to feed the need of the industries through our services to the technical textile & nonwovens industry and look forward to a brighter future that lies ahead. Wishing you all a very happy and successful 2020!

Owner
Samir Gupta

Publisher & Printer
Samir Gupta

Editor
Ritika Gupta

Published at:
Business Co-ordination House Pvt. Ltd.
UGF- 3 & 4, Arunachal,
19 Barakhamba Road, New Delhi
Tel: + 91-11- 23328130, 41520207
Fax: + 91-11- 23316008
E-mail: info@bch.in

Printed at:
Lustra Print Process Pvt. Ltd.,
A-84/2, Naraina Industrial Area,
Phase- I, New Delhi- 110028.

Reproduction of any of the content and illustration from this issue is forbidden unless prior written permission is obtained from the publisher.

100 Years of the Rangwala Group (1920-2020)



An Enriching Journey...



Two World Wars, the Great Depression, India's independence struggle before India gained independence in 1947, the licence-permit raj, controls on foreign exchange and expansion, the reforms of the 1990s and the era of technology, disruptions and globalization: very few Indian companies have seen it all, and adapted along the way to do well.

The Rangwala group also has stood the test of times as it celebrates its 100 years of a strong reputation with business relationships to cherish, business activities that were worth it and a journey that is worth remembering. It gives us immense pride and pleasure to share the highlights of this outstanding journey of 100 years.

“Business after all is nothing more than a bouquet of human relationships and as the 'Rangwala' group completes 100 years we would like to express our deepest gratitude to the remarkable people who were a part of this journey as partners, clients, associates, mentors, members, friends and family. ”
The Rangwala Group

BCH belongs to the 'Rangwala' group of companies a name which was established in 1920 by Lala Ramkisan Das Rangwala. The word 'rang' is a hindi word which means 'colour' and hence the family name 'Rangwala' implies to – one who does a business of colours. The group is 100% owned by the Rangwala family and is currently led by Mr. Samir Gupta Rangwala.



Lala Ramkisan
Das Rangwala

The roots of the 'Rangwala' legacy can be traced back to 1910, when Lala Ramkisan Das who was born in a tiny village of Dujana in the state of Haryana in India, moved to Delhi in search of better work opportunities.

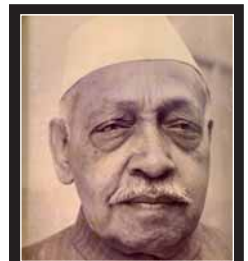
In 1916 he ventured into textile dyes trading. Soon after, in 1920, he started a business of trading of textile dyes in his own company, Bakhtawar Mal Ramkisan Das

(BR) in Khari Baoli, which is even today the main market for wholesale trading in old Delhi. In 1943, he expanded operations of the trading business to Mumbai, and

established another company, Paramount Dyes and Chemicals for trading of textile dyes along with his long-time friend Mr. Kedar Nath Khanna and others. Paramount Dyes and Chemicals which is currently active and headquartered in Mumbai has transitioned over the years into trading of speciality products for the plastics related industry.

As times in India changed, the business transitioned and in 1958, he along with other partners set up the manufacturing of textile dyes and pigments namely Pigments & Dyestuffs Ltd. very close to Mumbai with a technical collaboration from Sanyo Colour Works, Japan. The factory ran for about 20 years before closing down in 1979 due to some unavoidable circumstances in India.

Lala Ramkisan Das was succeeded by his son Lala Dwarka Das Rangwala who joined the business around 1940.



Lala Dwarka Das
Rangwala

In addition to growing the business in the region, Lala Dwarka Das along with other likeminded people gave a lot of impetus and further grew the various philanthropic activities started by his father which included an educational school where currently over 1500 children are studying today, a cowshed which houses over 3500 cows currently and also a 10 day religious play and festival called 'Ramlila' which happens every year before Diwali and is attended by roughly 100,000 people every year.



Mr. Mahabir Pershad
Rangwala

Lala Dwarka Das was succeeded by his son Shri Mahabir Pershad Rangwala who joined the family business in 1964 and he started a new firm – Ramkisan Das Mahabir Pershad (now called RKMP Rangwala).

He further expanded the textile dyes and chemicals business in the northern region. RKMP Rangwala worked for companies like Amar Dye Chem, Indian Dyestuff Industries Ltd. (IDI) and Indian Gum Industries (IGI).

Cover Story

...contd

In 1987, Mr. Samir Gupta Rangwala, son of Mahabir Pershad joined the family business and acquired proficiency in textile dyes and chemicals from his family business under the well-known banner of RKMP Rangwala. He worked pan India in the trading business till 2005 for leading companies like – CHT, CIBA, HUNTSMAN, IGI and IDI. He has also worked in the Textile effects segment of 'Ciba Specialty Chemicals' and 'Huntsman International' for over 5 years as the Head of Business Development and Brand Retail Marketing respectively.



Mr. Samir Gupta
Rangwala, Managing
Director, BCH

But as they say that "Response to change is the first condition for survival in business", thereafter as times in India changed, the business transitioned from trading & manufacturing to finally services. At the turn of the century, the stagnation in the textile trading business and the opportunities in the newer textiles, prompted Mr. Samir to look for futuristic opportunities.

Throughout his career in this industry, he continually established connections and fostered close relationships with textile and allied firms and became well aware of their corporate cultures & needs. He developed his strengths in networking and a contact base which have become the foreground for BCH operations.



Ms. Ritika Gupta
Rangwala, Executive
Director, BCH

In context of India's growing potential for the nonwovens & technical textiles industry, he along with his wife Ms. Ritika Gupta took up the responsibility of boosting this nascent industry in India and launched BCH in 2005. Ritika, who is passionate about taking the industry in India to greater heights strongly feels that the Indian growth story needs to be well tailored for it to be more effective and sustainable.

Today, BCH, is an advisory services company, providing services to clients across the globe. Having serviced clients in over 30 countries, BCH is a single window to India for the global nonwoven & technical textile industry.

As a gateway for Indian and overseas companies, BCH assists in Entry Strategy, Tie-ups and Alliances & also offers Global Sourcing solutions. While holding a rock-solid rapport worldwide with coveted associations, BCH aspires to steer industry players in accomplishing the utmost yield by serving them in all their needs.

In 2016, Samir and Ritika were joined by their son Kanav Gupta Rangwala in the business. Kanav, is currently responsible for business development at BCH and has worked with multinational consulting firms before he joined BCH. He is very optimistic about the future of the nonwovens & technical textile industry and is mainly responsible for growing the strategy consulting business in BCH.



Mr. Kanav Gupta
Rangwala, Business
Development Manager, BCH

2020 marks the first 100 years of the group's services to India's textile industry. It has been a journey of relentless spirit, ambition and strength. More importantly, it has been a journey built on trust and relationships.

Today the 'Rangwala' group enjoys a strong reputé in the industry with the 4th & 5th generations actively building upon the strong goodwill & experience earned through the years. With a strong background in the textile industry and a remarkable experience of ten decades, the group has carved an excellent business network & personal relationships in the global textile industry.

Business after all is nothing more than a bouquet of human relationships and as the 'Rangwala' group completes 100 years they would like to express their deepest gratitude to the remarkable people who were a part of their journey as partners, clients, associates, mentors, members, friends and family. ■



Ms. Aastha Gupta, Ms. Ritika Gupta
& Mr. Kanav Gupta



Mr. Samir Gupta & Ms. Ritika Gupta



Ms. Ritika Gupta, Mr. Samir Gupta &
Mr. Kanav Gupta

“We look forward to enriching our journey even further by working with Integrity and bringing synergy and value to all the efforts we make. Thankyou all for being a part.”
The Rangwala Group

Nonwovens & India



The Nonwovens market in India, which has grown at a CAGR of 12% in the last 5 years, is now turning out to be a destination of much interest for all industry players across the globe. Also, the local Indian companies are showing a lot of interest and many have ventured into the converting of nonwoven roll goods. India and China have similar demographics but still the Indian consumption of nonwovens stands at 1/10th of China market owing to a very low per capita consumption. This scenario is fast changing for the disposable and durable categories of nonwovens as India is witnessing the highest growth in the world. Economic development is leading to increased income lifestyle changes amongst the country's huge population which is the second largest in the world.



Mr. Samir Gupta
Managing Director
BCH

“We are at the cusp of exponential growth of nonwovens in India which will be witnessed in this coming decade. We can see more manufacturing setting in to complement the lifestyle changes that are taking place in the Indian consumers. One cannot overlook the fact that India and China are similar populations in number whilst there is a huge gap in the nonwoven consumption and production of both countries.”

Even though high-tech nonwovens are mostly imported from various countries, domestic & International players are fast becoming active to set up nonwoven production bases in India. In many cases the customers of end products are pulling their suppliers of nonwovens to set up bases close to them to economize on the basis of nearness owing to the huge potential that is envisaged in the Indian market.

So many nonwovens projects are already in the pipeline getting ready to start production within 2020 and year after that. **Global Nonwovens** is India's leading manufacturer of PP (Polypropylene) based 'Spunmelt' & 'Spunbond' Nonwoven Fabrics. Backed by a leading Indian business conglomerate, they are India's first company to install a Multi Beam (SSMMXS), 4.2 meters width, composite Spunmelt production facility and are now in the expansion mode.

Nan Liu Enterprise, a Taiwanese nonwovens producer, has begun to construct a production site in India. Nan Liu plant in India will be set up in a phase wise manner. In phase 1, Nan Liu will manufacture Airthrough nonwovens and the production will start in early 2020. In the next phase, Nan Liu India will manufacture wet/dry wipes, facial sheet masks and spunlace fabrics. Nan Liu India products will primarily serve the Indian hygiene market.

Toray Industries, a leading Japanese company, has acquired a business plot, about 350,000 m² in size, in Sri City, Andhra Pradesh, India, for a new base for its local subsidiary Toray Industries (India) Private Limited. As a first step, Toray decided to establish a new base for its polypropylene (PP) spun bond for hygiene materials business, whose market is expected to expand along with the increasing demand for disposable diapers in India.

Fujian-based materials maker **Xiamen Yanjan New Material Co.** plans to invest to set up an India unit and speed up the development of its overseas markets. The Chinese firm will set up the new company in Bhopal, the capital of India's central state of Madhya Pradesh. The new division will focus on making and selling polyethylene protective film and hot air through nonwovens.

Techfab India & Suntech Geotextile, two reputed manufacturers and suppliers of Geosynthetic products are also expanding their needle punch nonwoven production in India. There are many more who are thinking, deciding and exploring.

In this scenario, there is a need for knowledge sharing, awareness and education amongst many existing and potential manufacturers. To address the needs of the industry pertaining to manufacturing and the best practices to be followed - BCH organized their 2nd edition of the BCH flagship nonwovens event '**How to make the 'Right' Nonwovens**'. Also the **ANFA Nonwovens Conference** was organized in 2019 with a vision to grow the Asian nonwovens market with a focus on India. **Both these conferences proved to be ideal platforms for generating a positive growth and are further covered in this article. BCH will also be organizing EDANA training courses in April 2020 to address the need of education of various stake holders.**

How to Make the 'Right' Nonwovens?

The 2nd edition of the BCH flagship nonwoven event 'How to make the 'Right' Nonwovens'? 2019, was successfully held on 4-5 September at Roseate House, Aerocity New Delhi, India. After the success of the first edition of 'How to make the 'Right' Nonwovens'? in 2012, this was the second edition of mega conference & exhibition on nonwovens. This event was attended by nonwoven roll good manufacturers (new and existing) majorly of the spunmelt and the spunlace nonwoven technologies. This event also served as a good platform for networking and knowledge sharing for all stakeholders of the Indian nonwoven industry.

The theme of the conference was composed of 2 Keynote Speeches and the sessions included 12 speeches on Standards - Product Stewardship, Markets, Technology & Raw Material. Many questions and answers were enthusiastically exchanged among the speakers and the participants during the conference. The two-day conference welcomed 107 participants from 66 companies across the nonwoven supply chain majorly of the spunmelt and the spunlace nonwoven technologies.

Conference Proceedings



Mr. Silverio Baranzano
CEO
Fitesa

Keynote Speaker Day 1

On day one, the opening keynote presentation made by Mr. Silverio Baranzano, CEO of Fitesa on **'Quality and Innovation in Spunmelt Nonwovens'**. The second day opened with a keynote speech from Mr. Harsha V Reddy, Joint Vice President-Head of Global Sustainability of Indorama Ventures Public Co. Ltd. on **'Sustainability-Critical to Success'**. Other sessions as detailed further featured expert insights on market trends and presentations on the latest innovations and technologies pertaining to the nonwovens industry.



Mr. Harsha V Reddy
Joint VP-Head of Global Sustainability
Indorama Ventures Public Co. Ltd.

Keynote Speaker Day 2



Mr. Pierre Wiertz
General Manager
EDANA



Ms. Ritika Gupta
Executive Director
Business Co-ordination House
(BCH)

Session 1

This session was on Standards-Product Stewardship and Markets. Mr. Pierre Wiertz from EDANA presented the **test methods, standards and product stewardship for nonwovens** followed by Ms. Ritika Gupta from BCH, who spoke on the **Indian market scenario of nonwovens in India**.

Session 2

This session was on Technology and Raw Materials. The succeeding session was begun by Mr. Falk Roesner from Reifenhäuser Reicofil GmbH & Co. KG, who conferred about **what are the "right" nonwovens –different answers for different applications**. His presentation was followed by a speech by Mr. André Michalon from ANDRITZ on the **latest development of nonwovens for hygiene applications**.

Mr. Koichi Nishimura from Idemitsu Kosan Co. Ltd. discussed about **"light" nonwovens with keeping properties by fine fiber**.

Thereafter Ms. Sunisa Manchanda from PTT MCC Biochem spoke about the **BioPBS™ Polymer used for making environmental friendly nonwovens**.



Mr. Falk Roesner
Sales Manager
Reifenhäuser Reicofil
GmbH & Co. KG



Mr. André Michalon
Sales Director
ANDRITZ



Mr. Koichi Nishimura
GM, Performance Materials
Laboratories
Idemitsu Kosan Co. Ltd.



Ms. Sunisa Manchanda
Senior Technical Service Engineer
PTT MCC Biochem Co., Ltd.

Cover Story

contd...



Mr. Falk Roesner
Sales Manager
Reifenhäuser Reicofil GmbH
& Co. KG



Mr. Bernd Nordhus-Westarp
VP Sales Marketing Applications
Eurasia
Albany International



Mr. Marc Wolpers
Sales Director
Trützschler Nonwovens GmbH



Mr. Achim Von Wirth, Head of Sales
Nonwoven Industry & **Mr. Rüdiger Meyer**, Head of Sales Nickel Screens &
Drums Hygiene Industry
Saueressig Ungricht | surface solutions



Mr. Guido Maass
Global Market Manager Nonwovens
ISRA Surface Vision GmbH



Mr. Claudio Bisogni, Head of Sales
- Flexo Printing & **Mr. Simone Bertuccelli**, Head of Engineering
A.Celli Nonwovens SpA

Session 3

The last session was on Technology. The 2nd day of the symposium started with great enthusiasm.

Mr. Falk Roesner from Reifenhäuser Reicofil GmbH & Co. KG told the audience about the **latest developments and how they can influence the market**. Mr. Bernd Nordhus-Westarp from Albany International discussed about **how Albany International process belts contribute in making premium nonwovens**. Mr. Marc Wolpers from Trützschler Nonwovens GmbH gave a brief about **drying of spunmelt nonwovens and cotton wipes- A chance for India**.

His presentation was followed by a speech jointly delivered by Mr. Achim Von Wirth & Mr. Rüdiger Meyer from Saueressig Ungricht | surface solutions on the **right choice of engraving designs to make the right nonwovens**.

Thereafter Mr. Guido Maass from ISRA Surface Vision discussed about **increasing quality, improving production efficiency and how Optical inspection of spunbond and nonwovens is a must have to fulfill today's quality demands**.

Mr. Claudio Bisogni and Mr. Simone Bertuccelli from A.Celli Nonwovens SpA told the audience **how to get the best from your equipment through innovative winding & slitting technology for nonwovens**.

Panel Discussion



The Panel discussion amongst the speakers and the audience was mainly to discuss the future trends of the nonwoven industry of India. All were enthusiastic enough to wear their thinking caps and discuss the future of this exciting industry in India from 2020 and beyond.

Many speculative ideas were put forward regarding how the products & processes would evolve in coming times.



Cover Story

contd...

Table Top Exhibition

The event also included a successful table-top display of the latest technologies, raw materials and product offerings and casually network amongst the gathering and this area was kept extremely busy through out the long breaks designed for such interactions.



Networking

The breaks and the cocktail evening offered a great opportunity for one to one exchange of ideas for further strengthening of decisions and to generate a positive feeling for existing and new investment in this field.



"I am very please to attend the BCH event in New Delhi. Here I have met very interesting people. I have learned a lot of things about the Indian market, the driving segments are evolving significantly nowadays. I have the chance to interact with several of the competitors that work in this industry and I feel blessed to be here for the first time in New Delhi so it has been a great experience. Congratulations to BCH Team for the great event they have put together".-Mr. Silverio Baranzano, CEO, Fitesa

"I would like to thank BCH for organizing an excellent nonwoven technology conference. I was amazed about the audience participated. I was meeting a lot of old friends with whom we have business relations for long time here in India & I was also pleased to see couple of interested new participants of growing industry of this country. I am convinced that there is a bright future in this country for nonwovens & particularly for hygiene and medical applications. -Mr. Bernd Nordhus-Westarp, VP Sales Marketing Applications Eurasia, Albany International

ANFA Nonwovens Conference 2019

ANFA Nonwovens Conference 2019, the Asia's preeminent event for nonwovens was successfully held on 7-8 November 2019 at Shangri-La's - Eros Hotel, New Delhi, India and was organized by the **Asia Nonwoven Fabrics Association (ANFA) & Business Co-ordination House (BCH) - ANFA India Liaison Office** in order to promote the further growth of Asian nonwovens industry. The conference was held in India for the first time after being held respectively in 2005 (Taiwan), 2009 (Taiwan), 2014 (Japan) and 2016 (Taiwan).

The event was supported by **ANNA** (All Nippon Nonwovens Association), **CNTA** (China Nonwovens Technical Association), **EDANA** (International Association Serving the Nonwovens and Related Industries), **HKNA** (Hong Kong Nonwovens Association), **INDA** (Association of the Nonwoven Fabrics Industry), **INWA** (Indonesian Nonwoven Association), **KNIC** (Korea Nonwoven Industry Cooperative), and **TNFIA** (Taiwan Nonwoven Fabrics Industry Association). The conference was also supported by leading nonwoven related companies who participated as sponsors. **Birla Cellulose (Aditya Birla Group)**, **Indorama Ventures Public Co. Ltd.** were the Platinum Sponsors, **Autotech Nonwovens Pvt. Ltd.**, **Ktex Nonwovens Pvt. Ltd.** were the Gold Sponsors and **Nan Liu Enterprise Co., Ltd.**, **Obeetee Textiles Pvt. Ltd.**, **P.A.R.K. Industries Pvt. Ltd.** were the Silver Sponsors.

The two days conference welcomed **180 participants** (92 ANFA members and 88 Non-members) from **110 companies** from across the nonwoven supply chain of mostly Asia.



ANFA Nonwovens Conference 2019

An Excursion Trip and ANFA Board Meeting took place a day before the conference. Approximately, 60 overseas participants had an amazing time during different excursions such as sightseeing to Taj Mahal in Agra, Golf Game & visit to IIT Delhi & shopping.

The ANFA Board Meeting was illuminating and was attended by ANFA board of directors, ANFA Regional Office Heads & ANFA Members.

The theme of the conference was composed of 3 Keynote Speeches and the sessions included 16 speeches on Market Trends, Automotive & Medical Textiles, Machinery & Raw Material, Filtration, Sustainability & Hygiene and there were in all 6 Product Presentations. Many questions and answers were enthusiastically exchanged among the speakers and the participants during the conference.

The exhibition was held in the same location, with 11 exhibitors. Active information exchanges were carried out among the exhibitors and the participants as well, and many exhibitors have highly evaluated that they were happy to be a part as they enjoyed the visibility to their potential customers or participants.

There were ample networking sessions during tea and lunch breaks and the gala reception dinner on the 7th evening.



ANFA Board Meeting

Conference Proceedings



Mr. Katsuo Matsumoto
Chief Representative
Japan International
Cooperation Agency (JICA)

Keynote Speaker Day 1



Mr. Sunil Kakkar
Executive Director-Supply Chain
Maruti Suzuki India

Keynote Speaker Day 1



Mr. Amit Bhatia
General Manager-BD & Marketing
Toshiba Water Solutions

Keynote Speaker Day 2

On day one the keynote presentation was made by Mr. Katsuo Matsumoto, Chief Representative, Japan International Cooperation Agency (JICA), on '**JICA's activities in India on how they are supporting India's development of nonwovens**'. The second keynote speech of the day had Mr. Sunil Kakkar, Executive Director-Supply Chain, Maruti Suzuki India speak on '**Automotive market in India-current scenario and future trends**'. The second day opened with a keynote speech from Mr. Amit Bhatia, General Manager-BD & Marketing, Toshiba Water Solutions Pvt. Ltd. on '**Water and wastewater treatment market**'.



Dr. Hiroaki Kanai
ANFA Chairman & President
Kanai Juyo Kogyo Co.



Mr. Samir Gupta
ANFA Director &
Managing Director, BCH



Mr. Jacques Prigneaux
Market Analysis & Economic
Affairs Director, EDANA

Session 1

The 1st session was on 'Market Trends' during which Dr. Hiroaki Kanai from Kanai Juyo Kogyo Co. told the audience about the **recent trends of the Asian nonwovens market**. Mr. Samir Gupta from BCH spoke about **recent trends of the Indian nonwovens market** and was followed by Mr. Jacques Prigneaux from EDANA who discussed about **recent trends of the Greater European nonwovens market**.

Session 2



Ms. Li Suying
Professor
Nantong University



Dr. Sourabh Ghosh
Professor, Department of Textile
Technology, IIT Delhi



Mr. Shailesh Agrawal, VP Sales &
Marketing, Indorama Ventures &
Mr. Sanjay Bhayani, Director India
Operations, AVGOL

This session was on Automotives and Medical Textiles and was begun by Ms. Li Suying from Nantong University, who conferred about **an excellent implant for tissue engineering-nanofiber mat of biodegradable materials**. After her Dr. Sourabh Ghosh from Indian Institute of Technology(IIT) acquainted the audience with **tissue engineering using electrospun and nonwoven matrix**. Thereafter Mr. Shailesh Agrawal from Indorama Ventures Public Co. Ltd. and Mr. Sanjay Bhayani from Avgol India Pvt. Ltd. discussed about the **current trends and a perspective on the future of fibers and nonwovens in automotive applications**.

Cover Story

contd...



Mr. Wataru Oha
Sales/Textile Machinery Products
Kanai Juyo Kogyo



Mr. Yang Chang Hui
GM, Shantou SanFai
Nonwoven Machinery Factory



Mr. Adam Huang, Vice GM
Dalian Hualun Nonwoven
Machinery Engineering

Session 3



Mr. Zhang Penlong
GM, Hangzhou Yujie Chemical

This session was on Machinery and Raw Materials. Mr. Wataru Oha from Kanai Juyo Kogyo Co. Ltd. discussed about the **easy maintenance and long life metallic wires for carding machines for nonwovens**. Mr. Yang Chang Hui from Shantou SanFai Nonwoven Machinery Factory Ltd. told the audience about the **high stroke frequency needle punching machine**. His speech was followed by Mr. Adam Huang from Dalian Hualun Nonwoven Machinery Engineering Co. Ltd. who conferred about the **technologies about spunlaced nonwovens with Bi-component microfibers and calandered nonwovens with PLA Bi-components fibers**. Thereafter Mr. Zhang Penlong from Hangzhou Yujie Chemical gave a brief about the **application of soften masterbatch in spunbond nonwoven materials**.

Session 4



Mr. Toshihiko Tokumaru
Group Coordinator of Procon and
P84 Group, Toyobo Co. Ltd.



Mr. Toshiya Saito
Director, Sales Department
Tapyrus Co. Ltd.



Mr. Teh-Ming Liang, Director
of Water Tech. Research Divison,
Material & Chemical Engineering
Research Labs, **ITRI**

The 2nd day started with the session on Filtration. Mr. Toshihiko Tokumaru from Toyobo Co. Ltd. spoke about **PPS trilobal fiber for bag filter application**. Mr. Toshiya Saito from Tapyrus Co. Ltd. discussed about **the wide spectrum of melt-blown nonwovens and filtration applications**. Mr. Teh-Ming Liang from Industrial Technology Research Institute told the audience about **innovative applications of nonwoven textiles on industrial waste water biological treatment**.



Ms. Li Jo Hwa, Chief of
Sustainability & Certification
Section, Department of Testing
and Certification, **TTRI**



Mr. Rahul Bansal, GM-Global
Sales & Marketing (Nonwoven)
Birla Cellulose
(Aditya Birla Group)



Mr. Taku Kojima
Manager
JNC Corporation

Session 5

The last session was on Sustainability and Hygiene. Ms. Li Jo Hwa from Taiwan Textile Research Institute told the audience about **how nonwovens is the one of key of circular economy for the transformation in textile sectors**. She was followed by a presentation by Mr. Rahul Bansal from Birla Cellulose (Aditya Birla Group), who spoke on **Bio based solutions for environmental challenge-developing viscose topsheet for fem hygiene product**. Thereafter, Mr. Taku Kojima from JNC Corporation gave a brief about **bi-component fibers and nonwovens for hygiene applications; technology and market trend in Asia**.

Cover Story

contd...

Product Presentation



Mr. Amit Banga
Managing Director
SB Packagings Pvt. Ltd.



Mr. Shailesh Agrawal, VP Sales & Marketing, **Indorama Ventures**
& **Mr. Sanjay Bhayani**, Director India Operations, **AVGOL**



Mr. Nimesh Sanghrajka
Director & **Mr. Nikhil Vaswani**
Head of Sales, **KTEX Nonwovens**



Mr. Jerry Fan, Business Development Director, APAC, **Mogul Tekstil Sanayi Ve Ticaret A.S.**



Mr. Rahul Bansal, GM
- Global Sales & Marketing
(Nonwoven), **Birla Cellulose**
(Aditya Birla Group)



Mr. Socrates Ng
Managing Director
Fairtech Holding Co. Ltd.

6 companies spoke about their innovative products during the "Product Presentation" that took place at the end of the conference.

- **"Innovative Packaging Solutions for Hygiene Packaging"**
Mr. Amit Banga, Managing Director, SB Packagings Pvt. Ltd., India
- **"Fibers and Spunmelt Nonwoven Solutions from Indorama Ventures"**
Mr. Shailesh Agrawal, Vice President Sales & Marketing, Indorama Ventures Public Co. Ltd., Thailand & Mr. Sanjay Bhayani, Director India Operations, AVGOL India Pvt. Ltd., India
- **"Partners in Growth"**
Mr. Nimesh Sanghrajka, Director & Mr. Nikhil Vaswani, Head of Sales, KTEX Nonwovens Pvt. Ltd., India
- **"Madaline™ - Innovative Fabric & Applications"**
Mr. Jerry Fan, Business Development Director, APAC, Mogul Tekstil Sanayi Ve Ticaret A.S., Turkey
- **"Purocel EcoDry & Purocel AntiBac: Innovative Fibres by Birla Purocel"**
Mr. Rahul Bansal, General Manager – Global Sales & Marketing (Nonwoven), Birla Cellulose (Aditya Birla Group), India
- **"Portable Water Filter"**
Mr. Socrates Ng, Managing Director, Fairtech Holding Co. Ltd., Hong Kong

The conference ended with an inspiring speech by Mr. Nihar Ranjan Dash, Joint Secretary, Ministry of Textiles, Government of India.

He acquainted the audience with the endless opportunities in the Indian market. He also encouraged and motivated them to participate in the growing technical textile and nonwovens industry of India by taking the benefits of government policies.



Dr. Hiroaki Kanai, ANFA Chairman welcoming **Mr. Nihar Ranjan Dash**, Joint Secretary, Ministry of Textiles, Government of India



"I am so pleased and honoured to have our first ANFA Conference in India. We have good speakers, good members & good organization committee. India is a very very important market in the near future & so it is very important to have the conference over here".

Dr. Hiroaki Kanai, ANFA Chairman & President, Kanai Juyo Kogyo Co.

"We have the booth here at the ANFA Nonwovens Conference. This is the 3rd time we are exhibiting for BCH. They always do a good job because they get the right decision makers not just from the nonwoven industry but also from the user industry. The conference is well organized. It gives the mix of both the technical nonwovens based as well as the user space. It is always of tremendous value for us to be associated with BCH & the programme like ANFA. We believe that ANFA as an association is also very helpful to attract the right customers & meet companies from other region." **Mr. Ankit Desai**, Director, Autotech Nonwovens Pvt. Ltd.

Geosynthetics Conference 2020 CASE STUDIES

March 8–10, 2020 | North Charleston, SC

*Sharing Practical
Applications*

A NEW Geosynthetics Experience!

The inaugural Geosynthetics Conference: CASE STUDIES is a must-attend event for geotechnical practitioners, designers, regulators, contractors and installers. The conference is focused on practical education, featuring 30-minute case studies that dive deep into the many unique uses of geosynthetics and half-day short courses included with all full and one-day registrations. Register now to experience this brand-new format!

Why should you attend?

EXPAND your knowledge

EXAMINE in-depth case studies

EARN up to 17 pdh(s)

CONNECT with industry colleagues

Register Today!

Visit GeosyntheticsConference.com/register
to secure your spot.



Geosynthetics
Conference: **CASE STUDIES**

March 8–10, 2020 | North Charleston, SC USA
GeosyntheticsConference.com

Cover Story

contd...

Exhibition

The tabletop exhibition which was held in a separate hall offered a unique business opportunity for participants to see displays of the latest technologies, raw materials and product offerings and casually network amongst the gathering.

11 companies displayed their products to a captive audience and had the opportunity to discuss about their product offerings. The audience was overwhelmed to witness the variety that the world has to offer to the Indian market.



Indian Cultural Programme & Networking



The ANFA Reception was magnificently held on the evening of the first day of the conference. The Indian Cultural Programme showcased the Indian folk dances and the diversification of the Indian culture, and was followed by relaxing cocktail and dinner networking evening.



The two-day conference had a very relaxed atmosphere where the delegates had a very interactive networking during the lunches, dinner & the cocktail party at the Shangri-La's- Eros Hotel, New Delhi. The breaks and the cocktail evening offered a great opportunity for one two one relaxed and informal exchange of ideas for further strengthening of decisions and to generate a positive feeling for existing and new investments in this field. ■





Government's Initiatives...



Technical Textiles Industry in India

Technical Textiles



Technical Textiles is the harbinger of many new age applications covering almost all walks of life & having immense potential for bringing in higher level of productivity, efficiency, cost economics & offering innovative solutions to many engineering & general applications.

In addition to their commercial use, technical textiles have been identified for mandatory use across various important missions, programmes & schemes of the Government of India. Some of these are National Health Mission, Jal Jivan Mission, National Horticulture Mission & infrastructure development of highways, railways & ports. In order to boost a rapid growth of the technical textile segment in the country, the government has taken following major initiatives:

- 207 technical textiles items have been brought under separate head in the Harmonised System of Nomenclature (HSN) code under the Foreign Trade Policy.
- With a view to derive the benefits of technical textiles in various fields of applications, currently 92 application areas have been identified for mandatory use across 10 Central Ministries/Departments. So far, mandatory use notifications have been issued for 68 applications.
- Bureau of Indian Standards (BIS) has developed standards for 348 technical textiles products.
- On request from the Industry, Ministry of Textiles has included 6 additional courses for technical textiles in its Skill Development Programme called Samarth.
- The work of conducting fresh baseline survey on technical textiles sector has been given to IIT Delhi.

In terms of the projections of the last baseline survey on technical textiles submitted in 2015, the market size in India for the year 2017-18 is projected as Rs 1,16,217 crore. Although, there is no projection in the last baseline study with regard to the projections for the 2020-21, taking into account the current trend of growth & various initiatives of the government, domestic market size of the technical textiles is expected to cross Rs 2 lakh crores by the year 2020-21.

New Policy May Make Technical Textiles Mandatory in Defence, Agri

The government may make the use of anti-hail nets to protect crops, chemical-protection suits for defence, and drapes, gowns, sanitary napkins and implants for medical use mandatory as it seeks to develop the potential of technical textiles and facilitate their public procurement.

A comprehensive policy on technical textiles is being prepared to make their use mandatory in certain sectors, provide financial support to promote domestic manufacturing and set standards to make India a production hub for them. Technical textiles are meant for non-aesthetic purposes, where function is the primary criterion.

On The Anvil

- **Upcoming Policy** aims local manufacturing, public procurement
- **Fiscal Support** likely in policy

Strategy to set standards to make India technical textiles hub

- **Mandatory Usage** of technical textiles in defence ,agri,medical

According to one official, who spoke on condition of anonymity, the Bureau of Indian Standards has been advised to develop world-class norms across the 12 segments of technical textiles on priority as the government wants to push domestic production.

Exports of Textile & Apparel Sector

India's exports of textile and apparel sector (including handicrafts) have increased from USD 39.3 billion in 2017-18 to USD 40.4 billion in 2018- 19.



India faces competition from countries like Vietnam, Bangladesh and Sri Lanka which enjoy duty free access to key markets. Apparel exports from competing countries enjoy zero/preferential access to European Union whereas India faces a duty disadvantage. Besides Bangladesh and Vietnam have a large and productive labour force.

Government Interface

contd...

Stakeholders Suggestions for New Textiles Policy 2020

The Ministry of Textiles is in the process of formulating a New Textiles Policy 2020 with a vision to develop a competitive textile sector which is modern, sustainable and inclusive with special focus on manufacture of apparel and garment, technical textiles, man-made fibre products and exports while maintaining pre-eminent position in handicrafts and handlooms sectors.

The Ministry of Textiles is requesting substantive inputs and suggestions from all stakeholders including individuals and associations on various topics like wool, cotton, silk, jute, man-made fibre, handloom, handicraft, powerloom, infrastructure, investment, apparel, exports, branding and quality control, technical textiles, human resource, technology and machinery up-gradation to take forward various sub sectors of textiles Industry to a level where production, exports and employment grows at faster pace.

The entire effort is being made to realize the Prime Minister's vision of "Make in India" for the country and for identifying one strong product with export potential from every district and cluster.

Sale of BS -VI Norm Vehicles



The Government, vide G.S.R. 889(E), dated 16.09.2016 has mandated BS-VI mass emission standard for vehicles throughout the country from April 1, 2020 to curb pollution across the country.

The Ministry of Road Transport and Highways, vide GSR 178 (E) dated 20th February, 2018 had notified that new motor vehicles conforming to Emission Standard Bharat Stage-IV manufactured before the 1st April, 2020 shall not be registered after the 30th June, 2020 & the new motor vehicles of categories M and N conforming to Emission Standard Bharat Stage-IV manufactured before the 1st April, 2020 and sold in the form of drive away chassis shall not be registered after the 30th September, 2020. However, the Hon'ble Supreme Court vide its order dated 24th October, 2018 has directed that no new motor vehicle conforming to the emission standard Bharat Stage-IV shall be sold or registered in the entire country with effect from 01.04.2020

This information was given by the Union Minister for Road Transport and Highways Shri Nitin Gadkari in a written reply in Rajya Sabha.

SIAM Welcomes Guidelines for setting-up an Authorised Vehicle Scrapping Facility

Society of Indian Automobile Manufacturers (SIAM) welcomed the draft guidelines released by the Ministry of Road Transport & Highways (MoRTH) for setting-up of Authorised Vehicle Scrapping Facility (AVSF) in the country.

Mr. Rajan Wadhwa, President, SIAM said, "The automobile industry wholeheartedly supports the vehicle scrapping initiative of Government of India. The draft guidelines will help in establishing organised vehicle scrapping facilities in the country and will lead to increase in the latent demand for end-of-life vehicles available for scrapping. Such facilities will operate in an environmentally friendly manner having essential infrastructure and necessary compliances/approvals from government departments. Vehicle scrapping initiative of the government will not only help in removing old and polluting vehicles from roads, but will also increase the demand for new vehicles having better emission technology, meeting superior safety standards and at the same time lead to savings of fuel, foreign exchange, raw material, etc."



Mr. Rajan Wadhwa,
President, SIAM

Automobile industry keenly awaits an incentive based vehicle scrapping policy also from the government, which will help fleet modernisation on a regular basis.

EV Policy for Delhi



Mr. Rajesh Menon,
Director General, SIAM

"We would like to sincerely congratulate the Delhi Govt. for announcing a very comprehensive EV Policy which should encourage consumers to adopt EVs in the State of Delhi. Some of the welcome announcements in the policy include measures which would make electric vehicles affordable and acceptable. These include purchase incentives, interest subvention, scrapping incentive, waiver on road tax, waiver on registration and parking fees and measures to push charging infrastructure. These are in line with the recommendations of the Society of Indian Automobile Manufacturers (SIAM)" said Mr. Rajesh Menon, Director General, SIAM. ■

The Fibre Industry... ...Addressing Sustainability



"Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs." - Brundtland Commission

The Ecosystem sustains itself on the balance maintained in the eco cycle. The harmful impact of human activities on the environment along with the depletion of natural resources is creating a total imbalance in the natural phenomenon thus impacting the eco cycle negatively and pushing nature to change its course towards a very destructive future.

Almost everywhere in the world and in all industries, the sustainability movement has been manifested. Environmental issues are playing an increasingly important role in the textile industry too, both from the point of view of government regulations and consumer expectations. In this context, it has to be mentioned that the textile industry is one of the biggest polluters.

Since raw materials form the basis of the textile industry's value chain, it goes without saying that the choice for sustainable raw materials is a necessity in order to create and maintain a sustainable supply chain. Fibres are a backbone of the textile industry's value chain and sustainable fibres provide a base to the course of sustainable textiles. This article highlights some of the initiatives taken by some leading fibre producers to produce sustainable fibres.

Braskem Develops Polypropylene Microfiber Made from Disposable Cups



Braskem, the largest petrochemical company in the Americas & the world's leading biopolymer producer, continues to seek more innovative & sustainable solutions that use plastics to leverage the Circular Economy in the value chain. One of the latest developments is a polypropylene (PP) microfiber made from disposable cups with applications in the textile industry.

To confirm the technical & economic feasibility of this renewable production process on an industrial scale, Braskem has partnered with textile companies such as Profil, the company responsible for producing the yarns and a Braskem client, & EcoSimple. The company also signed a partnership with the brand PatBO to use the yarns and fabric made from the recycled-content PP microfiber to create beachwear apparel. The research conducted by Braskem's Recycling team has enabled the development of a solution that maintains the same properties as fabric made from virgin PP, such as lightweight, resistance to wrinkles & pilling, increased durability, fast drying, dispersion of transpiration,

washing ease & ecological dying (the dye is applied in the yarning process, which saves water).

The evolution in the polypropylene's formulation & Braskem's efforts to engage the textile industry in even more sustainable production methods are further reinforced by Lifecycle Assessments (LCA), environmental impact indicators calculated by the company to ensure that the new solutions are actually sustainable. LCAs take into consideration all phases of the production process, from the extraction of raw materials to delivery of the yarn for weaving, as well as factors such as global warming and the consumption of water and resources, with data quantified in accordance with the standard ISO 14044. In the case of PP made from recycled material, the environmental impact indicator is 45% lower than other alternatives used in synthetic fabrics.

Indorama Ventures Gives Global Commitment to Eliminating Plastic Pollution

Indorama Ventures Public Company Limited (IVL), a global chemical producer, has announced its commitment as part of the New Plastics Economy to help create a world where plastic never becomes waste. The company is now accelerating its efforts in support of a very ambitious goal to increase recycled content volumes by at least 750,000 tonnes, while also recently pledging US\$ 1.5 billion towards achieving this target by 2025. Indorama Ventures is among 400 organizations that committed to eliminate problematic plastic packaging and increase the use of recycled plastic in packaging. The New Plastics Economy Global Commitment calls on companies & governments to innovate solutions enabling plastic to be 100% reusable, recyclable or compostable.



Indorama Ventures announced a joint venture with Loop Industries aimed at commercializing their chemical recycling technology for sustainable PET packaging resin and Polyester fibers. In March 2019, IVL commenced commercial production and marketing of 100% rPET pellets made from post-consumer recycled PET bottles in Europe.

Toray Announces "&+" Fiber Commercial Brand to Underpin Sustainability Commitment



Toray Industries, Inc., announced its new commercial brand, called "&+" to underpin the start of full-fledged efforts to use fibers made by recycling the used PET bottles. The purpose is to contribute further to sustainable social progress, under promotional slogan of "Together, We Are the New Green".

Toray is aiming to leverage this brand to foster PET bottle recycling and to help materialize a closed loop economy by offering high-value-added fiber derived from PET

Special Feature

contd...

bottles. It will thereby serve a shared interest among bottle collectors, manufacturers, and consumers in protecting the environment.

Toray will position “&+” as the symbol of a growing public desire for PET bottle recycling activity while doing the marketing to consumers through retailers not Japan but worldwide. It is also targeting to expand the use of high-value-added fibers from PET waste globally.

In the leadup to creating the brand, Toray developed techniques to manufacture an array of high-value-added, exceptionally white plastic bottle-derived fibers that incorporate traceability technology.

Birla Cellulose Tops in its Commitment to Sustainable Sourcing

Birla Cellulose, of USD 44.3 Billion Aditya Birla Group, one of the global leaders in Man-Made Cellulosic Fibre (MMCF), has emerged as the top company for eliminating endangered forests from its supply chain in the environmental non-profit Canopy's 2019 Hot Button Ranking & Report.



Birla Cellulose
Fibres from nature

Canopy's Hot Button Report evaluates the global producers of viscose and ranks them on the sustainability aspects of their raw material sourcing practices. The criteria of ranking include protection of ancient and endangered forests, innovations in alternate raw material developments and supporting global forest conservation solutions. The viscose producers are inspected and awarded 'green buttons' based on parameters such as completion of CanopyStyle audits, contributions to forest conservation, using new alternative fibres, wood sourcing that promotes sustainable forestry, social accountability related to forestry, transparency and traceability.

Birla Cellulose has developed innovative technologies to recycle pre-consumer wastes that has immensely benefited actively taken part in the movement of using alternate means of raw material for the generation of its products and has been immensely beneficial in successfully catapulting the company to the highest spot in the market. Birla Cellulose utilizes an extremely efficient product traceability system which makes it possible to trace the source of fibre across its value chain, this can help consumer select a more sustainable fabric.

Lenzing Group to Become the First Carbon Neutral Fiber Producer in the World



Innovative by nature

The Lenzing Group, a recognized leader in climate action, member of the CEO Climate Leaders Group of the World Economic Forum and a signatory to the United Nations Fashion Industry Charter for Climate Action, will drastically reduce its CO₂ footprint. The Lenzing Group will invest EUR 100 mn over the coming years to reduce carbon emissions both inside its operational boundaries (scope 1+2) and in its supply chain (scope 3). Due to its ambitious CO₂ emission reduction strategy, the Lenzing Group will further contribute towards helping customers to transition their business to a lower CO₂ base.

A first milestone is set for 2030, when Lenzing plans to reduce CO₂ emissions per ton of product by almost 50 percent (scope 1+2 and 3) compared to a 2017 baseline. The total CO₂ reduction of all the planned initiatives will yield 1.3 million tons (Mt).

A series of measures in production as well as new innovations and adaptations to new technologies will help achieve these ambitious targets. A major contribution will also come from investments in the production of highly eco-responsible products such as TENCEL™ branded lyocell fibers. On top of that, the drastic improvement of energy efficiency & an increase in the share of renewable energy in the energy mix will deliver the targets set.

Unifi Announces New REPREEVE® Our Ocean™ Product Offering



Unifi, Inc., makers of REPREEVE®, the leading recycled fiber, has launched a new sustainable

product that enables customers and consumers to play a role in solving the ever-growing problem of ocean plastic. To deal with the root cause of ocean plastic, REPREEVE® Our Ocean™ fiber is made from bottles collected within 50 kilometers of coastlines in countries or areas that lack formal waste or recycling systems.

Each year, at least 8.8 million tons of plastics make their way into the ocean, which is the equivalent of dumping the contents of one garbage truck into the ocean every minute. In addition, at least 80 percent of plastic flows into the oceans from land, and at current rates, there will be more plastic by weight than fish by 2050.

Beaulieu Fibres International Launches Ultrabond, the Cost-effective Solution for Fully Recyclable, Latex-free, Sustainable Carpets



Beaulieu Fibres International (BFI) unveils a unique opportunity for carpet manufacturers to create fully recyclable needlepunch carpets, and benefit from production and resource savings, without influencing

performance. New UltraBond is a patented polyolefin bonding staple fibre that eliminates the need for latex or other chemical binders to bind nonwovens. It opens up a new path for creating 100% polypropylene (PP) needlepunch carpets which meet the same performance requirements as traditional latex-bonded carpets while reducing the end-of-life environmental impact.

Using UltraBond manufacturers finally gain the potential to cost-efficiently produce 100% recyclable carpets. The sustainability benefits are quantified through lifecycle analysis (LCA) of an exhibition carpet application-among the primary applications for needlepunch carpets. Evaluations show that the absence of water consumption directly translates into a large energy saving of 93% when using UltraBond compared to a latex bonding solution, and also a potential annual water saving of over 20 million litres for 100 million m² of exhibition applications in the EU. Without the addition of any other bonding agent, CO₂ emissions are reduced by 35% over the full production process. ■

The Launch of PWMAI

Preventive Wear Manufacturers' Association of India



PWMAI, Preventive Wear Manufacturers' Association of India was founded in 2018 by Dr. Sanjiiiv Relhan, with a vision to upgrade skills of surgical gowns & drapes manufacturers & to create a level playing field for Indian & multinational manufacturers.



Dr. Sanjiiiv Relhan
Founder Chairman, PWMAI

An Industry association was very much required from years and the notification from DCGI in November 2018 for inclusion of Drapes and Gowns in Medical Devices was the trigger point to have all the stakeholders united.

Medical Device Rules 2017, India's first step in delinking medical devices regulations from drugs, marked its first anniversary on Jan 1, 2019. Year 2018-19 was an interesting year for medical devices with a lot of supplementary support documents such as guidance documents and guidelines realized in respect of notified medical devices. The year also saw the inclusion of an array of additional medical devices into the regulatory framework.

A representation from an industry perspective was given by PWMAI to the Drug Controller General of India for the notification dated 27th Nov 2018, regarding inclusion of surgical gowns and drapes under the purview of medical device rules.

A meeting was called by DCGI at FDA Bhawan on 27th March 2019 to discuss and deliberate upon the notification. Representatives of PWMAI provided their affirmation to include surgical gowns and surgical drapes under the purview of medical device rules 2017.

Since its inception, PWMAI has been instrumental in raising the concerns of industry at various platforms including Ministry of Health & Family Welfare, Bureau of Indian Standards, Drug Controller General of India & Ministry of Textiles.

PWMAI jointly with FICCI (Federation of Indian Chambers of Commerce and Industry) organized The

FICCI STANDARDS CONCLAVE on February 21st 2019. The panel for medical textiles consisted of expert speakers from additional DGAFMS (Surg R Adm Sharad Bajpai), Head of Department, SITRA, CoE for Medical Textiles (Dr. Ketan Vadodaria), Scientist, BIS (Mr. Dharambeer) & Founder Chairman, PWMAI (Dr. Sanjiiiv).



Dr. Sanjiiiv Relhan
Founder Chairman, PWMAI at
The FICCI STANDARDS CONCLAVE

The panel deliberated upon various aspects of standards of surgical gowns & drapes followed globally, testing facilities available in India and the finalizing and implementing BIS standards in India.

The drapes & gowns industry in India is scattered and is governed by small scale manufacturers. Most of these manufacturers are ignorant about global standards, BIS Standards (in process of completion), AORN Guidelines, regulatory framework & benefits thereof.

During primary briefing to members, Mr. Gurjeet Kohli, General Secretary, PWMAI observed that most of the members were afraid of the sector being regulated. They were running their businesses on their firm belief on myth that surgical drapes & gowns are not in direct contact with the patients and hence, do not pose any risk to patient safety, and hence there is no need to regulate the sector under the purview of medical device rules.



Mr. Gurjeet Kohli
General Secretary, PWMAI

All of the small manufacturers were not aware about UDYOG ADHAR, ZED CERTIFICATION, GeM (Government e-market place), SITRA (Center of Excellence for Medical Textiles) & Accredited bodies to issue ISO 13485 (Quality Management Certificate for Medical Devices).



PWMAI at The FICCI STANDARDS CONCLAVE

Special Feature

contd...

Glimpses of the 1st General Body Meeting of PWMAI

Dr. Sanjiv Relhan,
Founder Chairman, PWMAI
Addressing the Gathering



Ms. Shaonli Chakroborty,
Swasti, The Health Catalyst
Speaking for Women in Factories



Mr. Puneet Kanodia,
Kansons Overseas
Presenting on Industry 4.0



Mr. Kanav Gupta, BCH
Speaking on The Promising Future
of the Medical Textiles in India

Keeping all the above in mind a panel of experts was constituted during 1st general body meeting of PWMAI held on 21st August, 2019 at Leela Ambience, Gurugram.

The panel will prepare a curriculum of training the manufacturers about standards, raw materials, guidelines of infection control, packaging and sterilization etc. The panel will also prepare training courses for users to choose the right surgical gown & drape & guidelines on usage & safe disposal of surgical gowns & drapes.

A letter of intent was sent to Chairman, SITRA (South India Textile Research Association), for putting up a training center with prototype of operation room & clean room for manufacturing of surgical gowns & drapes, to conduct periodic training sessions of manufacturers, which was agreed upon principally by SITRA.



PWMAI at SITRA



Ms. Tulsii
Joint Secretary, PWMAI

With the efforts of Joint Secretary, Ms. Tulsii, multinational companies like medline & Halyard health extended their full support in providing the research papers & studies conducted globally for manufacturing of surgical gowns & drapes.

Expert Panel of PWMAI played an important role in finalizing the BIS Standards for Surgical Gowns & Drapes, which are now under final stages and will be published soon.

With the inclusion of surgical gowns and drapes in the list of medical devices, and publishing of BIS Standards the surgical gowns & drapes industry in India is moving forward. Despite some challenges, the sector will offer unprecedented opportunities to existing and future investors.

PWMAI will thrive to fulfil its mission of uniting & empowering healthcare workers, healthcare organizations & industry partners to support safe surgery for every patient, every time. PWMAI has implemented a state-of-the-art online user forum, where industry people, academia, healthcare professionals & researchers can participate in active discussions, download research papers and join online video courses.

When one joins PWMAI, they are part of a community of professionals who share a passion for advancing Medical Textiles and ensuring patient safety and optimal outcomes. PWMAI supports personal and professional development by connecting one to valuable career and practice resources and continuing education, and close-knit industry partners. ■



PWMAI Members

Where nonwoven
innovations happen



20

indexTM
world's leading nonwovens exhibition

31 March - 3 April 2020
Palexpo, Geneva

indexnonwovens.com

Forthcoming Events

January - March 2020

ISPO Munich 2020

26 - 29 January; Munich, Germany;
www.ispo.com

DefExpo 2020

5 - 8 February; Uttar Pradesh, India;
www.defexpo.gov.in

15th AutoExpo 2020 - Components

6 - 9 February; New Delhi, India;
www.autoexpo.in/components-show/index.aspx

6th Wearable Expo

12 - 14 February; Tokyo, Japan;
www.wearable-expo.jp

FiltXPO

26 - 28 February; Chicago, IL, USA;
www.filtxpo.com

1st Dornbirn Global Fiber Congress Asia

3 - 4 March; Daegu, South Korea;
www.dornbirn-gfc.com

JEC World

3 - 5 March; Paris, France;
www.jec-world.events

Geosynthetics Conference: Case Studies

8 - 10 March; North Charleston, SC, USA;
www.geosyntheticsconference.com

INDEX™20

31 March - 3 April; Geneva, Switzerland;
www.edana.org

April - June 2020

EDANA/BCH Training Courses: Nonwovens; Filtration; Medical; Absorbent Hygiene Products

21 - 24 April; New Delhi, India;
www.edana.org

Smart Fabrics Summit 2020

16 - 17 April; Washington, DC, USA;
www.smartfabricssummit.com

13th World Filtration Congress

20 - 24 April; San Diego, CA, USA;
www.wfc13.com/v2/

Composite-Expo 2020

21 - 23 April; Moscow, Russia;
www.composite-expo.com

CIDPEX2020

22 - 24 April; Nanjing, China;
www.cnhpia.org

Outlook Conference 2020

26 - 28 April; Asheville, NC, USA;
www.ifai.com

Symposium on Advanced Wound Care Spring (SAWC Spring) Wound Healing Society (WHS)

13 - 17 May; San Diego, CA, USA;
www.sawcspring.com

7th Non-Woven Tech Asia 2020

5 - 7 June; New Delhi, India;
www.nonwoventechasia.com

mtex+

9 - 10 June; Chemnitz, Germany;
www.mtex-plus.de

Automotive Interiors Expo Europe 2020

16 - 18 June; Messe Stuttgart, Germany;
www.automotive-interiors-expo.com

WOW World of Wipes®

22 - 25 June; Minneapolis, MN, USA;
www.worldofwipes.org

OutDoor by ISPO 2020

28 June - 1 July; Munich, Germany;
www.ispo.com

July - September 2020

OSH India South

2 - 3 July; Bengaluru, India;
www.oshindia.com

Dornbirn Global Fibers Congress

16 - 18 September; Dornbirn, Austria;
www.dornbirn-gfc.com

Fire India 2020

17 - 19 September; Mumbai, India;
www.fireindia.net

OUTLOOK™

23 - 25 September; Lisbon, Portugal;
www.edana.org

RISE® - Research, Innovative & Science for Engineered Fabrics Conference

29 - 30 September; Raleigh, NC, USA;
www.riseconf.net

October - December 2020

Automotive Interiors Expo 2020

27 - 29 October; Novi, MI, USA;
www.automotive-interiors-expo.com/detroit

Symposium on Advanced Wound Care Fall (SAWC Fall)

30 October - 1 November; Las Vegas, NV, USA;
www.sawcfall.com

IFAI Expo

4 - 6 November; Indianapolis, IN, USA;
www.ifaexpo.com

JEC Korea

11 - 13 November; Seoul, Republic of Korea
www.jec-korea.events

ANDTEX 2020

11 - 13 November; Bangkok, Thailand;
www.andtex.com

Hygienix™

16 - 19 November; New Orleans, LA, USA;
www.hygienix.org

COMPAMED 2020

16 - 19 November; Düsseldorf, Germany;
www.compamed-tradefair.com

Technotex 2020

18 - 19 November; Mumbai, India;
www.technotexindia.in

OSH India

26 - 27 November; Mumbai, India;
www.oshindia.com

FILTREX™ Asia

7 - 8 December; Shanghai, China;
www.edana.org

The 8th Filtration & Separation Asia

9 - 11 December; Shanghai, China;
www.fsa-expo.com

Glimpses of Some Leading Industry Events

Dornbirn Global Fiber Congress 2019 11-13 September, Austria

- Over 100 international speakers from industry and research presented their latest innovations and trends of the global fiber and textile industry.
- Over 700 attendees from more than 30 nations participated in the world's biggest fiber innovation congress. Particularly companies from Asia and Turkey showed significant interest.
- The event was organized by Austrian Fibers Institute.



During a Session



Networking Session



During a Session

IFAI EXPO 2019 1-4 October, USA

- IFAI Expo 2019, North America's largest specialty, industrial and advanced textiles event, hosted more than 325 exhibiting companies and a total of 4,412 verified participants from 64 countries.
- Attendees had the opportunity to meet with over 325 different exhibitors, hear expert advice at more than 83 educational sessions & gain inspiration at a rousing keynote address. 28 campfire-style sessions on the show floor provided valuable information for the Advanced Textiles, Specialty fabrics & shade & weather protection markets.
- IFAI Expo is produced by Industrial Fabrics Association International (IFAI).



Huge Turnout



During a Session



Cocktail Evening

FILTECH 2019 22-24 October, Germany

- With 16,500 participants over 3 days FILTECH 2019 clearly exceeded all expectations and set a strong signal for further growth of the world-wide filtration and separation sector.
- More than 58% of the trade visitors came from outside Germany. The experts came from 75 nations and all continents.
- The positive market trend in the immediate run-up to the world's largest filtration show FILTECH 2019 in Cologne made for an excellent mood amongst the 428 exhibitors.



Product Demonstration



Exhibition Area



Product Display

OSH India 2019 28-29 November, India

- The expo catering to the occupational safety & health industry brought together internationally renowned exhibitors, consultants, business experts & key government officials on a single platform to discuss global best practices & seek solutions to some of the most pressing challenges in the field of workplace safety & health.
- The show has a presence of over 150 exhibitors and over 180 brands and is witnessing international participation from countries such as USA, China, UK, Belgium, Sri Lanka, Japan, Korea, Germany, Ireland, Middle East and Malaysia.



Registration



Inaugural Ceremony



Focused Discussions

RISE® 2019 - Research , Innovative & Science for Engineered Fabrics Conference 24-25 September, USA

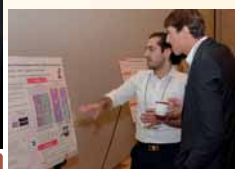
- Over 170 professionals in materials science, product development and new technologies participated in the ninth conference edition of RISE®—Research, Innovation & Science for Engineered Fabrics.
- The event was co-organized by INDIA, the Association of the Nonwoven Fabrics Industry, The Nonwovens Institute and North Carolina State University.
- Participants gave high praise for the focus of the three major sessions: Sustainable Additives & Polymers, Circular Innovation & Market Data & Intelligence Trends.



During a Session



Memorable Moments



Focused Discussions

Outlook™ 2019 9-11 October, Greece

- With a record number of delegates from across the nonwovens and related industries in attendance, OUTLOOK™ was again confirmed as a key industry event for the sector, showcasing EDANA's mission to support the growth and promote the sustainable development of the industry.
- The 18th edition of OUTLOOK™ examined emerging market trends, circularity and sustainability initiatives and new product developments during the first two days, with the final day featuring an interactive workshop on furthering stakeholder trust in the sector.



Conference Proceedings



During the Conference



Cocktail Evening

Hygienix™ 2019 11-14 November, USA

- Over 500 absorbent hygiene & personal care professionals from 30 countries & throughout the supply chain participated in the fifth edition of INDIA's Hygienix.
- The successful conference delivered premium content, education, networking opportunities, awards and a lively welcome reception.
- The event also included presentations from 33 other industry experts along with 13+ hours of scheduled face-to-face personal engagement. Participants also had the opportunity to meet leading industry supplier companies at 53 tabletop exhibits held during two informal evening receptions.



Welcome Hygienix



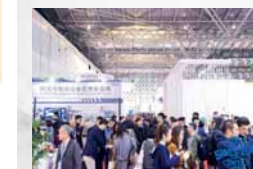
Networking Sessions



Memorable Moments

SINCE 2019 11-13 December, China

- Almost 500 worldwide exhibitors showcased their latest products/technologies. As an important and influential two-year exhibition in nonwovens industry, SINCE 2019 exhibition scale achieved 34,000 sqm, almost 500 exhibitors from 25 countries and regions showcased their latest products/technologies.
- The exhibition totally attracted 26,866 professional visitors from almost 60 countries including China, Korea, Japan, India, United States, Thailand, Vietnam, Pakistan, Indonesia, Malaysia, Italy, United Kingdom, Russia, Germany, Singapore, Turkey, etc. These visitors covered the industry of composites, hygiene, medical, wipes, geosynthetics, filtrations & separations, electronics, energy, automotive interiors, apparel, interior fabrics, packaging, etc.



Exhibition Hall



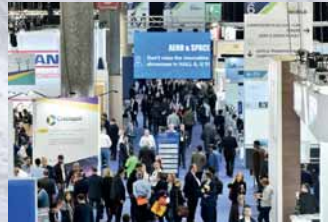
Exhibitors and Visitors



Exhibition Hall

JEC World 2020

Affirms Global Leadership in Composites Innovation, Business and Networking



JEC World is the global trade show dedicated to composite materials. Next year's show, from March 3-5, 2020, at the Paris Nord Villepinte Exhibition Centre, in Paris, will be the industry's most significant annual event, hosting all the major players in a spirit of innovation, business and networking.

JEC World 2020 is the Undisputed Global Reference

With 1,400 expected exhibitors and more than 45,000 expected professional visits from 112 countries, JEC World has become a global festival, and the undisputed reference for the composites industry. JEC World 2020 looks set to be even bigger. It is already 95% booked – a strong demonstration of the industry's commitment.

A significant number of industry leaders and JEC World regulars have confirmed they will attend, and the industry's leading countries and regions will be represented at 28 regional and international pavilions.

Innovation is in JEC World's DNA

JEC World's main objective is to promote the composites sector's biggest innovative projects. **More than 600 product launches** are expected to be announced over the three days of the show, which will also feature awards ceremonies, competitions and exhibitions:

- The **JEC Innovation Awards** celebrate innovative global composite projects, as well as fruitful collaborations between different players in the value chain. In 15 years, the Innovation Awards have brought together some 1,800 companies and recognized 177 projects.
- The **Startup Booster** is the leading startup competition in the world of composites. In its fourth year, it recognizes innovations with the greatest impact on the industry and promotes them to a significant audience of decision-makers. The finalists will have their innovations showcased at JEC World's "**Startup Hub**."
- The **Composites Challenge** recognizes selected PhD students for the quality of their research in the field of composites. Each researchers will present themselves and their ideas to a large and highly qualified audience.
- **Innovation Planets** will highlight the latest composite innovations in four display areas, each focused on specific themes (Mobility, Aero & Space, Construction & Energy, and Sports & LifeStyle).

- New **3D Printing and Bio-based solutions hubs** will showcase the latest developments in these two domains from participating companies.
- **Finally**, a dedicated zone will present **50 years of expansion in the composites industry across 15 application sectors**. This retrospective will put the future potential of the composites industry into clearer perspective.

JEC WORLD 2020 IN NUMBERS

- **1,400** expected exhibitors
- **28** pavilions
- **45,000** expected visits
- **112** countries
- **> 150** conferences
- **> 6,000** business meetings
- **4** Innovation Planets
- **> 600** product launches

The Essential Trade Fair for Industry Decision-makers

In order to maximize their return on investment JEC World offers visitors and exhibitors access to effective marketing & relationship-building opportunities. **More than 6,000 business meetings** will take place over the three days of the show, tailored to the specific needs & priorities of these leaders while giving them the opportunity to strengthen their positions, get involved in new programs & meet new partners.

JEC World Becomes a Composites "think tank"

JEC World also plays a key role in global knowledge sharing between the industry's main players. To promote this openness, several technical conferences will be held over the three days presenting the latest in:

- Eco-design, sustainability and recycling: where are composites?
- Concrete and Composites: the perfect mix
- Biomimicry: Nature shows us the most effective solutions
- Carbon: What materials and processes for the future?
- Artificial Intelligence: Artificial Intelligence – From design to production 4.0
- Fiber and nano-reinforced materials fill gaps in additive manufacturing

All these features make JEC World 2020 a global festival of composites, a place of business, discovery and inspiration.

CIDPEX 2020

The 27th China International Disposable Paper Expo



After 26 years of careful cultivation, China International Disposable Paper Expo (CIDPEX), organized by China National Household Paper Industry Association (CNHPA), has become a well-known worldwide annual industry event, attracting tens of thousands of domestic and foreign exhibitors and visitors every year. CIDPEX2020 will be held on April 22-24, 2020 at Nanjing International Expo Center, Jiangsu, China.

More than 2,000 tissue paper and disposable hygiene products brands from China and abroad will be shown during the event. One can get to know a variety of product and technology innovations in one place and enjoy the various promotion activities onsite.

The **Focus** Tissue & Hygiene conference held before the exhibition is guided by the actual needs of the industry and from the global and visionary perspective, focuses on tissue and hygiene industries, gathers industrial experts around the world, and concentrates on hot topics for deep analysis, conversation and discussion, building a professional exchange platform of "opening, sharing, cooperation and win-win" for domestic and foreign enterprises.

Highlights:

- 80,000m² exhibition area, 850 exhibitors, 35,000 professional visitors. Meet everyone in one place at one time.
- See the latest innovation and evaluate products in tissue paper/disposable hygiene products industry onsite.
- Tissue & Hygiene Conference is divided in three main sessions: Tissue Paper, Disposable Hygiene Products and Market & Marketing, including totally 34 keynote speeches and 2 high-level forums.
- Different pavilions will be the highlights of the show which can help understand the latest development in the industry and start new business in China. They are:

Tissue Paper Pavilion: Lotion Tissue is the Most Popular New Product in CIDPEX 2020

In the tissue paper pavilion, the large manufacturers, such as Taison, Lee & Man, Gangxing, Vanov, Orient

Champion, etc. will show up for the event. Hundreds of brands of tissue paper will be brought in the event. The lotion tissue is favored by consumers with sensitive skin and has become the "Star" product in China.

Disposable Hygiene Products Pavilion: More natural, Thinner and Softer

Many disposable hygiene products enterprises add new and differentiated products to their product line. The products with natural materials (such as 100% cotton nonwovens), ultra thin and soft products are favored by consumers.

Raw Material Pavilion: Focus on Safety, Differentiation, Nature and Eco-friendly

The raw material providers will bring their new solutions to help make differential finished products with excellent performance. One will find technology improvement in all kinds of raw materials, including hot melt adhesive, closing system, packing material, SAP, nonwovens, and other raw materials.

Machinery Pavilion: Ever-changing Innovation and Upgrading Equipment

In the machinery pavilion, hundreds of machines will be demonstrated onsite. The visitors could have a direct impression on the new technology and improvements on machinery. The well known machinery providers will all show up in the event, such as A.Celli, Andritz, Toscotec, Kawano Zoki, Fabio Perini, Baosuo, Dechangyu, Soontrue, Fameccanica, Hengchang, etc.

- Automation level keeps improving to make the operation easier and improve stability.
- Intelligence becomes a direction for the development of machinery.
- The level of Chinese machinery improves significantly.
- Imported machinery suppliers pay attention to the clients' differentiated needs.

Please log on the website:

<http://en.cnhpia.org/cidpex.html> or email to cidpex@cnhpia.org, to know more about the show and register as a visitor or conference delegate. ■

Thailand: Indorama Ventures Completes Acquisition of Sinterama S.p.A

Indorama Ventures Public Company Limited (IVL), a global chemical producer, announced that it has successfully completed the acquisition of Sinterama S.p.A, a leading Global polyester automotive interiors high performance colored yarns manufacturer.



This acquisition elevates IVL's capability to deliver comprehensive and innovative solutions in highly specialized applications including coloured polyester yarns for the automotive, furnishing, apparel and technical applications. The combination of IVL's existing manufacturing capabilities and supply chain with Sinterama's industry-leading portfolio gives IVL added momentum to serve the increasing demand for automotive and home applications.

Sinterama has approximately 890 employees working at five production sites in 4 countries in Italy, Brazil, China & Bulgaria. Sinterama holds leading positions in highly specialized applications in Europe, with an excellent reputation & proven technology.

Mr. Aloke Lohia, Group CEO of IVL said, "We are pleased to complete this acquisition and excited to welcome our new colleagues to the IVL family. The addition of Sinterama bolsters our leadership position and further differentiating our portfolio to ensure that we are well-positioned to support customers today and into the future. We look forward to delivering on the opportunities that this acquisition provides, and building our journey of growth together."

Sweden: Autoliv Introduces Airbag that Prevents Passengers from Colliding

Autoliv Inc., the worldwide leader in vehicle safety systems, has announced the development of a new front center airbag that is designed to save lives in side-impact crash situations.



The new Autoliv Front Center Airbag helps avoid driver-to-interior and driver-to-passenger impact. The inboard seat mounted airbag deploys in the space between the driver and the front-seat passenger, providing protection for them from colliding during a side impact and reduces risk of trauma to head, shoulder and chest.

The Autoliv Front Center Airbag will be introduced in 19 car models in 2020.

Germany: SGL Carbon and Solvay Collaborate to Develop Highly-Competitive Advanced Carbon Fiber Composites

SGL Carbon and Solvay have entered into a Joint Development Agreement (JDA) to bring to market the first composite materials based on large-tow Intermediate Modulus (IM) carbon fiber. These materials, which address the need to reduce costs and CO₂ emissions, and improve the production process and fuel efficiency of next-generation commercial aircraft, will be based on SGL Carbon's large-tow IM carbon fiber and Solvay's primary structure resin systems.



The agreement encompasses both thermoset and thermoplastic composite technologies. It builds on Solvay's leadership in supplying advanced materials to the aerospace industry and SGL Carbon's expertise in carbon fiber manufacturing.

USA: Motus Integrated Technologies Acquires Janesville Fiber Solutions

Motus Integrated Technologies (Motus), a Tier 1 and Tier 2 supplier of automotive interior products, closed its previously announced acquisition of Janesville Fiber Solutions (Janesville), formally a division of Jason Industries, Inc. (Jason).



With this acquisition, Motus adds Janesville's innovative high-performance engineered acoustical and thermal fiber automotive solutions for acoustic & insulation. The deal expands Motus' leadership in the sector with one of the industry's broadest & most technologically advanced product portfolios. The Janesville acquisition adds 8 North American facilities & over 1,000 associates.

India: Union Minister Nitin Gadkari assures Auto Sector of Pro-Reform Policies for Revival

Society of Indian Automobile Manufacturers (SIAM) organized its 59th Annual Convention, titled "Building the Nation, Responsibly: Moving into a New Era of Auto Industry". At the convention, Chief Guest Mr. Nitin Jairam Gadkari, Hon'ble Minister for Road Transport & Highways & Micro, Small & Medium Enterprises, Government of India, provided assurance to the automobile industry of support from the government & said that he will take up the industry's demand of GST reduction with the finance minister.



News

contd...

Industrial Textiles

Germany: BASF Completes the Divestiture of its Ultrafiltration Membrane Business to DuPont

BASF has closed the transaction to divest its ultrafiltration membrane business to DuPont Safety & Construction (DuPont). The divestiture includes the shares of Inge GmbH, the business' headquarters & production site in Greifenberg, Germany, including all employees, its international sales force, & certain intellectual property previously owned by BASF SE. The ultrafiltration membrane business had been part of BASF's Performance Chemicals division. The division's portfolio includes plastic additives, fuel and lubricant solutions, oilfield chemicals and mining solutions as well as kaolin minerals.



Industrial Textiles

USA: DuPont to Acquire Desalitech

DuPont announced that it has signed an agreement to acquire Desalitech Ltd., a closed circuit reverse osmosis company. The transaction is expected to close in January 2020.



DuPont is a leader in water purification and separation technology including ultrafiltration, reverse osmosis and ion exchange resins.

Desalitech's globally patented & unique process technology, using standardized design & operated using proprietary software, enhances DuPont's portfolio with a compelling offering to further reduce the lifecycle cost of water purification and reuse. Desalitech has proven the value of these systems to deliver up to 90-98% water recovery at more than 200 blue chip customers over the past seven years.

USA: Evoqua Completes Divestiture of Memcor® Product Line

Evoqua Water Technologies announced that the company has completed the divestiture of the Memcor® product line to Dupont Safety and Construction. Gross proceeds from the sale were approximately \$110 million. The Memcor product line, which pioneered many firsts in low-pressure membrane technology, consists of microfiltration, ultrafiltration and membrane bioreactors (MBR). The divested business has approximately 190 employees globally.



USA: DuPont Exercises Option to Acquire OxyMem

DuPont announced that it has exercised its option to acquire full ownership of OxyMem Limited, a company that develops & produces Membrane Aerated Biofilm Reactor (MABR) technology for the treatment & purification of municipal & industrial wastewater. OxyMem has more than 60 employees & one production site located in Athlone, Ireland. OxyMem was founded in 2013, based on a technology spin-out from the University College Dublin, Ireland. The company is engaged in the development, manufacturing & sales of MABR units using patented technology for hollow fiber, silicone polydimethylsiloxane (PDMS) membranes to treat wastewater. DuPont already owns 31% of the company & has exercised its option to acquire all outstanding shares of OxyMem for 100% ownership.



Germany: A Growing Family: MICRODYN-NADIR, TriSep Corp., & Oltremare Part of MANN+HUMMEL

The last few years presented a whirlwind of exciting changes or MICRODYN-NADIR GmbH, TriSep Corporation, and Oltremare S.p.A. – three separate membrane manufacturers offering solutions for membrane separation challenges. Though already announced earlier, that MICRODYN-NADIR wanted to share the story of how the three companies morphed into the strong version of what they are today.



Joining the MANN+HUMMEL Family: In 2015, MICRODYN-NADIR became part of MANN+HUMMEL and operate as the Membrane Solutions business unit of the global filtration titan, within their Life Science & Environment segment.

TriSep Corporation Becomes Part of MICRODYN-NADIR: In 2016, MICRODYN-NADIR acquired TriSep Corporation, the membrane industry's leader for speciality & custom membrane solutions. TriSep Corporation found success producing reverse osmosis & nanofiltration membranes, as well as innovative sanitary spiral elements for the process and speciality industries.

Oltremare S.p.A. Joins MICRODYN-NADIR

MICRODYN-NADIR family grew again in 2018 with the addition of Oltremare S.p.A. The Italian company was the leading provider of private-labeled reverse osmosis spiral-wound elements in Europe, further strengthening our position as a provider of excellent, custom-made reverse osmosis elements.

Many Companies, One Family

Throughout acquisitions, & new product lines, MICRODYN-NADIR vision & customer focus remain unchanged. They may have been formed of many companies, but they have forged one family between their brands – all under the MANN+HUMMEL umbrella.

News

contd...

Industrial Textiles

Japan: Toray Innovates Seawater Reverse Osmosis Membranes to the World's Highest Level of Water Production Performance

Toray Industries, Inc., announced that it has created a seawater desalinating Reverse Osmosis (RO) membrane that makes it possible to produce 70% more clean drinking water than conventional offerings. It is thus the world's most energy-effective seawater RO membrane. RO is a water production technology using semipermeable membrane. By applying pressure higher than osmotic pressure of feed water, RO membranes can exclude metal ions, anions & such low-molecular organic compounds. Toray's advanced membrane afford users higher throughput water production without consuming more energy, cutting process costs. Toray puts forward this membrane on market in three years, expanding RO technique in desalination plants. The new membrane technology aims for a solution to restore the environment and to resolve water shortage, allowing everyone enjoy access to clean water.



Medical Textiles

Finland: TrustShield™, Ahlstrom-Munksjö's Single-Use Medical Fabrics for Ultimate Protection

Ahlstrom-Munksjö announces the launch of TrustShield™, a versatile portfolio of medical fabrics that can be used to provide protection against surgical lasers, chemicals and potent chemotherapy drugs.



TrustShield™ products were specially designed around growing market trends. The evolution of laser technology in a surgical environment has significantly advanced as their usage has become widespread for numerous specialties. Operating room fires can occur if the laser comes in contact with combustible objects. Lasers not only can cause fires but they can cause thermal burns if they have skin contact.

Handling and administering chemotherapy drugs pose a health hazard as most of these drugs are considered hazardous if the health care worker is exposed. TrustShield™ Chemo was developed to prevent any permeation by providing a barrier against the strongest chemotherapy drugs on the market.

For those high risk, fluid intense surgeries, TrustShield™ Absorbent fabric is the solution for the ultimate protection and fluid management. It is highly absorbent and maintains its strength & uniformity even when wet.

Medical Textiles

USA: Loparex and Infiana: Acquisition Complete and Moving to Integration

Loparex announced that the transaction to acquire Infiana has been completed & the integration into Loparex has begun. Infiana's know-how and international expertise in highly engineered films & Loparex's global leadership in specialty release liners complement each other very well. The combination will build stronger release liner capabilities and strengthen their global industry-leading position.



Technical Textiles

Austria: Lenzing Lays the Foundation Stone for World's Largest Lyocell Fibers Plant

Within the context of the foundation stone laying ceremony held in November, the Lenzing Group officially launched construction work in Thailand right on schedule to build the world's largest lyocell production plant. Following the approval granted to the project in 2019 & the successful signing of the Engineering, Procurement, Construction Management (EPCM) contract with Wood PLC in August 2019, construction work was formally commenced on the new manufacturing facility located at Industrial Park 304 in Tatoom, Srimahapoj in Prachinburi province.



The new plant with a capacity of 100,000 tons per year will be the largest lyocell facility in the world. It will help Lenzing to meet the strong demand for lyocell fibers and simultaneously strengthen the company's market leadership position for specialty fibers. The investment volume for a first production line amounts to EUR 400 million. Up to three additional production lines can be built and operated on the site. The project is of great importance to Lenzing as it is the first step in bringing lyocell production to Asia.

Medical Textiles

Brazil: Fitesa Buys South American Hygiene Business from Freudenberg

Fitesa and Freudenberg announce the signing of an agreement, under which, Fitesa buys Freudenberg's South American Hygiene nonwoven business. "The acquisition of Freudenberg's South American hygiene business provides us with a state-of-the-art production facility as well as with a professional and well-trained workforce, which will help us to better serve the needs of our customers," states Silverio Baranzano, CEO of Fitesa.





Inspired by design. Driven by technology.

SAUERESSIG UNGRICHT is a newly combined business unit of Matthews International Corporation. The new brand merges a unique product range and therefore differentiates between two guiding principles: Technical Positioning and design-orientated functionality.

A new brand that combines decades of experience from different surface sectors and relies on corporate strength, tradition and reliability.

Solutions for nonwovens:

- Perforation screens for top sheet films
- Screens and drums for spunlace units
- Heating & cooling rollers
- Mirror finished rollers
- Embossing rollers
- Calender rollers
- Coating rollers
- Chill rollers
- Anilox rollers
- Anvil rollers

Matthews International GmbH
Location Vreden | Germany
T: +49 2564 120
su-surfaces.com

UNGRICHT GMBH + CO KG
Mönchengladbach | Germany
T: +49 2161 3590
su-surfaces.com

**SAUERESSIG
UNGRICHT**  surface solutions

News

contd...

Clothing Textiles

Japan: New Joint Initiative from UNIQLO and Toray Optimises use of Valuable Resources-

Japanese global apparel retailer UNIQLO & Toray Industries announced the joint development of down clothing employing reclaimed down and DRY-EX apparel incorporating fabric from polyester fibres made with recycled PET bottles. This new initiative, part of a longstanding strategic partnership between the two companies, will contribute to sustainability by giving consumers access to merchandise that optimises the use of valuable resources.

DRY-EX is a revolutionary material that quickly wicks away sweat & moisture. This is a milestone because, while fibres made from reclaimed plastic bottles have been commercially available for some time, it has been hard to produce fibres featuring special cross-sections and fine fibres, owing to contaminants in PET bottles. Another challenge to address has been that plastic bottles yellow as they age. Toray's contaminant filtering technology overcomes these issues, making it possible to manufacture fibres whose features are commensurate with those of fibres from plastic made directly from petrochemical feedstock, including those with special cross-sections. Another advance is Toray's Recycling Identification System, which enhances reliability by ensuring that fibres derived from plastic bottles are traceable.



Japan: UNIQLO Opens its First Store in India

UNIQLO, a Japanese global apparel retailer, opened its debut store in India at Ambience Mall in Vasant Kunj in New Delhi. The UNIQLO team was also joined by CEO of Niti Aayog, Amitabh Kant.

Tadashi Yanai, UNIQLO Founder and Chairman, President & CEO of the Fast Retailing Group, said, "Fast Retailing has long wished to open stores in India in view of the tremendous potential of such a large nation."

Yanai further spoke about UNIQLO's experience in India and about their recruitment process which has been going on since the last year. He said, "We began recruiting here at the end of the last year and have been impressed by the exceptional talent, ambition and diligence of the young people we encountered and welcomed aboard."

With a strength of 500 employees, UNIQLO India plans to open 3 more stores in New Delhi within its first year, as per its statement.



Sports Textiles

Japan: Teijin Frontier Launches Light, Soft and Tear-resistant Fabric for Sports and Outdoor Wear

Teijin Frontier Co., Ltd., the **TEIJIN** Teijin Group's fibers and products converting company, announced that it has launched a lightweight, tear-resistant & flat-surfaced fabric that also is soft, eco-friendly and abrasion-resistant, making it ideal for sportswear. Teijin Frontier will promote its new fabric as a key product for 2021 spring/summer sports and outdoor collections, targeting sales for a wide range of applications.

With the appearance of diverse fashion styles integrating sports, outdoors and lifestyles in recent years, demands have grown need for sports apparel that combine superior functionality with new appearances and textures. Woven rip-stop fabric in which thick yarns are arranged in a checkered pattern is commonly used as a lightweight, tear-resistant fabrics for sports and outdoor wear. Current fabrics, however, have various problems in terms of hard textures, uneven surfaces in checked patterns, sometimes resulting in snagging, and low resistance to abrasion.

The market has been demanding new design methods to produce rip-stop fabrics offering distinctive functions, appearances & textures. In response, Teijin Frontier has adopted a thin, high-tenacity polyester yarn and applied innovative yarn arrangement and weaving density to produce a lightweight and highly tear-resistant fabric that is ideally suited for sports and outdoor wear with its flat, even surface, soft texture and high resistance to abrasion and snagging.

USA: New Hanes Active Comfort Tank Compression Shirt Supports those Who Work and Play Hard

Hanes believes that everyone who works and plays hard deserves support. The brand has launched the Active Comfort Tank as part its Tec ComfortGear Collection. The high-performance sleeveless shirt incorporates lightweight, breathable yarns and an innovative knitting technique that combine to provide bi-directional comfort compression and all-over stretch to fight fatigue. Mesh in targeted areas adds ventilation, a longer back ensures the tank stays securely tucked in, and an ultraviolet protection factor rating of 50+ adds sun protection. All-day comfort and ease of wear is achieved through use of the Tec ComfortGear Collection's exclusive "Triple Tec" fabric that includes:

- X-Temp technology that adapts to body temperature and wicks moisture for comfort;
- FreshIQ advanced odor protection technology that inhibits the growth of odor-causing bacteria; and,
- Slide-on technology that makes compression garments easy to put on and take off. ■



Enhanced Performance through Innovation

BOSCH & STOLL's Sensor Gloves

STOLL has developed a 3D flat-knitted, seamless glove, made together with Robert Bosch GmbH. For this innovation, STOLL and BOSCH won the innovation award 2019 for "New Technology" at Techtextil Frankfurt. Made of sensor yarn, the award-winning glove provides the wearer with sensory and control functions on all fingers – allowing the wearer to have operating interfaces for man-machine interaction, movement control in relation to augmented and virtual reality application, or rehabilitative purposes for healthcare. This innovative new product is not only functional, but comfortable for the wearer.



Sensor Gloves by STOLL & BOSCH



Biocrystal® Mixture by BC Tech

BC Tech has developed a Biocrystal® innovation with its upgraded forms of application and even further possibilities of implementation into various kinds of end products. As a completely natural innovation, based

on 100% natural materials, Biocrystal® is scientifically proven to bring only the positive impact to the human's body, encouraging better energy flow, reduced fatigue, better sleep and less stress to the people using a product with Biocrystal®. Biocrystal® is received as an innovation with a huge potential to offer what market today is missing- an active treatment for customers' well-being experience through an added value for everyday products.

- Biocrystal® mixture is grinded into the particles size less than one micron, which makes the mixture easily implementable into the products such as textile fiber for yarn production.
- Applications such as foam, thread and textile with Biocrystal® implemented inside, as well as semi products such as Biocrystal® SleepPad™ and PillowPad™ intended for an easy implementation into bedding products are also possible.
- It is an extremely easy and cost-efficient application of technology.

Biocrystal® Innovation

Mrs. Smolic, company's sales specialist, underlined a need of producers to innovate their offer by following modern people's needs which are related to efficient rest provided by an active treatment of everyday products. Explaining how exactly Biocrystal® innovation answers those needs, she stressed out the main benefits and proven impact of Biocrystal® – improving the energy flow in the user's body, which afterward leads to other improvements needed for a top-quality life. "The innovation which gives the opportunity to customers to renew the energy, using only natural resources will be the ones to provide market success to many companies and many industries. The era of new products, the active product is actually starting with Biocrystal®," she concluded.

Reebok's Plant-Based Performance Running Shoe

Reebok revealed a trailblazing innovation in sustainable footwear – a plant-based shoe that rivals the best performance running sneakers on the market. The **Forever Floatride GROW** is the

latest example of Reebok's commitment to reduce the use of petroleum-based plastics in footwear by making products with plants. The Forever Floatride GROW builds on the brand's successful Cotton + Corn lifestyle collection of footwear.



Forever Floatride GROW Plant-based Shoe

The most significant sustainability advancement is the shoe's highly cushioned, responsive midsole, which is built from sustainably grown castor beans & maintains the high performance & a lightweight cushioning standard of the original Forever Floatride Energy. The eucalyptus tree upper is naturally biodegradable, sustainably sourced, strong & breathable. The sockliner utilizes BLOOM algae foam, which is harvested from invasive growth areas & is naturally odor resistant. Finally, the flexible, durable & responsive natural rubber outsole is sustainably sourced from real rubber trees, rather than the petroleum-based rubber featured in other performance products.

"With Forever Floatride GROW, we're replacing oil-based plastic with plants," said Bill McInnis, Vice President, Reebok Future. "The biggest challenge in making a shoe like this was developing plant-based materials that could meet the high performance needs of runners. During the three years we spent developing this product, we heard loud and clear that the idea of a plant-based running shoe resonates strongly with serious runners. But those same runners felt just as emphatically that they would never compromise on performance. The Forever Floatride GROW is the result. Plant-based performance – with no compromise." ■

7th NON WOVEN TECH[®] ASIA 2020

5 6 7 June, 2020
Pragati Maidan, Delhi, INDIA

INTERNATIONAL EXHIBITION & CONFERENCE

- Medical Nonwoven • Geotextile
- Packaging Nonwoven • Hygiene Nonwoven
- Automobile Nonwoven • Nonwoven Filtration

Exclusive Nonwoven
Exhibition in India



HIGHLIGHTS OF NON WOVEN TECH ASIA 2019

99%

OF EXHIBITORS WERE
SATISFIED WITH THE QUALITY
OF VISITORS



90%

OF EXHIBITORS MET THEIR
OBJECTIVES FOR
EXHIBITING



HIGHLIGHTS OF NON WOVEN TECH ASIA 2020

10,000^{SQM}

Exhibition Area

200+

Exhibitors

20,000+

Total Number of Visitors

10+

Participating Countries

Organized By



In Association With



Industries Support



Rajshree Fabrics
find the finest



Vimal Industries
The name you can trust

Support By



All Maharashtra Association
of Non Woven



FOR STALL BOOKING



+91 9173 440725



sales@nonwoventechasia.com



www.nonwoventechasia.com

JEC WORLD

2020 The Leading International Composites Show

March 3-4-5, 2020 | PARIS-NORD
VILLEPINTE



Join the leading one-stop shop event
for the **composites materials industry**



43,500
Professional
visits



1,300
Exhibitors



112
Countries



4,000+
Business
meetings



150+
Conferences



28
Regional and
international pavilions



4
Innovation
Planets



600+
Product
launches



GET YOUR BADGE

www.jec-world.events

Cleanroom Constructs to Boost your Bottom Line

Mr. Michael Bruce, Director of Marketing and Customer Care, Filtration Group, HVAC

Mr. Michael Bruce is the director of marketing and customer care for Filtration Group, HVAC.

As part of the world's fastest growing filtration company, he oversees product development and management for the HVAC division. He has three granted patents with others pending. Previously, he has held roles in sales, operations, and engineering in various industries.

Mr. Michael graduated Magna Cum Laude from the University of Maryland, Baltimore County, with a bachelor's degree in Engineering.



Mr. Michael Bruce
Director of Marketing
and Customer Care,
Filtration Group, HVAC

"Making prudent operational and financial decisions while considering a variety of variables can be challenging - but it doesn't have to be."

Most experts agree that cleanroom design, operation and maintenance is complicated. If your design doesn't support your processes, you will likely experience lower than expected uptime. When problems don't surface until after the room is in operation, they are more difficult and costlier to correct.

Understanding best practices for meeting the specific requirements for a cleanroom application goes well beyond complying with ISO standards. Making prudent operational and financial decisions while considering a variety of variables can be challenging - but it doesn't have to be. Breaking down the steps and learning "cleanroom language" are good places to start. Working with filtration solution experts who can help you consider your Total Cost of Ownership (TCO) can have a positive impact on your bottom line.

Looking Back to Look Ahead

Cleanroom technology became relevant in the early 1960s, with aerospace innovations. The first cleanroom standardizations occurred in 1963 and were not heavily regulated. Today, an increasing number of industries rely on cleanroom technology and adhere to requirements and standards set in place by the Institute of Environmental Sciences and Technology.

Innovations are constantly evolving, and national and international standards help companies regulate practices - an integral part of effective, and consistent, cleanroom technology. The challenge is to operate cleanrooms that achieve the particulate concentration goals without breaking the bank. When asked to explain their successful cleanroom operations, experts point to TCO.

QUESTIONS TO ASK WHEN CONSIDERING TCO

- How much do we pay for energy consumption? Does my region offer rebates?
- How much are we paying for filter and other equipment disposal?
- Do the Fan Filter Units have low noise emissions?
- Can our FFUs accommodate HEPA (99.99%) and ULPA (99.9995%) filters?
- Do our Fan Filter Units have room-side or top-side replaceable filters and motors?
- Do we need green LED lighting for an OR setting?
- Based on our ceiling space, do we require white LED lighting?

Deciphering the Terminology

The International Standards Organization (ISO) provides classifications for cleanroom standards. Nine ISO classes help discern the levels of cleanliness which equate to the number of contaminants in the room. The most common classifications of cleanrooms are ISO 7 and ISO 8, which generally require between 5 and 150 changeouts per hour. [As a point of reference, a conventional HVAC system makes 2 to 4 changeouts per hour.]

In general, a cleanroom will require the same number of low air returns and HEPA filters. However, just like HEPA filters, air return models differ. It is important to be aware of the quality of the filter to determine its functionality - the number of air returns can be higher or lower than the number of HEPA filters, based on filter capacity.

Another important consideration is laminar air flow, commonly referred to as unidirectional. This refers to air that flows in an unimpeded trajectory with a steady velocity. When airflow is not unidirectional, a mixed flow,

Industrial Textiles

contd...

Table 1: Abbreviated list of ISO 14644-1 Classifications with Recommended Air Changeouts per Hour (ACH) requirements.

Maximum Particles/m ³					
ISO Classification	0.2 micron	0.3 micron	0.5 micron	Common Airflow Pattern	Recommended ACH
1	2	1	-	Unidirectional Flow	500-750
2	24	10	4	Unidirectional Flow	500-750
3	237	102	35	Unidirectional Flow	500-750
4	2,370	1,020	352	Unidirectional Flow	400-750
5	23,700	10,200	3,520	Unidirectional Flow	240-600
6	237,000	102,000	35,200	Mixed Flow	150-240
7	2,370,000	1,020,000	352,000	Mixed Flow	60-150
8	23,700,000	10,200,000	3,520,000	Mixed Flow	5-60

the movement of air is turbulent, the velocity fluctuates and will result in possible contamination in critical environments such as pharmaceutical manufacturing and medical testing, or lower yields in electronics manufacturing.

Total Cost of Ownership (TCO)

Cleanrooms come in every conceivable configuration and there are multiple variables to consider. Ultimately, each variable will influence your bottom line. By taking a wholistic approach of all costs associated with meeting cleanroom standards it is possible to better balance the short and long-term financial goals of the operation. What may appear to be a cost-prohibitive Fan Filter Unit (FFU), could end up paying for itself within a few years and sometimes within months.

Calculating TCO leads to the optimization of cleanrooms and helps to optimize operational costs and maximize profits. It also gives you the ability to see the big picture by combining the costs of filtration solutions, installation labor, energy consumption and disposal. Accounting for all costs is the best method for designing cleanrooms and selecting filtration equipment.

$$\text{TCO} = \text{Labor} + \text{Filter Solutions} + \text{Energy Consumption} + \text{Disposal}$$

Deciding which filtration solution is best requires proficiency, data and a command of TCO. When it comes to filters, an upgrade in quality will typically increase upfront costs, yet the savings in lower energy consumption will result in greater dollar savings.

Considerations for Proper Product Selection

The selection of a fan filter unit and accompanying

filter is often driven by the lowest upfront price, but that decision unknowingly costs significantly more money over time. To ensure the proper balance of upfront and long term costs, four primary factors need to be considered when selecting an FFU for a cleanroom. These factors include the cost of energy, the required air changeouts per hour, the available percentage of ceiling space for proper installation, and the height of the cleanroom.

Cost of Energy

In the United States, energy costs vary greatly depending on the region. For example, energy in the Northeast and on the West Coast can cost up to three times that of the Midwest.

To optimize costs, cleanrooms that operate in locations with high energy costs must include an FFU and filter that are energy efficient, such as the Flowstar VS250 FFU. Compared to its sister products, the Sentinel and the VS100, the VS250 uses 50-67 percent less energy at 90 FPM air velocity.



VS250

The Most Comprehensive FFU Available

- Up to 250FPM, great for environments needing high air changeout rates with limited ceiling space.
- Room side replaceable filter and motor.
- Fully welded T304 stainless steel plenum.
- Various control packages to suit application specific requirements.
- Lighting and battery backup option for cleanrooms with limited ceiling space.
- Standard PVC fan and optional powder coated housing for Trace Metals applications.

Business
meets **Customers**

Industry
meets **Solutions**

Marketing
meets **Science**

Testing
meets **Consistency**

FiltXPO™

International Filtration/Separation
Exhibition & Technical Conference

Where YOU
meet **Opportunity**

With more than 2,000 attendees, 200 exhibitors, training sessions, and deep dives into all the hottest topics in filtration and separation, FiltXPO is **the** must-attend event for getting in front of our industry's decision makers.

FiltXPO is North America's only exhibition and technical conference dedicated exclusively to filtration and separation. Exhibit here, and you'll be in front of CEOs, technology leaders, sales teams, research scientists, supply chain managers, and more. No matter what their role, if it involves filtration and separation, they'll be in Chicago in February 2020 – and you need to be a part of it!

This premier event presents the most important technical issues facing filtration and separation right now and in the future.

Find out more about exhibiting and attending! Go to filtxpo.com today!

As an exhibitor, you'll connect with an audience of technical experts to specify your filtration and separation products and technologies in:

- + Biopharmaceuticals
- + HVAC/Indoor Air Quality
- + Food/Beverage/Liquid Processing
- + Clean Energy/Oil & Gas/Emissions
- + Testing/Instrumentation/Modeling
- + Wastewater/Process Water Filtration

FEBRUARY 26-28, 2020

Navy Pier, Chicago, IL, USA

Contact **Joe Tessari**, Exhibit Sales Manager. P: 919 459 3729 / C: 804 822 1049
joe@filtxpo.com

  **#FiltXPO**

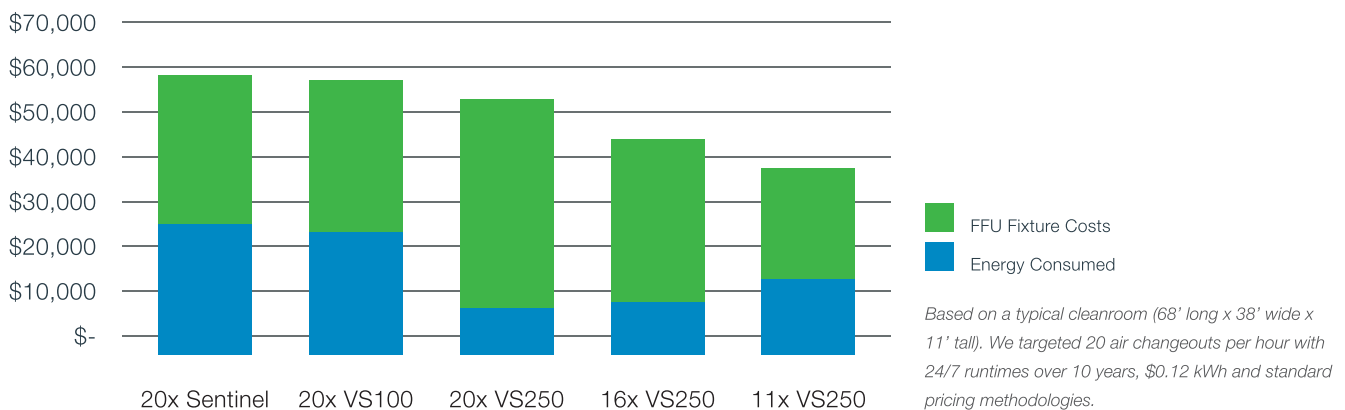
Industrial Textiles

contd...

The VS250 Filter Lowers The Total Cost of Ownership (TCO)

Purchasing a high-performing FFU such as the Flowstar® VS250, reduces TCO over time. For less critical ISO classifications, fewer VS250 models are required which reduces upfront costs.

In the graph below, we compare energy consumption and fixture costs. In the first three examples, we incorporated 20 units of different FFUs and then decreased the quantity of the Flowstar® VS250 to reduce the TCO while maintaining the CR ISO 7 classification. The more efficient your system is, the likelihood for contamination is lessened, and the lower your total cost will be.



• Available Ceiling Space for FFU Installation

Sometimes, there are physical obstructions above the ceiling of a cleanroom such as the HVAC, electrical, and building structures that do not allow for FFUs to be installed. The lower the available amount of ceiling space for FFUs, a higher flowrate performance is needed from the installed FFUs. FFUs with built-in lighting options like the Flowstar VS100 and VS250 can help manage the ceiling space as well – as higher-end ISO class cleanrooms can require 100 percent of the ceiling to be covered with FFUs.

• Height of the Cleanroom

The higher the ceiling of a cleanroom, the harder the FFUs have to work. Let's target a 100 air changeout per hour rate in two separate 1,000 sq.ft. rooms, one with an 8-foot ceiling and another with a 12-foot ceiling.

Because of the added volume in the second room, to achieve the same air changeout rate you would have to install 50 percent more FFUs or run the same amount of FFUs 50 percent harder, which is even more expensive and will not produce laminar air flow – a critical component in ISO classes 1-5.

• Air Changeouts per Hour

As you move from ISO Class 8 to ISO Class 1, a higher air changeout rate is needed to achieve the particulate concentrations required. This requires higher flowrates from the selected FFU, or more FFUs altogether.

Making Sense (and Cents) of it All

The list of obstacles and challenges to maintaining a well-operated cleanroom can be lengthy. Inefficient

placement of workstations, limitations to space and ceiling height, temperature and climate fluctuations, ventilation issues and financial hesitation all play a role in just how complex it can be.

By organizing needs, partnering with quality filtration solution experts, and understanding the up-front costs compared to the payoff over time are essential to operating a successful cleanroom.

Focusing on quality and value will guide decisions regarding the products that are best-suited for cleanroom needs. Ultimately, experts agree – understanding TCO is paramount to long-term operational and financial success. Working with filtration solution experts who can help optimize TCO will have a positive impact on the bottom line.

CRITICAL ENVIRONMENTS REQUIRE SOPHISTICATED EQUIPMENT

When making product choices, look for the following signs of quality and value:

- Low energy consumption
- Accommodations for high air changeouts with limited ceiling space
- Room side replaceable filters & motors for regular maintenance and upkeep
- Ambient lighting and battery backup in limited ceiling configurations
- Long motor life & high flow rates
- Low noise emission (55 decibels or lower)

This article was originally published in the May/June 2019 edition of International Filtration News, www.filtnews.com. ■

Standardization of Bullet Resistant Jacket

Accomplishing Specific Needs of
Defence Forces and Central Armed Police Forces

**Mr. J. K. Gupta, Scientist-D (Textiles) & Member Secretary - TXD 23
Bureau of Indian Standards, New Delhi**

Mr. J.K. Gupta a B. Text in Textile Technology from 'The Technological Institute of Textiles & Sciences, Bhiwani' has about 20 years of experience in the Bureau of Indian Standards in various capacities in the areas of certification, standardization and quality assurance of various textile products, mechanical products, chemical products etc. and has carried out more than 1000 surveillance visits for these products.

At present he is looking after the work of standardization in the field of technical textiles specially Agrotexiles, Geotextiles, Protective textiles, Industrial textiles, Packaging textiles, Medical textiles and building textiles including jute/coir technical textiles and has published more than 100 Indian Standards in these areas.

He has been represented/nominated on various technical committees of Ministry of Textiles, Department of Chemical and Petrochemical, Ministry of Home, Ministry of Defence, Ministry of MSME, FICCI, CII etc. in India as an expert.



Mr. J. K. GUPTA,
SCIENTIST 'D', TEXTILES
Bureau of Indian Standards



17051:2018) has been published by BIS. This has placed India in the select league of nations like US, UK and Germany who have their own national standard on the subject.

This standard has been formulated following the direction received from Niti Aayog and Ministry of Home Affairs, Govt. of India.



Experts from Terminal Ballistic Research Laboratory (DRDO)-Chandigarh, Bureau of Police Research Development (Ministry of Home Affairs)-New Delhi, DMSRDE-Kanpur, DGQA, Ministry of Defense, DEBEL (DRDO)- Bangalore, Central Armed Police Forces namely CRPF, BSF, CISF, SSB, ITBP and manufacturers of BRJs contributed immensely in formulation of this Indian Standard of National importance.

This Indian Standard prescribes the minimum performance requirements of bullet resistance jackets for protection against small arms and ammunition and provides procedures for their evaluation.

This standard is expected to fulfil the long pending needs of Indian Armed Forces, Paramilitary Forces and State

Police Forces and will assist them in streamlining their procurement procedure.

It will also ensure that only acceptable quality reaches the user which eventually leads to reduction in fatal casualties to the security forces wearing such bullet resistant jackets.

This standard does not cover the threats from knives, sharply pointed instruments and shards, splinters and fragments from the hand grenades. These aspects may be dealt with in other standards.

This standard defines five size designations based on chest/bust girth- XS (72-80 cm), S (above 80-88 cm), M (above 88-96 cm), L (above 96-104 cm), XL (above 104-112 cm) for ensuring its suitability for soldiers of all regions.

These jackets shall be designed ergonomically to minimize restrictions of movement by conducting field tests by trained personnel.

It also includes the optional requirements of quick release system, dynamic weight distribution system and high buoyancy jackets and covers physical requirements like protection area of Soft Armour Panel (SAP) (front, back, groin, neck, collar etc) and Hard Armour Panel (HAP), (front, back and side for 360° protection), maximum aerial densities of BR panels and total weight of jacket.

Protective Textiles

contd...

Areal Densities of Bullet Resistant Panels

Maximum areal density of bullet resistant panels with respect to threat levels shall be as given below:

Maximum Areal Density of SAP and HAP

Sl No.	Threat Level	Areal Density (25mm BFS)			Areal Density (44mm BFS)		
		SAP (3)	HAP (4)	Standalone (5)	SAP (6)	HAP (7)	Standalone (8)
(1)	(2)						
i)	1	5	—	—	3.8	—	—
ii)	2	5	15	21	3.8	15	20
iii)	3	5	16	22	3.8	15	20
iv)	4	5	23	29	3.8	22	27
v)	5	5	27	33	3.8	25	30
vi)	6	5	40	46	3.8	38	44

NOTES

- The above data is based on current technology. With each revision of the standard, these values may change with improvement in material/processing technology.
- Areal density shall be calculated as weight of the panel (in kg) divided by the protection area (in m²).

PERFORMANCE REQUIREMENTS

It also specifies the performance requirements for 6 threat level (Level 1 to 6) and can sustain the threat from 7.62 X 39 mm AK 47 with hard steel core bullet with impact velocity of 700 m/s and 7.62 X 54 R armour piercer incendiary rounds with impact velocity of 830 m/s. The details of different threat levels are provided as follows:

Threat Levels

Threat Level	Ammunition	Impact Velocity m/s	Distance of Impact m	Remarks
1 (SM, MP-5, Carbine etc)	9×19mm	430±15	5±0.5	For all flexible panels
2 (AK 47 with mild steel core bullet)	7.62×39mm	710±15	10±0.5	—
3 (NATO ball, SLR/BAR)	7.62×51mm	840±15	10±0.5	In addition, shall be compliance with threat level 2
4 (INSAS)	5.56×45mm	890±15	10±0.5	In addition, shall be compliance with threat level 3
5 (AK 47 with Hard steel core bullet)	7.62×39mm	700±15	10±0.5	
6 (Armour piercer incendiary)	7.62×54R	830±15	10±0.5	

Behind Armour Blunt Trauma

Behind Armour Blunt Trauma (BABT) is measured in terms of Back Face Signature (BFS) on backing material. Maximum permissible BFS limits shall be 25 mm or 44 mm. The user may select maximum permissible BFS based on their requirement.

The panel shall be considered to have passed BFS requirements, if

- All BFS values are less than or equal to maximum permissible limit (25 mm or 44 mm).

OR

- A single BFS value exceeds the maximum permissible value provided that the Upper Prediction Limit (UPL) of all the values of that particular sample, operating condition and threat is less than or equal to the maximum permissible limit (25 mm or 44 mm).

Upper Prediction Limit (UPL) (X_U)

Upper prediction limit of BFS is applicable only in case of lot testing. All measured BFS shall be either less than or equal to the maximum permissible limit, or the probability of a single BFS exceeding maximum permissible limit shall be less than 10 percent with 95 percent confidence level in one sided tolerance level. The formula in such case is given by:

$$\bar{X} + \sigma K = X_U \text{ (25 mm/44 mm)}$$

Where X_U is the upper prediction limit, \bar{X} is the average of all back face signatures, σ is the standard deviation and K is a constant depending upon the number of shots.

UPL shall be considered for all the BFS values obtained in firing at 0° angle in one lot sample against single threat level.

Non-Conformities

Non-conformity observed during ballistic evaluation is classified into two types (Critical and Major defects). Rejection based on non-conformities shall be considered only for lot testing of samples. For one particular lot of bullet resistant jackets, the acceptable quality limit testing shall be carried out on its constituent panels.

Critical Defect

- Complete Perforation (HAP and SAP)
OR
- BFS of any shot exceeding 10 percent of maximum permissible limit.
OR
- Ballistic limit — $V_{50, BL} < V_{50, \text{Manufacturer}}$ [permissible up to (-)10 m/s]

6.5.2 Major Defect

- Perforation of HAP but stopped by SAP.
OR
- Any BFS > 25 mm or 44 mm (with UPL ≤ 25 mm or 44 mm).

Shelf life of SAP and HAP

The shelf life of SAP and HAP ballistic panels shall be minimum 5 years from the date of manufacture.

**100
YEARS
OF TEXTILE
INNOVATION**



EXPO

Save the Date!

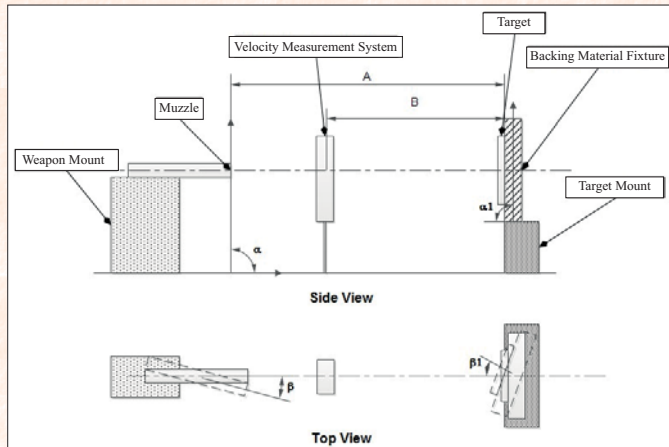
Nov. 4-6, 2020 | Indianapolis, IN USA
Education: Nov. 3-6 | Indiana Convention Center | IFAlexpo.com

Protective Textiles

contd...

Sampling Plan and AQL

Special inspection level S-4 as given in IS 2500 (Part 1) shall be used for ballistic evaluation during lot testing. AQL of 2.5 percent shall be considered for ballistic evaluation. The lay out of the test range is given as follows:



Fair Hit Criteria

A shot is considered fair hit, if it impacts the panel and meets the following criteria:

- From the edge:
 - At minimum distance of 51 mm in case of HAP (ICW or standalone configuration) or any flexible/rigid armour panel.
 - For SAP – between 51 mm and 70 mm from edge for shot numbers 1, 2, 3.
 - At less than 51 mm from edge but does not cause perforation or excessive BFS.
- From a prior shot:
 - At minimum distance of 51 mm in case of SAP/HAP (ICW or standalone configuration) or any flexible/rigid armour panel.
 - At less than 51 mm distance from the prior shot but does not cause perforation or excessive BFS.
- Velocity:
 - At velocity within the specified range.
 - At a velocity less than the specified range but causes perforation or excessive BFS.
 - At a velocity more than the specified range and less than specified inter-shot distance and/or less than specified edge to shot and does not cause perforation or excessive BFS.

Ballistic Limit Test Procedures (BL) - The ballistic limit or limit velocity is the velocity required for a particular projectile to perforate an armour 50 percent of the time.

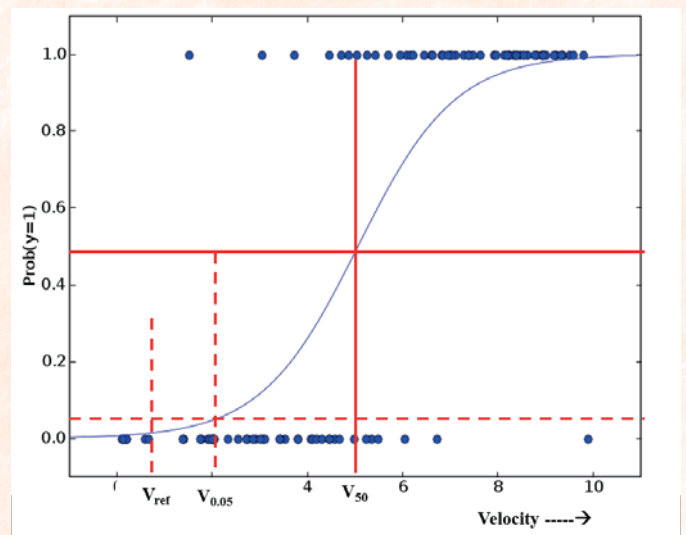
The angles of incidence for all shots shall be 0° ($\beta_1 = 0^\circ$). All samples shall be tested dry. No conditioning shall be done on samples meant for BL testing. The process of ballistic test is given as follows:

Test Parameters for Ballistic Limit Test

Sl No. (1)	Parameter Description (2)	Value (3)
i)	Velocity of first shot	The reference velocity for the armour type and caliber
ii)	Velocity step until first reversal	a) -30 m/s, if first shot was a perforation b) $+30$ m/s, if first shot was a stop
iii)	Velocity step until second reversal	± 22 m/s, depending on result of previous shot
iv)	Velocity step after second reversal	± 14 m/s, depending on result of previous shot

BL Performance Requirements

- $V_{50, BL} \geq V_{50, \text{Manufacturer}}$ (permissible up to -10 m/s).
- No perforations shall occur at or below the corresponding maximum fair hit velocity of a threat level.
- The estimated probability of complete perforation at the corresponding P-BFS reference velocity shall be less than 5 percent. In other words, $V_{05} \geq V_{\text{ref}}$.



Conclusion:

In this standard, maximum areal densities for Soft Armour Panel (SAP) and Hard Armour Panel (HAP) has been specified to ensure availability of light weight jacket with 360 degree protection. Presently, HAP is being manufactured with Boron carbide plates with UHMWPE based backing material to control penetration of bullet and back face signature.

India has world class facilities and design capabilities and as per the information available, BRJs are being exported to about 100 countries including Europe. As the critical performance requirements and their evaluation procedures have been clearly brought out in this standard, it will ensure the availability of quality BRJs at economical price. ■



April 22-24, 2020

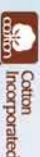
Nanjing, China

The 27th China International Disposable Paper Expo

Organized by



Co-organized by



Contact person:

Lucy (Ms. Cao Baoping)
Ashley (Ms. Wang Juan)
Tel: 86-(0)10-64778184/8179
Fax: 86-(0)10-64778199
E-mail: cidpex@cnhpia.org
<http://www.cnhpia.org>

Start planning now to be at the biggest event and meet with:

- **Tissue Paper & disposable products manufacturers:**
Tissue, wipes, sanitary napkins, pantyliners, diapers, pet pads.
- **Machinery manufacturers for tissue paper & disposable products:**
Tissue machine, cylinder, felt and wire, converting machinery, disposable hygiene products machinery, machinery for airlaid and nonwovens, other related apparatus and fittings.
- **Raw/auxiliary materials suppliers:**
Fluff pulp, airlaid, nonwovens, film, adhesive tape and release paper, hot melt adhesive, SAP, chemical actives, elastic band, package materials.
- **Agents, distributors**

CIDPEX Conference: the high-level meeting of tissue & disposable hygiene products industry in China.



• About **800** Exhibitors

• **800000** m² Exhibition Areas

• Over **35000** Visitors

• More than **700** conference delegates

Please log on:
<http://en.cnhpia.org/class/view?id=4>

CIDPEX2020 for details

Come to China in April 2020 for CIDPEX2020

BCH Welcomes New Member! Cellulose Converting Solutions (CCS)



Cellulose Converting Solutions is an Italian company which engineers and installs complete lines for the manufacturing of disposable hygienic products. The company was founded through the merger of a leading investor and two groups of technicians and designers with a thirty-year experience in the production of machines for baby diapers, incontinence products, lady sanitary napkins, bed under-pads, fluid absorbing pads, and bibs for babies and adults. The company has achieved many international goals thanks to its skill in this field, combined with a continuous desire for innovation and technological development.

CCS works with passion and competence, constantly striving to create new technologies able to support any idea; namely to offer its customers a practical solution to their needs, customizing its products to fit the customer's demands.

CCS Joins the BCH Family

Feminine Care Trends Set New Performance Requirements



The hygiene industry has changed drastically in recent years, particularly in the feminine care business. With new and challenging changes to products and market demands comes a wide variety of innovations fit to cater an ample range of needs from a highly diverse group of users.

One user group that has heavily influenced the feminine care market's direction is millennials, which comprise around 31% of the total global population and are entering their prime purchasing years. This group of key buyers is guided by their selective purchasing patterns and takes health and wellness into consideration on every purchase they make. These purchasing decisions are leading the new product launches across the different regions and reshaping the performance target for the components materials involved in the feminine articles.

Global Feminine Hygiene Market Trends

One clear trend in the feminine market that caters to an active lifestyle and need for added functionality is the increase of health skin and odor control innovations. These range from products with antibacterial claims, using additives and internal absorption layers with properties to capture or mask the intimate area odors after a long day of work or activity.

A growing niche is the ecofriendly feminine care market, not limited only to organic pads. Options like menstrual cups and reusable period underwear are available to millennials who are concerned about the environment. Hygiene regional and global players are creating diverse product niches to address this growing consumer trend.

Functional changes in the feminine care products are also widely spread across the globe. These particular innovations aim to make life easier for users and avoid interruptions to their usual routines. Products that offer added flexibility of the pad's core are available in Asia. In Latin America, there are panty liners designed to adjust to different types of underwear, as well as a two-in-one version that eliminates the need to carry a spare liner.

These global trends present an opportunity for manufacturers of absorbent hygiene products to differentiate themselves through innovations that address consumer needs and deliver production efficiencies. The newest positioning adhesive from H.B. Fuller addresses consumer demand for feminine care products that deliver a reliable and seamless experience, while offering up to 25% cost in use savings.

Introducing Full-Care® 6215 Positioning Adhesive



To address the need for products that accommodate an active lifestyle & offer increased functionality, H.B. Fuller created an innovative & high performing new positioning adhesive, Full-Care® 6215.

This new positioning grade was created by skilled chemists, taking the experience that this global company has gathered in the highly competitive Asian market to develop a product that is robust enough to adjust to the wide range of substrates used in the feminine market.

Full-Care® 6215 ensures consistently higher peels values at efficient coat weights, compared to other positioning adhesives in the market - even in presence of different types of garments fabrics like cotton, polyester & microfiber. It is an exceptional choice for adjusting to the ever-evolving market needs.

Members' Column

contd...

First RF5 Line Starts Spinning Successfully



The first line of the new RF5 generation has successfully extruded the first filaments at the nonwoven manufacturer PFN in the month of October.

Reifenhäuser Reicofil sets new standards in quality, output, line availability, efficiency, and machine intelligence with the new technology for the production of spunbond, meltblown, and composite nonwovens. The spunbond and meltblown technologies were totally revised for the RF5 technology. The RF5 is also equipped with digital solutions from the Reifenhäuser Digital Business Platform. This paves the way for intelligent machines and intelligent production.

High flexibility of the new line for decisive market edge

The semi-commercial line features high flexibility, thus permitting PFN to develop new products. Besides polypropylene, the line processes polyester. When combined with other products, it produces the components for diapers. Today, these components are produced separately in different processes. The specifications also include the production of Full High Loft. As a producer of nonwovens mainly used in the hygiene sector, PFN gains a significant market edge through RF5 technology.

Fully equipped with digitalization

The RF5 line is the first generation equipped with digital solutions from the Reifenhäuser Digital Business Platform. PFN is now based on a full equipment solution. It includes all the available modules that feature intuitive operation, continuous process and quality monitoring, predictive maintenance, and anomaly detection. For example, the line offers operators a productivity analysis that predicts exactly when a wear part will fail. It warns the operator of spinning dysfunction before it occurs and provides a troubleshooting guide.

Focus on purity of final product and sustainability

In addition, the RF5 line is equipped with an anti-contamination package providing an extremely high-purity end product. It also reduces noise, which improves working conditions for operators.

When it comes to sustainability, Reicofil has also tuned energy consumption for efficiency. The Blue Package reduces energy consumption to achieve greater sustainability in production. For example, the extruders and calenders are specially insulated and the fans are equipped with high-efficiency motors.

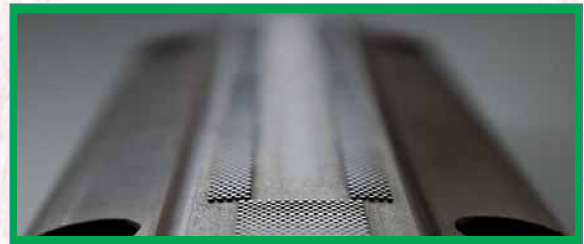
Please go here for all details on RF5 technology: www.future.reicofil.com

Superior Bond Strength with Maximum Production Speed

Curt G. Joa, Inc., a global, custom-engineering design and machine-building company, announced the invention of a side seam bonding technology.



The new Single Anvil In-Line (SAIL) Bonder from Curt G. Joa, Inc. uses a patent-pending design that provides better bond strength with unique designs, reduces overall costs for maintenance & material consumption, plus allows simple adjustments for size changes. Until now, the traditional ultrasonic process was limited by the dwell time required to form bonds of sufficient quality, limiting machine speeds. JOA's invention breaks through barriers & provides consistent quality at the highest production speeds. Furthermore, with the precision of the process, seams require less material which creates a more aesthetic product.



The unique SAIL Bonder has 4 key benefits for customers:

1. Better Bond Strength: optimized per material and consistent across all sizes
2. Flexible Bond Patterns: unique designs previously unavailable
3. Reduced Costs: less inventory, simplified maintenance, plus material savings from the reduced pattern width
4. Simple Adjustments: electronic size change at the push of a button

Kevin Zeinemann, Corporate Director of Engineering, explained more, "Traditionally, ultrasonic side seam bond strengths correlated to production speed & product size. This increases deviations in bond strength between product sizes & limits production speeds. However, JOA's invention is multi-dimensional & addresses all the process variables involved in bonding a plurality of webs together."

About Curt G. Joa, Inc.

Curt G. Joa, Inc., a global leader of custom and premium machinery to produce disposable products, utilizes its own independently developed and patented technologies in its machinery. For 87 years, customers have relied on Curt G. Joa, Inc. to solve their complex production concerns both effectively and economically. For additional information about JOA and its global capabilities and innovations, please visit www.joa.com.

contd...

Members' Column

contd...

Teknoweb Converting Introduces the Perfect Solution to Make a Step into Wet Wipe Manufacturing

Wet wipes are a product that is growing worldwide at a yearly rate of 6.7%. In India, where volumes are still at negligible growth rate is double & even triple digit for specialty products. In this environment more & more companies are thinking to expand their product range.



Manufacturing wet wipes can be complex, risky & pretty expensive. Teknoweb Converting has the right answer. Genesis is a complete solution for manufacturing baby wipes consisting of a folder and a packaging unit combined in a one single machine. It is entirely controlled by single PLC and HMI. It comes in 2 versions, 10 or 12 reels, with embedded all quality checks, a first class & user friendly automation platform and capability to manufacture all products that are nowadays available in the market (from 6 up to 120 sheets count) in both interfolded & not interfolded version. Machine is only one and HMI to learn is only one. It delivers more than 100 packs/min of baby wipes in a safe & controlled environment to guarantee the highest sanitary standard. Quality & reliability are the highest possible in order to limit unplanned stops & unwanted costs.

Genesis is an essential machine. One can get only what is necessary to start safely and steadily producing wet wipes. For companies who need it Teknoweb Converting provides also the full solution to fabricate lotion to be incorporated in wipes.

Moreover, Teknoweb Converting recently introduced the latest development to manufacture wet wipes at high speed with a particular attention to sanitary design. With this latest innovation Teknoweb brings sanitary requirements to new heights. It is named X3MSD. Teknoweb X3MSD consists of a series of innovation that are hardly present in the modern wet wipes machineries. Among others it includes:

- Lotion distribution piping with variable section in order to keep the right speed of cleaning agent during CIP process along the whole line
- Separation of drive side from the operator side with stainless steel plates where cantilevered process units are applied
- CIP process completed automated and managed by the manufacturing line PLC. Automatic shut off valves are managed automatically in sequence in order to maximize the cleaning power of pumps which are dosing cleaning fluid along the line (reaching the right fluid speed level).
- COP process for quick change over replacing all parts that need to be cleaned.

The new X3MSD is implemented on request on all NEXT, FUTURA & EXIGE folder lines

For info sales@teknowebconverting.com

Fameccanica and TKWM Agreement on T-Pad



Fameccanica.Data SpA ("Fameccanica") and Teknoweb Materials Srl ("TKWM") have teamed up, to better serve their customers in the disposable hygiene business and entered into an agreement pertaining an innovative technology, named T-Pad, in the field of the absorbent cores for bed underpads, pet mats and similar products.

The technology is characterized by superior performances as well as enhanced visual and tactile end-user experience and will be combined and incorporated in the Fameccanica machines for the mentioned product category.

The agreement by TKWM and Fameccanica consists of an industrial partnership and a license to Fameccanica to exclusively serve the market with T-Pad technology. By adding T-Pad solution to its high-tech machinery and leveraging its global footprint, Fameccanica will be able to offer a competitive advantage to its partners whilst guaranteeing the diffusion of cost-effective innovative products at global scale.

The validity of the license is agreed worldwide with the only exception of the USA where TKWM will keep such activity on its own.

Fameccanica and TKWM believe that, combining their competence, capability and strengths in the absorbent core technology, they will enhance the performance of final products in this hygiene category and, at the same time, offer to the industry a new benchmark of high performance manufacturing machines.

For additional information feel free to contact either Fameccanica or TKWM

For Fameccanica:

Ettore Paolini - Sales and Marketing Director
Via Aterno, 136 - 66020 Sambuceto - (CH) Italy
Phone: +39 085 45531
E-Mail: fmd.sales@fameccanica.com

For TKWM: Fabio Zampollo - CEO

Via Verdi 23/bis - 26020 Palazzo Pignano (CR) Italy
Phone +39 0373 350511
E-Mail: info@tkwmaterials.com ■

*"To attain knowledge, add things everyday. To attain wisdom,
remove things every day." – Lao Tzu*

EDANA Training Courses

21-24, April, 2020
New Delhi, India

Organised By:



**Registrations will
open in February
Kindly save the
dates for these high
level courses...**

**Mark Your
Diaries**

Derive your best from these impactful training courses:

- Trainings will be held by international trainers of global repute
- Interactive sessions within the group
- Trainees limited to 30 for each training

For more details please contact at info@bch.in

21-22, April
NONWOVENS



23-24, April
**ABSORBENT
HYGIENE & MEDICAL
PRODUCTS**



23-24, April
FILTRATION

