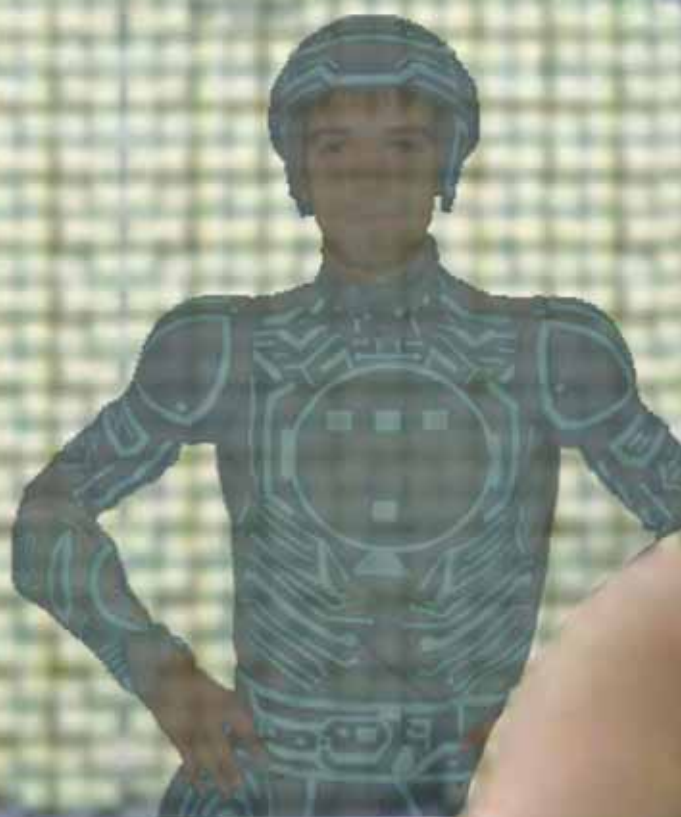
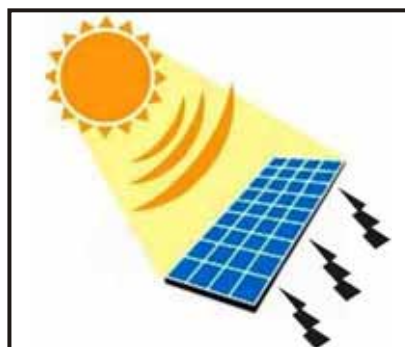


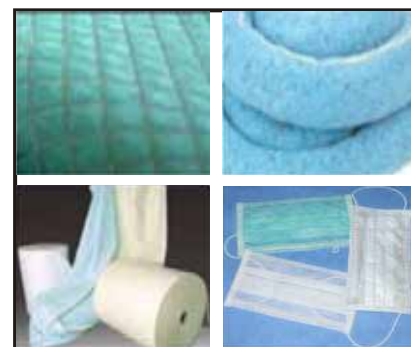
Analyze 2010... ...to look into 2050 and beyond



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From the MD's Desk



Mr. Samir Gupta, MD, BCH

“*With the many predictions that surround the visionaries of this industry, a complete transformation in many products and applications is foreseen in the coming decade. Things may shape up completely different from what they are today. Products addressing better efficiency and needs and at the same time are sustainable will form the 'next generation' products. This factor needs to be looked upon now especially by those seeking new opportunities and investments.*”

2010 certainly was a very eventful year witnessing some noteworthy acquisitions, joint ventures & mergers which will surely help the technical textile industry emerge stronger in the future. Johnson Controls took over Michel Thierry, Honeywell took over Sperian Protection, Black stone took over PGI, SGL joint hands with BMW and the list goes on....

With the many predictions that surround the visionaries of this industry, a complete transformation in many products and applications is foreseen in the coming decade. Things may shape up completely different from what they are today and this is precisely what we have highlighted in our cover story this time which talks about thinking beyond innovation. The concerns about carbon emissions has already sparked off the urgent need to develop more green cars in the developed world and it will not be too late until we see similar regulations in India as well. Not only the electric or hybrid power houses but the other parts and designs of the car are also expected to witness a complete transformation in the future. Tapping renewable energies with the help of technical textiles or using fibre and fabrics in composites for various applications has given a complete new dimension to the world of thinking. Products addressing better efficiency and needs and at the same time are sustainable will form the 'next generation' products. This factor needs to be looked upon now especially by those seeking new opportunities and investments.

It is time to learn from the visionaries of the past and take inspiration to look into the future. To name one of them is Roger Milliken who died as Chairman of Milliken & Company of U.S. on Dec. 30, 2010, at the age of 95 who is known to have transformed the family business of woolen mills into one of the world's largest privately owned, successful, profitable and innovative technical textiles and chemical company. Though I did not get the opportunity to meet him personally but his close friends and associates swear by his dynamism.

Back home in India as well the industry is gaining momentum and with the expected launch of the Technology Mission on Technical Textiles and confirmed addition of 4 more centres of excellence to the existing 4, the commitment of the Indian Government in growing this sector is clearly visible. Even more the honorable textile minister's vision of getting more prominence to the Indian textile industry on the global map is well complemented with the ever growing demand of the Indian industry and individuals. What is required is proper planning and execution to ensure that the time and money invested are used for the growth and benefit of the industry.

Going forward the ICERP 2011 in Mumbai, IFAI expo 2011 in Singapore, Business Forum for Technical Textiles and Nonwovens in Frankfurt, INDEX 2011 in Geneva and Techtextil in Frankfurt will be events where the industry leaders can be seen planning their future strategies and expansions. This year in October the Techtextil India will be held in Mumbai and the Filtrex show will happen in November. Once again it will be exciting to see the global industry leaders deliberating and showcasing their products to the inquisitive yet cautious audience of India.

Wishing all our readers a very happy and a successful year 2011 ahead.

Owner
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Publisher & Printer
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Published at:
Business Co-ordination House Pvt. Ltd.
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19 Barakhamba Road, New Delhi
Tel: + 91-11- 23328130, 41520207
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Printed at:
Lustra Print Process Pvt.
Ltd., B-249, Naraina
Industrial Area, Phase- I,
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Reflections

The BCH Newslite looks very professional. It has a nice blend of informative articles, advertising and industry information. Congratulations on a job well done.

Ian Butler, INDA (Association of the Nonwoven Fabrics Industry)

I like to keep an eye on the global textile picture and therefore your newsletter is an interesting piece of information to me.

Ulrich Fembacher, Textilcolor AG

We received the hard copy of TechTex India, thank you. The lay out is very nice and the Agro Textiles article is a real "awareness" article, this means it gives a good impression to people on what can be done with nets in the erosion industry.

Bert Paesen, Conwed Plastics

This is one of the best magazine and one of the best activity of BCH. Gives us very good info.

Mr. Deepak Kulkarni, Government Polytecnic



Analyze 2010 to look into 2050 and beyond.....

How will lifestyles change post 2050? How will this affect all the other industries and thus the textile industry? Will the world of textiles see a transformation by way of 'what is, will not be & what is not, will be'? Of course, no one can predict the future with 100% accuracy but by tracking expected technology breakthroughs and adding a dash of imagination, we can create a plausible scenario of how life could unfold. It is time to analyze 2010 to look into 2050 and beyond... Given the advancement in technologies from the 20th century to the 21st, every area from medicine, to transportation, to weapons, to energy, to mobile technologies, to computers has seen a phenomenal change ... one can only fathom where these rapidly changing and evolving technologies will lead us by the end of this century.

- Robots may become physically and mentally superior to humans
- World population may reach 10 billion by 2065
- There may be use of nuclear fusion as power source
- Existence of space solar power stations
- There could be a 15 to 95 cm rise in sea level
- 50% of world's arable land could become salty
- There would be manufacture of long diamond fibres
- Existence of smart skin for intelligent clothing and direct human repair
- There would be factories in space for commercial production
- Terrorists may go biological
- Prevalence of a constant fear of a global nuclear war
- Life expectancy may approach 110
- Cars would fly or float
- No-carbon economy worldwide.....

“At first people refuse to believe that a strange new thing can be done
Then they begin to hope it can be done,
Then they see it can be done,
Then it is done and all the world wonders
why it was not done centuries ago.”

Frances Hodgson Burnett

In this era of globalization today we are witnessing an explosion of technologies and knowledge pools. There now exists a whole set of new needs which are self created due to these advancements. Issues that need to be addressed are expanding populations, depletion of environment, depletion of natural resources and combating threats. To go from where we are to where we need to be is going to require a transformation in the way we live and thus in the innumerable

products which make this living. Another interesting point is that the future will not only be addressing needs but will also be feeding each development with a newer development as a natural evolving process. Vision and prophecy when accompanied with knowledge, sound reasoning and accurate data can present a possible timeline of future events. Large corporations invest heavily in this kind of activity to help focus attention on possible events, risks and business opportunities. Such work brings together all available past and current data, as a basis to develop reasonable expectations about the future.

Technical textiles is today a very closely watched area where innovation activity is intensifying. Today technical textiles encompass textiles not just for a technical end product but rather textiles with deliberately developed functions. Innovation has resulted from close cooperation amongst different industries as specialized textiles are a part of each industry in some way or the other. In one application they may be used for their softness and drapability while in the other they may be used for their ruggedness. Textiles have the benefit of incorporating contrasting properties when different fibres and fabric technologies come together. The last few years have seen intense innovation activity in fibre and associated fabric developments for clothing, protection, household textiles, medical, transportation etc. This has followed the trend for convergence of varied expertise to create products which may be a road map to analyze the future how it will be.

“It is very interesting these days to debate on the future of many technical textile products and get adverse or extreme opinions from experts who may be researchers or marketing personnel. The world is changing fast and so are its needs and preferences. Many future technologies seem to be embracing natural phenomena and resources while many are based on mechanical advancements or next generation technologies.”

Ritika Gupta, Executive Director, BCH

Cars may need to fly or float to address traffic jams. Shoes would be designed to tell us the way. Clothing would be sprayed on to the body, fabrics may be used extensively to make exterior bodies for transportation vehicles, new fibres will evolve and old will disappear, every person would need a protective uniform to combat fear of nuclear, biological or chemical warfare and one can go on and on Lets take a peep into different application areas of technical textiles in order to understand what is happening today and hence start opening our minds towards what will happen tomorrow.

Cover Story

...contd

Clothing Textiles

It is not certain when people first started wearing clothes however, anthropologists give estimates that range between 100,000 to 500,000 years ago. The first clothes were made from natural elements: animal skin and furs, grasses & leaves, bones & shells & probably with the way things are shaping up, the last will be made out of 'magic'. Clothing which was earlier designed only for protection & fashion is now incorporating many performance oriented functions to enhance human living in a different way.

In today's world where we are talking about wovens & nonwovens or even composites as fabrics, it is interesting to suddenly hear 'a do away with them'. Can one imagine a zero lead time for making garments? Innovative clothing has become an arena for competition for scientists all around the world. The race is on to develop fabrics that are protective, detective, monitoring, controlling, preventing & performing. It's time again to analyze a complete transformation of clothing that will form the future now. Times are changing fast & if predictions were to be taken seriously then there would be a time when all individuals would be wearing only high tech uniforms which would incorporate functions such as tracking & monitoring medical fitness, temperature control, energy absorption, color change & what not- all designed to make living more practical, fast & futuristic. Smart clothing is only the beginning of what may become a lifestyle very soon as it would be difficult to function without it.



Spray-on Clothes. No need for fabric.

Researchers are all set to unveil a seamless fabric that can be sprayed on to the surfaces to make skin & other clothes, medical bandages & even upholstery. Dr. Manel Torres, a Spanish fashion designer has collaborated with Paul Luckham, Professor of Particle Technology to create a seamless material called Fabrican Spray-on fabric that can be sprayed directly onto the body using aerosol technology. The spray dries instantly to make innovative clothes that can be washed and re-worn. This technology helps to create clothes from scratch. The Fabrican Spray-on fabric consists of short fibres that are combined with polymers to bind the fibres together & a solvent that delivers the fabric in liquid form & evaporates when the spray reaches a surface. The spray can be applied using a high pressure spray gun or an aerosol can. The texture of the fabric can be changed according to what fibres are used (such as wool, linen or acrylic) & how the spray is layered. The spray-on fabric can be produced & kept in a sterilized can which could be perfect for providing spray-on bandages without applying any pressure for soothing burnt skin or delivering medicines directly to a wound.

Innovative research reawakens human memories through intelligent textiles



As part of the 2010 Congress of the Humanities & Social Sciences, two teams of researchers have developed a highly sophisticated concept of interactive clothing whereby the body's physical & emotional state triggers the transfer of personalized memory back to the wearer. Combining uniquely engineered adaptors & soft cabling systems with fashionable clothing designs, the prototype garments incorporate wireless technologies & bio-sensing devices to activate a rich database of image & sound, creating a narrative or string of messages from an 'absent' person. Wireless sensors & bio-sensing devices are embedded into garments that record the wearer's temperature, heart rate, galvanic skin response (moisture) & rate of respiration. The data is sent via the internet to a sophisticated database which in turn sends back messages to the clothing. The messages, which evoke memories of an absent person, may take the form of voice recordings or songs broadcast from speakers sewn into a hood or shoulder seams or scrolling text on a LED array woven into fabric or video and photographic imagery. To give an example, a person might be experiencing a certain emotional state such as stress, grief or despair. The bio-sensors would prompt the person's clothing to receive a range of messages such as photos, texts and sound recordings to provide comfort. This unique combination of textile arts, emotional mapping & responsive technologies can enhance human experience with enormous potential for the fields of health care and well-being.

Snippets

- Socks that mend themselves, trousers that can power your iPod and luminous sleepwear you can read by, a solar tie that charges your mobile phone, a suit with a built-in iPod, clothes that can change colour
- Garments that can be tracked via GPS systems to help locate wounded soldiers or missing miners and clothes that can automatically contract around a wound to prevent blood loss
- Garments with embedded wireless sensors with a variety of sports and medical applications, including remote rehabilitation and clothes that can notify nursing staff if a patient falls over
- Fabrics are becoming so intelligent that they can differentiate between a bad smell and a good one; they will absorb your body odour but not your deodorant or aftershave. Fashion tights infused with fragrant oils, moisturiser and vitamins and the list goes on.....

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Medical Textiles

The origin of medical textiles dates back to 5000-3000 B.C. when hand woven cloth or spider webs were used to stop bleeding and wound closures/sutures were made of natural materials such as flax, silk, linen strips, and cotton. Recent technological developments are transforming the function of medical textiles which are now also curing apart from preventing. Textile materials for medical and healthcare products range from simple gauzes, surgical gowns, drapes or bandage materials to scaffolds for tissue culturing and a large variety of prostheses for permanent body implants. These products are constantly seeing an innovators scrutiny not only to perform better but to perform more. Discoveries are limitless and are ranging from fibres driving away asthma or wound dressings with built in drug delivery system, implants performing better and so on. It is interesting to watch textiles replace path labs, doctors or treatments in many orders.



Check your wound without removing the bandage



Wounds have to be regularly checked, to make sure any complications in the healing process are detected at an early stage. A new material will make it possible to check wounds without changing the dressing: If an infection arises, the material changes its color. Whether a small cut with a fruit knife, a surgical wound or a major injury caused by a fall—the body's defense and repair system leaps into action & tries to close the wound as quickly as possible. Small injuries usually heal within a few days but a gaping wound will take longer to heal & an infection can take hold even after several days. Dressings protect the site of the injury but to check the wound they have to be removed. This can be painful for the patient & moreover it risks giving germs the chance to enter & cause infection. Scientists at the Fraunhofer Research Institution for Modular Solid State Technologies EMFT in Munich have developed dressing materials and plasters which indicate pathological changes in the skin. If an infection is present, the color of the dressing changes from yellow to purple. "We have developed an indicator dye which reacts to different pH values & we have integrated it into a dressing & a plaster. Healthy skin & healed wounds usually show a pH value of below 5. If this value increases, it is shifting from the acid to the alkaline range, which indicates complications in the healing of the wound. If the pH value is between 6.5 & 8.5 an infection is frequently present and the indicator color strip turns purple," states Dr. Sabine Trupp, scientist at the EMFT, explaining the chemical reaction. In this way the intelligent dressing material makes it possible to regularly check wounds from the outside without disrupting the healing process. There are plans to integrate optical sensor modules into the dressing to measure the pH value and indicate the results on a reader unit. This method would allow the value to be read off precisely, providing information about how the wound is healing.

Light Activated Antimicrobials

LAAMScience Inc, a four year old company based in Morrisville, NC, is unveiling Serget, a light activated antibacterial & antiviral coating technology that can be applied to wovens, nonwovens, natural and synthetic fabrics & a variety of polymers. The technology produces singlet oxygen, a broad spectrum antibacterial & antiviral agent that is generated when exposed to visible light. Current applications include N95 respirator masks, surgical masks & semi-disposable cleaning wipes such as kitchen wipes & dishwashing towels. The energy of light changes oxygen to singlet oxygen which is very reactive. Singlet oxygen inactivates or eliminates viruses & does not allow any odour or bacteria to grow. Within milliseconds it changes back to normal oxygen but these reactions continuously reoccur as long as the surface is exposed to visible light. The greater the light intensity, the faster the rate of singlet oxygen generation & therefore higher rates of bacterial & viral kill. The treated product can be washed up to ten times. It has efficacy in the light for up to three months & when in the package it has a shelf life of three years.



Hydrating silk garments used in eczema treatment



UK based Dreamskin Health Ltd has launched hydrating medical-grade silk garments designed to relieve the itching & irritation of eczema and dermatitis. The secret to the new garments is a proprietary biomimetic copolymer matrix which is firmly bound to the surface of the silk & assists the water & temperature regulation functions of the skin. Dreamskin garments are currently available in bodysuits for babies & face masks, tops, leggings and pyjamas for children up to 12 years old & are designed with wearer comfort as the top consideration. Seams are kept away from identified irritation areas such as the underarms, inside elbows and knees, fingers & toes webbing. Dreamskin garments are said to offer the benefits such as improve skin hydration, moisture regulation, aid reduction of skin itching and irritation, assist with regulation & maintenance of body temperature, support the recovery of normal skin function and decrease contact between skin and irritants such as washing powder residue.

Cover Story

...contd

Transport Textiles

In future will there be any room (need) for textiles in an automobile or will there be an increased usage of textiles in an automobile? To analyze this question it is important to first understand what kind of thought process is prevailing in the minds of today's car designers. Textiles have long been used in automobiles. Being open top, the first cars had seats made of leather or leather imitations. Wool, cotton and rayon were then used until synthetic fibres, such as nylon and polyester became dominant in the second half of the 20th century. The 21st century is seeing innovations galore corresponding to:



- Airbags built into the webbings of seat belts
- New thermoplastic fiber composite materials which will be used in the exteriors
- External airbags being designed to protect pedestrians
- Lighter polypropylene auto parts made out of new synthetic mineral fibres and many more...

Automotive textiles in the form of seatbelt and airbag webbings, tyre cord, filters, upholstery, interior trims, etc. of today are engineered with enhanced functionalities, are looked upon to be environmentally sustainable materials offering lighter weight and better functionality- all at the same or reduced costs. The global consumption of textiles used in automobile industry is estimated to be over 4.5 Lakh tonnes today and the percentage of textile material used in a motor car amounts to 2.2% of the overall weight of the car. But with the latest changes taking place in the interior or exterior design of a car, we all need to really think if this textile consumption is going to increase or decrease or tailored to new needs in future. Lets take a cue from some interesting works mentioned below.

Mercedes-Benz BIOME: Could cars be grown out of seeds?



At this year's Los Angeles Design Challenge, the designers from the Mercedes-Benz Advanced Design Studios in Carlsbad, California, surprised everyone with a revolutionary vision. Taking their inspiration from nature, they designed a vehicle which is fully integrated into the ecosystem, from the moment of its creation right through to the end of its service life. The Mercedes-Benz BIOME grows in a completely organic environment from seeds sown in a nursery. Out on the road the car emits pure oxygen and at the end of its lifespan it can be simply composted or used as building material. The Mercedes-Benz BIOME symbiosis vehicle is made from an ultralight material called BioFibre and tips the scales at just 875.5 lbs (around 394 kg). This material is significantly lighter than metal or plastic, yet more robust than steel. BioFibre is grown from proprietary DNA in the Mercedes-Benz nursery, where it collects energy from the sun and stores it in a liquid chemical bond called BioNectar4534. As part of this process, the vehicle is created from two seeds: The interior of the BIOME grows from the DNA in the Mercedes star on the front of the vehicle, while the exterior grows from the star on the rear. To accommodate specific customer requirements, the Mercedes star is genetically engineered in each case, and the vehicle "grows" when the genetic code is combined with the seed capsule. The wheels are grown from four separate seeds.

Struck in traffic? Turn your car into a plane in 30 secs



Your dream of a car that runs on road but can also fly you out of a traffic jam.

The "Terrafugia Transition" is a two-seater car that can convert from road to air in just 30 seconds, without the driver leaving the vehicle. Developed by former NASA engineers & built by a small American company, Terrafugia Inc, the vehicle can travel at speeds of up to 145kmph in car mode with its wings folded. The wings unfold for flight mode in which it can cruise at the speed of 185kmph for up to 805km on a tank of unleaded gasoline. Also, with its wings folded, it can be parked in an ordinary car garage. It can take off or land at any public use general aviation airport with at least 2,500 feet of runway. One of the major advantage of the transition over ordinary light aircraft is safety, as in the event of inclement weather, it can simply drive home instead of either being grounded or flying in unsafe conditions.

The thinking 'driverless' car

Tinosch Ganjineh, a researcher at Berlin's Free University has a vision of a country full of taxis. He believes that some time in the future individual modes of transport will become a thing of the past. Vehicles will not require the skills of a human driver. At first glance the car model looks like an ordinary Volkswagen Passat but a laser scanner device mounted on the roof indicates there is more to this car. The scanner turns around at a speed of 10 revolutions a second, scanning its surroundings and generating a 3D image. The scanner allows the car to "see" in almost every direction at the same time. Less obtrusive are the integrated laser and radar scanners that allow the car to recognise obstacles. Apart from pedestrians, road markings, signs and traffic lights can also be recognised and there is a GPS system on board. The driverless taxi can instantly recognise a passenger as soon as he or she orders the vehicle using a PC tablet. Traffic jams would cease to exist if Ganjineh's dream ever comes true and traffic accidents would never happen.

Cover Story

...contd

Sport Textiles

Thinking about sports or thinking about competition, fitness, business, patriotism, entertainment, togetherness, charity, change and the list goes on. We've been gaming for years and the interest and participation has only been increasing, thanks to all the pleasures and motives that we derive from sports. Sportswear and goods have been always in the news for enhancing sporting activities and the desire to ease or outperform has boosted the development and excellence of sportswear, equipment and sports infrastructure.

The technical developments in the sports clothing industry have resulted in the use of engineered textiles for highly specialized performances in different sports. Interesting launches day after day have become inevitable. Combining clothing functions with wear comfort is a growing market trend and for all active sportsmen this constitutes one of the vital factors for achieving high level of performance. Moreover the future is going to be different! Till now we had heard of competition and willpower bringing out the best in players but this will change as performance textiles will now enhance the players capabilities not only by protecting or providing comfort but also adding another dimension of better performance. Shoes that make you run faster, swimwear that enhances your speed or golfing gloves that monitor your grip are some examples of textiles that better your performance.





A digital golf glove- your new guide to golfing

German-based company, Sensosolutions, has come up with a compact way to measure the level of grip pressure in the form of the SensoGlove, the world's first digital golf glove with a that constantly reads your grip pressure. Using small, highly responsive sensors, the SensoGlove provides audio & visual feedback about your exact pressure on the club. The SensoGlove computer is a small, lightweight, sweat-proof monitor that analyzes pressure settings from four tiny sensors sewn right into the glove. The SensoGlove reads & displays your pressure and warns you if you exceed your target level. The SensoGlove even shows you what finger is gripping too tight, so you can adjust your grip accordingly. Best of all, the SensoGlove reads your grip pressure during your address & swing. Many golfers start out with a light pressure only to grip tighter at take-away and through the backswing and downswing. Using the built-in audio warning, golfers will know if they are gripping too tight exactly when it happens during their swing. The four tiny sensors read the user's grip pressure 80 times a second and a computer analyzes the readings & displays the results on a sweat-proof 1.2-inch LED digital monitor located on the back of the glove. Before a swing, the user dials in their target pressure on a scale of 1 to 18. The lowest settings (1 – 12) are less sensitive, while the highest settings (13 – 18) are the most sensitive and encourage a very light grip pressure, useful for chipping and putting. But trying to swing with more power causes a death grip, creating tension in the hands, wrists, arms and shoulders. SensoGlove will allow all golfers, from beginner to advanced, to quickly learn how to hold the club and avoid the dreaded "death grip" and improve every part of a golfer's game— from backswing, downswing, impact, follow-through, to driving, putting and chipping. The computer/display can be easily removed from the glove and snapped onto a replacement glove if the glove wears out, or if you just want to play without it. It is powered by standard watch batteries which last for 80 – 100 hours of play.

Solar soccer balls score design points



There are obviously some people out there who think that soccer ball aren't doing enough. Earlier this year, we told you about the soccket, a ball that generates power as it gets kicked around. Now, word comes to us of soccer ball prototypes with built-in solar panels. Where the black pentagonal sections would normally be, these balls instead have custom-designed panels that gather energy as they bask in the sun. That energy is used for running onboard motion sensors & audio devices that emit a tracking sound whenever the balls are kicked. It is hoped that this sort of technology could be used to allow visually-impaired people to play soccer in the future. Greendix, a company that specializes in custom solar applications, designed the balls to challenge people's notions of where and how solar panels can be used. "These solar footballs were created to celebrate the current World Cup and demonstrate that solar panels can be integrated into objects such as balls," said Joseph Lin, President of Greendix. "The main goal of this project was to prove that solar panels can be integrated into any object that we interact with on a daily basis and to push the limits of what is possible with solar panels."

process | technology

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Protective Textiles

The threats from mechanical, thermal, environmental, nuclear, biological, chemical and electrical hazards are only seem to be growing and so are the means of combating them which are becoming ever more complex. A consequence of this is the development and exploitation of new textile fibres, structures and clothing systems whose purpose is to provide improved protection, whilst maintaining comfort, efficiency and well being. Recently some headlines that have been hitting the news will help us think on what kind of textiles will be used for the protection of humans in hostile environments:

- Expanding blast-proof curtain designed to reduce impact of bomb explosions
- LifeNetT, innovative mosquito nets to protect against malaria
- Liquid-Cooled Suit Could Soon Protect Firefighters
- Copper fibre socks helped Chilean miners
- Rescue Protection Set protects crash victims and rescue personnel

Home Textiles

Textiles have always served the purpose of decoration, comfort and safety along with giving a touch of completeness to one's home. While the basic functions remain unchanged but the new age home textiles are becoming more and more intelligent. The skilled designers have participated whole heartedly to offer new and exciting looks to the modern and contemporary homes apart from providing various functions which ensure better living. We could be talking about anti-dust mite mattress, carpets that improve air quality inside buildings, temperature-regulated bed linen for healthy sleep and the list is endless.

...It is without a doubt an exciting time that we are living in, as we are constantly churning out something new each year, making things better and optimizing their usage. After all the technology business is fierce and with continuous introductions and launches of new products it almost feels like we are functioning in a fast forward mode. One thing is certain in the distant future - the world will be a very different place. What must be remembered by anyone preparing for the future is that technology change isn't very important in itself. What matters is what this change enables or destroys. Ultimately we are all aiming for improved lives with a variety of entertainment, better health, greater wealth and probably better social wellbeing. ■

**Smart underpants save lives**

The "smart" in "smart underwear" refers to the fact that the printed sensors will be incorporated into logic-based biocomputing systems that will monitor biomarkers found in human sweat and tears, make autonomous diagnoses, and administer drugs. A team of U.S. scientists has designed some new men's briefs that may be comfortable, durable & even stylish but unlike most underpants, may be able to save lives. Printed on the waistband and in constant contact with the skin is an electronic biosensor, designed to measure blood pressure, heart rate and other vital signs. The technology, developed by nano-engineering professor Joseph Wang of University of California San Diego & his team, breaks new ground in the field of intelligent textiles and is part of shift in focus in healthcare from hospital-based treatment to home-based management. This specific project involves monitoring the injury of soldiers during battlefield surgery & the goal is to develop minimally invasive sensors that can locate, in the field & identify the type of injury. Ultimately, the biosensor that detects an injury will also be able to direct the release of drugs to relieve pain & even treat the wound for remote monitoring of the elderly at home, monitoring a wide range of biomedical markers, like cardiac markers, alerting for any potential stroke, diabetic changes & other changes related to other biomedical scenario. Wearable biosensors can also provide valuable information to athletes or even measure blood alcohol levels.

Air cleaning carpet to provide relief for asthma sufferers

Although medical professionals often advise people with severe allergies to remove wall-to-wall carpeting, carpet manufacturers defend their product, saying that carpet fibres actually trap allergy-provoking substances like dust and pollen and prevent them from circulating in the air where they can be inhaled. A new carpet from International carpet & artificial grass manufacturer, DESSO, could mean an end to such conundrums as it is designed to capture & retain more of the potentially harmful allergy-producing particles in its fibres and significantly reduce the amount of such particles floating in the air. Both the Asthma and Allergy Foundation of America & German Asthma Foundation (DAAB) actually come down on the side of carpet manufacturers, saying there are more allergens on surfaces than in the air. But the problem is that the slightest movement can disturb them. The new AirMaster carpet is designed to address this problem by safely trapping and immobilizing potentially harmful allergy-producing particles in the carpet fibres. The coarser dust is captured in the thicker yarns of the lower pile, while the high pile consists of ultra fine yarn filaments to capture and retain particulate matter that is less than 10 micrometers. DESSO says this guarantees a significant improvement in indoor air quality, and therefore reduces the risk of health-related problems.



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FICCI's Fiscal Recommendations to Boost Technical Textiles Industry

In a bid to give a strong fillip to the technical textiles industry, FICCI has recommended inclusion of the industry under Special Product Focus Scheme for exports, correction of inverted duty structure, fixing drawback and DEPB rates for new products, keeping the industry out of the ambit of GST for at least two years, duty free import of speciality fibres & yarns not produced in India and reduction in excise duty on man-made fibres & yarns from 10% to 4%.

In its recommendations to the Ministry of Textiles for taking up the issues with the Finance Ministry, FICCI has pointed out that given the fact that technical textiles have high potential for exports there is a need to incentivize such products and sectors under the Special Product Focus Scheme of Foreign Trade Policy which would make them eligible for grant of Duty Credit Scrips equivalent to 5% of FOB value of exports. Currently, these items are included under the Focus Product Scheme only which entitles them for a duty scrip of 2% only, noted FICCI.

Apart from providing higher export incentives there is a need to incentivize domestic manufacturing of these products by rationalizing custom duty structure in the sector. Giving an example of diapers which is a technical textiles item, FICCI said that effective total custom duty on raw materials required for producing diapers is at 26% almost the same as import duty on import of finished diapers (HS Code 48184010) which is at 26.8%. FICCI said that there is a need to reduce import duties on raw materials required for producing diapers to encourage manufacturers to produce domestically.

Additionally, FICCI has sought custom duty exemption on certain raw materials and additives that are primarily imported, viz. custom duty on titanium di-oxide (Anatase grade) with HS code 28230010 to be reduced to nil from current 10% and custom duty on spin finish oil be reduced to nil from current 7.5%. Currently, a large amount of these products are imported as a result of high and equal percentage of custom duty on raw materials.

FICCI has urged the Textiles Ministry to consider the technical textile industry's demand for allowing duty free import of the following speciality fibres & yarns that are not produced in India:

- Acetate fibre (HS code– 55049010)
- Acetate filament yarn (HS code– 540342)
- Tri-acetate fibre (HS code proposed– 55049011)
- Tri-acetate filament yarn (HS code proposed– 54033310)
- Cuprammonium filament yarn (HS code– 54033910)
- Cuprammonium fibre (HS code proposed– 55049040)
- Nylon 11 (HS code proposed– 55031120, 54025120)

- Lycra fibre (HS code proposed– 55039030)
- Lycra filament yarn (HS code– 54024400)
- PVA fibre (HS code proposed– 55039030)
- PVA filament yarn (HS code proposed– 54026960)
- PBT yarn (HS code proposed– 54026970, 55039040)
- Modacrylic staple fibres (HS code proposed– 55033010)
- Modacrylic filament yarn (HS code proposed– 54026940)
- PTET (HS code proposed– 54026980, 55039050)

Also, FICCI noted that for a number of technical textiles products, DEPB or Drawback rates are not available. As for DEPB rates, the chamber has stated that at present, under Sr. No. 46A and 46B of the DEPB schedule of product code 89, the rate of DEPB for nonwoven fabrics/made-ups manufactured from man-made spun yarn are provided. However, DEPB rate for nonwoven fabrics/made-ups manufactured directly out of man-made fibres without undergoing the process of spun yarn are not provided. DEPB rates should be fixed for these products. In case of Drawback rates, at present no Duty Drawback rates for wipes, bandages & gauges of nonwovens made from fibre are fixed and these are all technical textiles items. FICCI said that the same should be considered as per the table given below:

| Tariff Item | Description of goods | Pack size/unit | A | | B | |
|-------------|---------------------------------------|----------------|--|------------------------------|--|------------------------------|
| | | | Drawback when CENVAT facility has not been availed | | Drawback when CENVAT facility has been availed | |
| | | | Drawback Rate | Drawback Cap per unit in Rs. | Drawback Rate | Drawback Cap per unit in Rs. |
| 3307 | Wet Wipes | Pieces | 16% | Nil | 4% | Nil |
| 5601 | Dry Napkins | Kg | 16% | Nil | 4% | Nil |
| 3005 | Gauges, Bandages & Swabs of Nonwovens | Pieces | 16% | Nil | 4% | Nil |

Further, with the increase in excise duty on man-made fibres, the Duty Drawback rates on nonwovens are required to be increased in line with the same. It is recommended that Drawback rates be increased to 20.67% with a value cap of Rs. 35 per kg. FICCI has noted that the excise duty on man-made fibres/yarns is presently 10%. Since man-made fibres/yarns are the major constituent/raw material for technical textiles, it is essential that in order to promote the indigenous production capability of technical textiles at affordable price, develop export capabilities and to increase cost competitiveness as well as to have import substitution, the excise duty on specialty man-made fibres/yarns and their intermediate products needs to be reduced to 4%. ■

Wetlaid Technology for Advanced Nonwovens

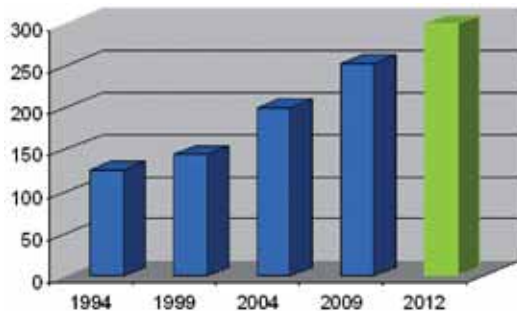
Dipl.-Ing. Ioannis Lappas, ANDRITZ Küsters GmbH, Krefeld / Germany

Wetlaid Nonwovens are gaining increasing importance. This process requires raw materials that break up into fibres when submerged in water and then settle on an inclined wire part. This article introduces the ANDRITZ Küsters neXformer wetlaid technology. The ANDRITZ Küsters wetlaid technology comprises complete lines for the most varied areas of application, from stock preparation via the neXformer right through to drying, finishing, winding.

Market

There has been a significant development in the global wetlaid production from 1994 which is expected to rise considerably in future too (See Table 1). The development

Table 1: Wetlaid production in 1,000 tonnes/year



of new high-tech fibres and the rediscovery of natural fibres as modern construction materials constantly open up new niche markets for nonwovens in almost all fields of industry. Areas of application are the automotive industry, the aerospace industry, agriculture and construction, the medical/hygiene industry and in the household. All these areas have manifold applications of wetlaid nonwovens (See Table 2).

Production Process

Wetlaid nonwovens have their origin in the paper making process as in paper production, fibres are suspended in water. During the production process the fibres settle on a wire section where the water is drained off and the fibres form a uniform sheet of material, which is then bonded, dried and finished.

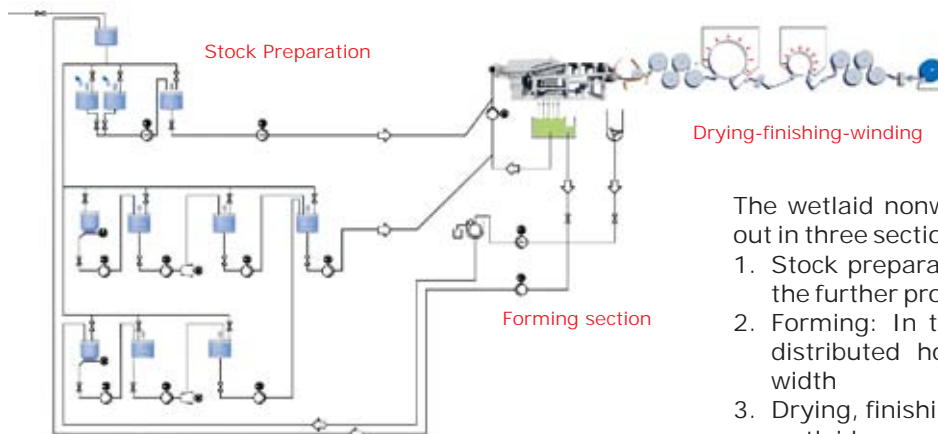


Fig. 1 - neXline wetlaid nonwoven production process

Table 2: Applications of wetlaid nonwovens

| Industry | Applications |
|-----------------|---|
| Automotive | Air intake filters, oil filters, car interior |
| Aerospace | Aeroplane interior, reinforcement of aeroplane body |
| Agriculture | Plant pots, plant insulation |
| Construction | Roof sheeting, flooring material |
| Household | Wall paper, overlay paper for furniture, vaccum cleaner bags |
| Medical/hygiene | Biodegradable wipes |
| Others | Backing fabric for RO membranes, food packaging, teabags, coffee pads, battery and fuel cell separators |

The special target in the wetlaid nonwoven technology, however, is to achieve a structure with textile-fabric characteristics, which differs a lot from paper properties with regards to porosity, flexibility and strength. Fibres suitable for wetlaid nonwoven production are:

- Renewable fibres like flax, jute, coconut, cotton, abaca, wood-chips
- Synthetic fibres like viscose, rayon, PES, CoPES, PA 6, PP, polyacrylic, nylon
- Binding fibres like PVA, cotton-polyester, bi-component fibres
- High-tech fibres, metallic fibres, glass fibres, carbon fibres, aramid fibres & recycled fibres. These high-tech fibres have certain characteristics that allow producing advanced nonwovens with properties such as temperature resistance, chemical resistance, controlled porosity, high tensile strength, static or anti-static character - a big potential for innovative

product ideas: e.g. clean room filters, automotive filters for air & liquid filtration, filtration material for chemically charged liquids, fuel cells, battery separators, honeycomb reinforcement material for aerospace.

The wetlaid nonwoven production is a process carried out in three sections as shown in Fig. 1:

1. Stock preparation: Here the fibres are prepared for the further process
2. Forming: In the forming section the suspension is distributed homogeneously over the full forming width
3. Drying, finishing, winding: After the web forming the wetlaid nonwovens are dried. Depending on the end-use further process steps may be necessary, e.g. binder application and / or calendaring etc

Special Feature

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Fibres from 1 to 18 mm length (in some cases even longer) can be used. The suspension from stock preparation and a large volume of water are pumped from the white water tank through a special connecting pipe into the distribution system and then flow into the headbox. The fibres settle on the wire under homogeneous pressure and optimal flow conditions, dispersing arbitrarily on top of one another to form a web. This leads to the formation of a homogeneous product with controlled fibre formation and porosity. The nonwoven fabric is transferred to the next machine, while most of the water flows through the wire back into the white water tank, thus remaining in circulation.

The ANDRITZ Küsters Wetlaid Technology

The neXformer wetlaid is the core of the ANDRITZ Küsters wetlaid technology and consists of a distribution system, headbox and an inclined wire part with dewatering box (See Fig.2).

1. The suspension is provided from the stock preparation to the neXformer system
2. Circulation water system: The dilution water is taken from the white water tank (3)
3. White water tank
4. Mixer pump: The suspension from the stock preparation is mixed with the dilution water
5. Distribution system: The mixed suspension is provided homogeneously through flexible hoses to the headbox
6. Headbox: The fibres settle consecutively onto the inclined wire
7. The water is drained by dewatering boxes and returned to the white water tank (3) by gravitation. The formed web is carried by the wire and the residual water is removed by suction tubes
8. The formed nonwoven is picked up and guided to the subsequent line components (e.g. press, binder applicator, dryer, calender, winder)
9. Broke pulper: Waste fibre material from the edge trim or from those parts of production manufactured during run-up or from suboptimal web formations is returned to the stock preparation

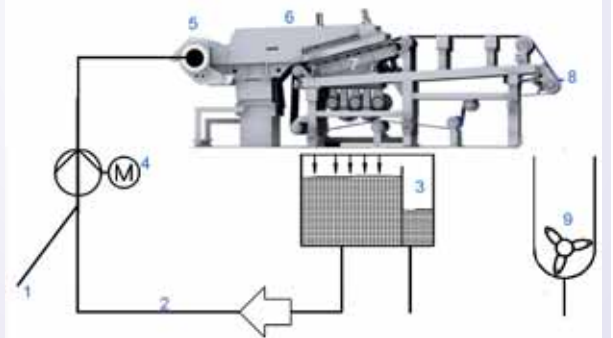


Fig.2 - neXformer wetlaid system

The neXformer wetlaid system is closed resulting in the possibility to control the conditions inside and building up an internal pressure for a controlled suspension supply onto the wire.

A double headbox for two layers of suspension is available as a special option. The advantage of this system is that fibres from different materials or blends can be deposited layer by layer. This causes the fibres in the different layers to mingle with one another, with the result that both layers are entangled without requiring any auxiliaries.

The ANDRITZ Küsters neXline wetlaid technology offers complete lines for the most varied areas of application and comprehensive concepts, including engineering, design, manufacturing, erection, commissioning, after sales service and training. The technology is not only limited to the design of new lines but also offers weak point analyses of existing lines and develops custom-made concepts for modernisation, upgrades and rebuilds.

High-Tech Fibres for Innovative End Products



Fig.3 - Line layout combining wetlaid and hydroentanglement technologies

ANDRITZ has special expertise in the treatment of high-tech fibres, such as carbon or aramid. Their process engineers work continuously in close cooperation with R&D partners from technical universities and research institutes on the development of innovative products from new fibres and blends according to market demands. The rising demand for eco-friendly nonwovens is met by the ANDRITZ wetlaid technology as well. Many natural fibres are suitable for the wetlaid process. When wetlaid and hydroentanglement are combined in the neXline wetlace, fully biodegradable nonwovens can be produced with neither chemical additives, nor thermal bonding (See Fig.3). ■

New Advanced Short Cut Fibers

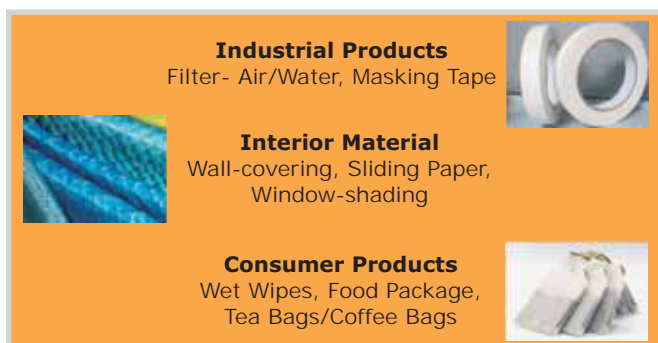
Prince Arora, Teijin India Private Limited, India

Introduction

Wetlaid nonwovens are increasingly becoming popular and are widely being used by individuals and the industries. The wetlaid process which has its origin in the traditional papermaking process, has fast gained importance as it offers the manufacturers an ability to produce a much versatile product by incorporating fibers in the traditional paper making process. The synthetic wetlaid nonwovens offer many advantages and have fast replaced paper and natural fibers. These specialized fabrics offer increased absorbency, stretchability, softness, strength, flame resistance, light weightedness, filtration, barrier properties and sterility. These are engineered fabrics that may have a limited life, as is in the case of disposable single-use fabrics or may be durable in nature. Even when used in combination with other materials they provide a spectrum of products with diverse properties and are used alone or as components of apparel, home furnishings, health care, engineering, industrial and consumer goods.

Indian Market Scenario

India is becoming a big market for nonwovens with a continuously increasing trend in consumption by the industries and the end users. Considering the fact that major usage of nonwovens is in disposable products, the availability of surplus income and increase in hygiene awareness are important factors that have spurred the growth in this industry. In an era of industrialization, the per capita income of average Indian households has increased, specifically of the educated middle class and thus the single use disposable products such as wet wipes and diapers etc. that utilize wetlaid nonwoven material have become more affordable and prevalent. The list of products manufactured using wetlaid nonwoven is virtually endless, they are used for consumer products such as wet wipes, food packages, tea bags/coffee bags, interior materials such as wall coverings, sliding paper, window shadings and industrial materials such as filters (Air/Liquid) & masking tapes etc.



The desired properties of nonwoven materials for any end products are unique and manufacturers need to meet these requirements as best as they can. The key is certainly to use the most suitable fiber source which has

maximum inherent properties. The quality of any wet laid nonwoven fabric depends on many parameters such as the type of fiber used, the web structure and processing techniques. Considering all these parameters TEPYRUS® offers features that are unique and offer many advantages over the existing fibers used in the Indian nonwoven industry.

About TEPYRUS® (Short-cut Fibers)

TEPYRUS® is the trademark of Teijin precision cut polyester fiber engineered for wet-formed nonwoven industry. To satisfy the diverse requirements of different customers, Teijin has worked on several integration concepts and has come up with TEPYRUS®, which is one of the most reliable and versatile fiber sources commercially available in this field. TEPYRUS® polyester short-cut fiber has much better dispersal properties in water than any other normal polyester fiber. Therefore, it can be applied to all kinds of wetlaid processes. Its performance is backed by Teijin's continuing effort to respond to market needs.

Distinguishing Features of TEPYRUS®

- **Higher Strength-** TEPYRUS® fiber have a uniform diameter, which provides a uniform tensile strength to it as against other fibers that are less uniform and thus more prone to be weak in sections owing to variation in diameter
- **Flexible Product Design-** The product design is such that it allows the fiber to be easily mixed with other materials or to be even used as a multi layered
- **High Loft-** It being a high loft fiber is very soft and light in nature that makes it suitable for various consumer goods both durable and non durable
- **Made of Organic Material-** It is made up of organic material which makes it recyclable and non toxic thus making it most suitable for consumer goods like wet wipes, diapers etc.
- **Good Filter Efficiency-** The fiber has high filter efficiency that can be effective for filtering larger and smaller particles, this makes them quite suitable for air and liquid industrial filters
- **Heat Sealable-** These fibers are so engineered that their melting points allow them to heat seal without any special coating. This enables them to form a bond with themselves or other substrate thus making them appropriate for food packaging and similar industrial usages
- **Excellent Dispersion in Water**

TEPYRUS® with its advanced features and advantages certainly comes as a dependable component that can help make better products. After its success in Japanese markets, Teijin aims to introduce its specialized fiber product and technology in the fast growing economies including India, which is continuously taking leaps in technology and quality standards. ■

A tête-a-tête with Mr. Anand Singh

Thea-Text Healthcare (India) Pvt. Ltd. is a professional particulate respirator and surgical mask manufacturer that also produces and markets allied nonwoven finished products such as disposable caps, gowns and shoe covers. Established in 2004, Thea-Text commenced commercial production in early 2005 and has quickly grown to one of India's leading professional mask and respirator producers. Apart from selling to the international markets, Thea-Text's domestic market coverage comprises more than 150 regular and loyal clients spanning each state of India. By supplying mainly in Bulk/Neutral/OEM packing, Thea-Text supports some of India's leading domestic brands and MNC's by providing high quality, low cost products in large volumes.



Mr. Anand Singh
Director
Thea-Text Healthcare

BCH brings you an interview with Mr. Anand Singh, Director and promoter of Thea-Text Healthcare, one of the most promising entrepreneurs of India who has not only seen a successful past but has been expanding his company ever since its formation. Being young and dynamic, Mr. Anand Singh sets a very good and holistic example to the Indian manufacturing industry .

BCH: Thea-Text Healthcare today is not only a leading Face Mask manufacturing company in India but will always be remembered as one of the pioneers too in this industry. Please highlight the reasons for attaining this attribute and along with this, introduce your product offerings with market presence.

AS: Thea-Text was incorporated in April 2004, soon after I arrived from the UK (where I was born, raised and educated) as a fresh enthusiastic 27 year old Entrepreneur. For the first 6 months we did nothing apart from research the domestic market for surgical masks/caps etc. Our findings were quite simple in that the existing market was very small, highly unorganized and there were no serious large scale players. The quality was poor and the prices were high, BUT the potential for growth was exponential as the trend of shifting from reusable to disposables was just emerging as was technical textiles. We didn't hesitate to open the L/C for our Taiwanese machinery and by early 2005 we were in commercial production. The combination of our high quality products, aggressive pricing strategy and customer service gave us immediate market penetration and we have been almost doubling our turnover annually for the last 4 years.

BCH: What made you decide on setting up of the manufacturing of nonwoven disposable masks in India?

AS: I think 5 years ago, any British or US Indian coming to India to start a business would have habitually looked for something in traditional textiles that could be exported via family/friends. We were lucky in that a family friend has suggested taking a look at technical textiles which was an emerging sector with great potential and little competition. After studying various projects like making PP spunbond fabrics, sanitary napkins, diapers, wet wipes we actually decided on one of the smaller projects like surgical masks due to fund constraints at that time like any new start up.

BCH: What were the challenges you faced while getting into this industry in India? Please highlight the government's role too in this aspect.

AS: I think the challenges of starting a business and getting into an industry are broad based and not specific to this industry. The glaringly obvious challenges are the red tape and 'miscellaneous expenses' of any new venture. We had a terrible time getting our machines imported and various registrations done as we were averse to paying 'miscellaneous expenses' but you do what you have to do and get on with it. The Textile Division of the Government has been very good at a macro level, in particular the Textile Commissioner's office with their support and promotion of technical textiles. I think the TUFs scheme was a big factor we came into this industry so the Government do need a pat on the back for this. One problem is that the strategic decisions made at the top level don't always filter down to grass roots level and the smaller/newer entrants suffer due to things like delayed subsidy reimbursements.

BCH: Could you explain the different technologies and types of masks that exist in the Indian market with their percentage break up?

AS: (a) The machinery used in manufacturing our products is based on ultrasonic sealing/converting technology and there is a vast range in the different technologies available. Nowadays you can buy a Chinese mask machine in less than Rs. 5 Lacs, whereas the Taiwanese machines are priced between Rs. 20-60 Lacs. Last week I was speaking to a French machinery manufacturer with a single machine costing Rs. 2 Crore. Then again you wouldn't compare a Tata Nano with a Mercedes, but it is important to make a calculated choice as we sell disposable products so the machine depreciation and finance cost will obviously be absorbed in the selling price. It's important to assess the life of the machine, output, wastage efficiency, finishing quality as well as other factors when making any capital investment. Thea-Text houses 20 Taiwanese machines.

(b) The main mask sold in the domestic market is the basic surgical mask (175mm x 95mm) and in 2-ply variety which is basically ineffective for the intended purpose of a surgical mask. 99% of the surgical masks sold in India are basic 2-ply that provide insufficient protection for the patient from infectious agents transmitted by air. It's actually shocking that something that is classified as a

Special Feature

...contd

Medical Device is not regulated by any standards in India. In Europe, surgical masks are covered by the Medical Devices Directive and EN 14683 (CE) and in the US it is under the purview of the FDA. Thea-Tex follows the European Standards and in 2011 we are submitting our masks for US FDA approval.

BCH: Who form the main customer base for such masks in India and why?

AS: The obvious target market is the medical/surgical market, but this accounts for only 50% of our sales. We sell an equal volume in industrial safety, hospitality, food processing, bottling, pharma, catering and retailers. I think there will be a point when our products actually become an FMCG and you'll see a packet of masks available on supermarket shelves.

BCH: Is, what you have elaborated above by way of technology and markets similar to the developed world or you see a huge difference in India?

AS: There's no difference in the technology that we're using compared to the developed countries. I may be sticking my neck out a bit here but I reckon some of our products are not only 'at par' with those manufactured in developed countries but even better quality. Recently we sent our new N95 particulate respirator that has been approved by NIOSH, USA to a client that also manufactures N95 respirators in the US and their VP-Production was quite stunned at the high quality and product development. They have asked us if we are interested to private label for them. An added bonus is that we now have local access to world class raw materials suppliers like AIM (Pune), who we work with more like partners than suppliers. In the early days we couldn't scale up as the raw materials had to be imported but now nothing takes longer than a week to reach our factory.

BCH: According to you, who are the other major players with their market shares in this industry in India?

AS: There are probably 2-3 strong domestic competitors that have been established for many years and even before we came on the scene. The long term outlook for our industry still remains very positive, but we are currently facing a critical downturn this last few months, which I would call a 'hangover' from Swine Flu. All the existing players including Thea-Tex made large capacity expansions in 2010 so there is a tremendous over supply of masks in the domestic market which has pushed down the prices and margins to precarious levels. However, the main problem is that new entrants have come into manufacturing masks for the wrong reasons by thinking they will make a quick buck if there is another Swine Flu pandemic, instead of taking a long term strategic view of the growing healthcare segment. Additionally I would make a calculated guesstimate that nearly two crore masks are being dumped in the domestic market from

China every month at our manufacturing cost as they also have surplus capacity and stocks. A simple measure to protect the genuine domestic manufacturers of surgical masks would be the implementation of some regulation/standards which would immediately wipe out more than 50% of the illegitimate competition. If we can't get any support from the Government in terms of developing standards then we are actually looking to exit the domestic market and focus on our exports where the quality and certification is appreciated and rewarded also.

BCH: What growth rates and expansion is this industry witnessing? Please tell us about your expansion plans.

AS: We made a considerable capacity investment this year as we reinvested surplus funds generated during Swine Flu in new machinery. In fact we doubled our capacity to more than 25 million pieces per month. It's more that we require at present but we do feel that we will grow into it in the next couple of years. The market is certainly growing at least 25-30% year on year and in line with the growth of the healthcare segment which is one of the best performing and growing sectors in the Indian economy.

BCH: Particulate Respirator type face masks are still not very popular as they should be. Could you tell us the reason for the same?

AS: There is critically poor knowledge and usage of Particulate Respirator Masks (e.g. N95/FFP2) within the health segment. A basic surgical mask is intended to protect outward transmission of air and not the user from inward transmission. It is only a properly certified Respirator like a NIOSH, USA approved N95 that will protect the healthcare users/worker against inward transmission of infectious agents. N95's became famous during Swine Flu but that is only a seasonal requirement and in fact they should be used by all healthcare workers exposed to TB patients and in India I think we have the highest incidences of TB. Unfortunately during the Swine Flu epidemic of 2009, N95's were black marketed at extortionate prices and I think the Government has even purchased N95's at crazy prices. Instead the Government should have a systematic epidemic preparedness plan for such pandemics and award annual contracts to genuine domestic manufacturers. We would be prepared to supply the Indian Government NIOSH, USA approved N95's at less than 50% of the prices they awarded tenders at this year! During an International Medical Expo, I met a French Company that manufactures respirators for the French Government. In 2006 during Bird Flu, when the entire world was dependant on masks from China the French Government supported a French Company to manufacture the respirators in France. They awarded them an annual contract of almost 10 Crore respirator masks so both parties benefited. The Government is prepared for any pandemic and gets the stocks at a low price and in turn they support a local manufacturer. The dependency on China in the event of a critical pandemic was eliminated. The same manufacturer has now become

Special Feature

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the leading manufacturer in Europe. This is the kind of reciprocal support required by our Government also that will expedite the growth of this industry.

BCH: What kind of filter media is being used for manufacturing different types of masks? Is it being procured locally or being imported? Who are the main players for filter media in the country?

AS: The filter media used in masks is Meltblown non wovens. It is being manufactured in India now by two Companies in Pune and we source from them both for different markets. We very much value AIM as one of our long term partners in growing our export business for both the surgical masks and respirators and I have a very close personal rapport with Dhiren and Paresh over at AIM.



A correct surgical mask comprises 3 layers of which 2 layers are PP Spunbond and a Middle layer of Meltblown (Filter). It is very important that the PP Spunbond used is Medical Grade in that it should be lint free, hypoallergenic

and smooth on the face. In lower quality face masks a cheaper grade of PP Spunbond designed for the packaging industry or 'stock lot fabrics' are used which are very coarse, rough on the skin and contains lots of lint. This causes irritation and possible sneezing for the user. However it is the middle filter layer that is the key component and determines whether the mask meets the requirements for the surgical mask standards. Being the most expensive element of the mask construction, this is where unscrupulous manufacturers misbehave and substitute inferior material. Either the filter layer is very poor quality Meltblown with a BFE of not even 90%, whereas the minimum requirement for a basic mask is 95% or the Meltblown is substituted with PP Spunbond offering no filtration at all. Maybe 99% of the Chinese masks imported have inferior Meltblown or even tissue paper with a BFE much below 90%. Domestically approximately 75% of the 3-Ply masks manufactured are without any Meltblown filter at all and the balance with an inferior quality filter.

The question that has to be posed is, "What standards should a manufacturer follow when there are no standards and who is monitoring?" Why would small domestic manufacturer increase the cost of his product 20-25%, when his buyer/end user is only interested in the selling price?

I have personally been bombarding the Bureau of Indian Standards, MOH, NICD etc with letters/calls on this issue since 2006, but have received a very negative response. I have issued them all the guidance and references of the European Standard EN 14683 on surgical masks, but to date no reply and no action!

BCH: What are the innovations/changes or future trends that will be seen in this industry in the coming years?

AS: I think the innovation will be in the form of the raw materials used. There is scope for use of newer, higher performance fabrics that are softer on the skin, provide better filtration, fluid repellency. Lots of new masks were launched globally last year with special anti-virus/bacteria killing properties. I think 90% were money making gimmicks but there is certainly some scientific research that is being done in this area which is credible and genuine. Also, there may be innovation in mask design such as face fit and comfort levels, but this will depend on which manufacturers invest in R&D. I have seen some amazing mask designs from Japan and the US that have in fact been patented, so there is room for improvement and innovation in our industry.

BCH: What advice you would give to this industry for it to develop in a healthy manner?

AS: (a) First and foremost there has to be some regulation maybe under the supervision of a body like the FDA or some standards/certification implemented. Surgical masks are Class 1 Medical Devices so it is imperative that not any Tom, Dick or Harry can manufacture and sell uncertified surgical masks. It is important that the Hospitals/Govt. authorities recognize surgical masks as Medical Devices and demand proper certification either European or US along with Test Certificates for Bacteria Filtration Efficiency (BFE), Breathability and in some cases Fluid Repellency.

(b) There has to be development of some proper testing facilities in India for Masks/Respirators. We spend thousands of dollars annually sending our masks to a US lab for test reports without which we can't export or get FDA/CE/NIOSH certified. We are aware of so called Centres of Excellence in India, but they are way of the mark in their testing accuracy and methods plus they are simply not acknowledged or recognized by foreign buyers. The same masks we get tested in India which score BFE 99% wouldn't even get 95% in a US lab. Also, we find the local labs very paper heavy so they need a complete modernization overhaul. We've also tested our respirators at the Central Labour Institute but again their test data is not accurate. The filtration testing machines such as TSI and Palas simply aren't available in expedite the growth of this industry. Indian labs and with the cost touching Rs. 1 Crore or more it is not viable for the local manufacturers to buy. Indian manufacturers must be able to submit technical files for European/US certification with test data from Indian labs but instead we have to first do pre-testing in the US at an expense of several thousand dollars.

(c) Something has to be done about the volume of uncertified masks coming into the Indian market from China or for want of a better word, Dumped! On one hand the Government is supporting and promoting people to manufacture these products, but on the other hand the imports that are landed at our manufacturing cost is killing the industry so it's a paradoxical situation. I think long term due to an overheating domestic economy and appreciating RMB, the China price will increase to the point it is not viable to import but the problem is currently creating major turbulence for the domestic manufacturers. ■

Solar Textiles

Light Pathway to a Brighter Future

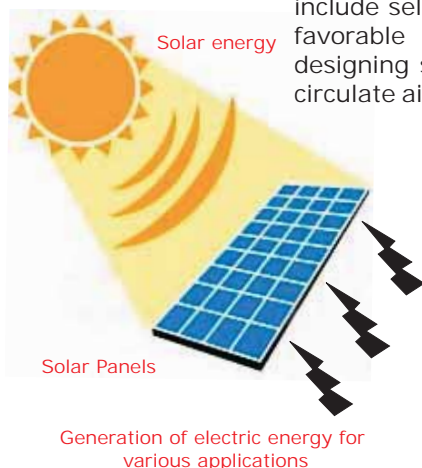
Today, energy is an important requirement for both industrial and daily life. While the energy demand is constantly increasing every day, existing energy resources are limited and slowly coming to an end. A world free of carbon emissions, a world where power is plentiful, safe and truly green is what is required for the future. These needs have triggered an innovation instinct and 'ENERGY' has become one of the most sought after industries not only for the makers and the users but most importantly the innovators. Researches have been directed towards developing new energy sources which are abundant, inexpensive and eco friendly. Solar energy, which is limitless, clean, and renewable has thus become a source not only for heating solar panels but is also an inevitable part of heated discussions that surround all of us.

Solar energy, radiant light and heat from the sun has been harnessed by humans since ancient times using a range of ever-evolving technologies. Most prevalently it is today being used to convert into either heat or electrical energy.

Solar powered electrical generation relies on heat engines and photovoltaics. **Photovoltaics (PV)** is a method of generating electrical power by converting solar radiation into direct current electricity using semiconductors that exhibit the photovoltaic effect. The photovoltaic effect is the creation of a voltage (or a corresponding electric current) in a material upon exposure to light. Photovoltaic power generation employs solar panels comprising a number of cells containing a photovoltaic material. A solar cell (also called photovoltaic cell) is a solid state device that converts the energy of sunlight directly into electricity by the photovoltaic effect. Due to the growing demand for renewable energy sources, the manufacturing of solar cells and photovoltaic arrays has advanced considerably in recent years. A photovoltaic array (also called a solar array) is a linked collection of photovoltaic modules, which are in turn made of multiple interconnected solar cells. By their modularity, they are able to be configured to supply most loads.

Solar Technology

Solar technologies are broadly characterized as either passive or active depending on the way they capture, convert and distribute sunlight. Active solar techniques use photovoltaic panels, pumps and fans to convert sunlight into useful outputs. Passive solar techniques include selecting materials with favorable thermal properties, designing spaces that naturally circulate air, and referencing the position of a place or object to the Sun. Active solar technologies increase the supply of energy and are considered supply side technologies, while passive solar technologies reduce the need for alternate resources and are generally considered demand side technologies. Three key elements in a solar cell form the basis of their



manufacturing technology. The first is the semiconductor, which absorbs light and converts it into electron-hole pairs. The second is the semiconductor junction, which separates the photo-generated carriers (electrons and holes) and the third is the contacts on the front and back of the cell that allow the current to flow to the external circuit.

Traditional solar cells are made from silicon, are usually flat-plate and generally are the most efficient. Second-generation solar cells are called thin-film solar cells because they are made from amorphous silicon or nonsilicon materials such as cadmium telluride. Thin film solar cells use layers of semiconductor materials only a few micrometers thick. Third-generation solar cells are being made from variety of new materials besides silicon.

Some of the developments seen recently in the Solar Cell technology are:

Concentrators: Solar cells usually operate more efficiently under concentrated light. This has led to the development of a range of approaches using mirrors or lenses to focus light on to specially designed cells & use heat sinks or active cooling of the cells, to dissipate the large amount of heat that is generated.

Electrochemical PV cells: Unlike the crystalline & thin film solar cells that have solid-state light absorbing layers, electrochemical solar cells have their active component in a liquid phase. They use a dye sensitizer to absorb the light & create electron-hole pairs in a nanocrystalline titanium dioxide semiconductor layer. This is sandwiched in between a tin oxide coated glass sheet (the front contact of the cell) and a rear carbon contact layer, with a glass or foil backing sheet.

Photovoltaic fibres & fabrics: Stainless steel wires, the thickness of a human hair of around 100 micron gets a three layer coat to form an organic solar cell. A second wire just 50 microns thick is coated with silver paste for the secondary electrode. These two wires are interwinded and coated in a clear polymer coat for protection & insulation. The resulting solar wire/fibre is capable of harvest around 3% of light into electrical energy. The photovoltaic fibre can be woven into fabric that could be used to make electricity-generating clothing.

Power Plastics: No longer capturing solar energy is limited to large-scale roof-top installations and outdoor solar panel arrays, even everyday objects can be turned into power sources through power plastics. Power Plastic is a lightweight, thin-film photovoltaic material that is much more versatile in application than traditional solar panels. Power Plastic reacts with both indoor and outdoor light, greatly expanding its potential applications.

Special Feature

...contd

Application of Solar Technologies in Textiles

Knowing how solar energy can be used has helped the designers, inventors and scientists to develop innovative ways of using the energy for large-scale applications. There are many applications of solar energy available across a range of industries. Indeed, textile materials also present a large surface area that can be exposed to sunlight & thus generate a very large quantity of energy. Integration of flexible solar cells & the various developing technologies into clothing can provide power for portable electronic devices. This can be subsequently utilized for umpteen applications like voice & data communication, health monitoring, emergency & surveillance functions etc. Some of the interesting ways in which the solar technology is integrated into the fabric & fabric structures are discussed below.

Clothing & Accessories

Solar cells can be integrated into clothing or accessories which enable power generation for mobile electronic equipment. Solar panels embedded into the fabrics of different clothing & accessories which may be exposed to sunlight during use, aid in charging portable electronics. As an example the jacket integrating solar cells could be worn which will later provide electricity to charge the ipod, mobile phone etc. When solar cells are integrated into the clothing they are referred to as IPV's (clothing- integrated photovoltaics).



Courtesy: Voltaic System

Building Integrated Photovoltaic Panels

Building-integrated photovoltaics (BIPV) are photovoltaic materials that are used to replace conventional building materials in parts of the building envelope such as the roof, skylights or facades. They are increasingly being incorporated into the construction of new buildings as a principal or ancillary source of electrical power. Konarka Technologies, for instance teamed up to create a transit shelter design that integrates a solar roof to power the structure which enables it to generate power to fuel LED lighting at night. The new design transforms transit shelters from power consumers into power generators, while providing the protection & information.



Courtesy: Konarka

Geomembrane Solar Cover

A Georgia, U.S. based landfill site has been transformed from an operating landfill that has reached capacity into a commercial scale, solar energy generating facility. A key part of this development is the use of an Exposed Geomembrane Solar Cover (EGSC) system. This technology combines an enhanced final cover anchoring system & thin film photovoltaic solar panel attached to a geomembrane. The result is the formation of an integrated final landfill cover system that allows a landfill owner to close a landfill but generate renewable electrical power. This system allows a closed landfill to generate revenue while eliminating the ongoing maintenance costs of mowing & soil replacement. With this technology, long term care has a new positive economic & sustainable component that may change the way landfill closures are approached in the future.



Fabric Structures

FTL Solar is the world's first creator of flexible, tensile structures integrated with thin film solar cells, which not only create shelter but generate their own energy from the sun. Originally designed as easily deployable canopies for military applications, FTL's solar products are available for solar parking lot shades, rooftop building installations & small & large solar tent structures.



Courtesy: FTL Solar

Another fabric structure company SKYShades, has recently installed the first tensile membrane solar parking structure featuring thin-film photovoltaic solar panels. The installation, at a West Palm Beach office park, uses the solar panels to produce electricity to power lights & electric car & golf cart charging stations in the parking structure as well as provide shelter from rain & protection from the sun.



Courtesy: SkyShades

Portable Applications

Konarka's unique & patented technology of lightweight, rollable Power Plastic is based on photo-reactive materials made from conductive polymers & organic nano-engineered materials. It is currently being integrated into a number of solar products including lanterns, backpacks, outdoor gear such as tents, canopies etc. Soft-sided structures can enjoy the benefit of generating their own power with solar technology that adheres right to the fabric of the structure. It maintains the ease of set-up & transportation of the structures, be they umbrellas, tents or temporary shelters.



Courtesy: Konarka

Intelligent Textiles

Researchers at the Hohenstein Institute & the ITCF are developing intelligent textile materials which have both heat-reflecting & translucent properties. These textile sunscreening materials are able to adapt intelligently their thermal permeability to suit the ambient temperature & they act automatically to allow infrared radiation to pass through or be reflected depending on the need for heating or cooling. When external temperatures are low, the incoming IR radiation can be used as heat energy, while when temperatures rise, the IR reflection will prevent excessive overheating & so cut the running costs of air conditioning systems. These sunscreening materials are now paving the way for innovative canopies & sun screening roller blinds.

All the above developments within textiles makes us imagine what tomorrow's world may feel or look like .We can imagine a textile world where...

...Solar textiles may form a part of everyday living incorporating technologies in Clothing, Building, Geo, Sports, Protective, Home and over all Technical Textiles. ■



EXPO

Asia 2011

22-25 March 2011
Marina Bay Sands, Singapore
ifaieexpoasia.com



Pictured above is the exciting new Marina Bay Sands Resort & Conference Center where IFAI Expo Asia 2011 will take place.



At last... A dynamic trade exhibition and conference dedicated to the specialty fabrics marketplace in Asia Pacific.

Technical Sessions will include:

- Geosynthetic Materials for Environmental Applications
- Geosynthetic Applications for Infrastructure
- Sustainability in the Textile Value Chain
- Automotive Materials (Interior Focus)
- Medical and Healthcare Applications
- Architectural Shade and Structures
- Technical Nonwoven Applications
- E-textiles and Smart Fabrics
- Protective Clothing

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Forthcoming Events

January-March 2011

Vision 2011

10-12 January; California, USA;
www.inda.org

PPE Conference 2011

01-02 February; Brussels, Belgium;
www.ppeconference2011.eu

The Grass Yarn & Tufters Forum 2011

22-24 February; London, UK;
www.amiplastics-na.com

ICERP 2011

02-04 March; Mumbai, India;
www.icerpshow.com

Geo-Frontiers 2011

13-16 March; Dallas, USA;
www.geofrontiers11.com

FILTECH 2011

22-24 March; Wiesbaden/Frankfurt, Germany;
www.filtech.de

Technical Textiles 2011

23-24 March; Frankfurt, Germany;
www.conferencegroup.de/TT2011

IFAI Expo Asia 2011

22-25 March; Singapore;
www.ifaexpoasia.com

April-June 2011

Smart Fabrics 2011

04-06 April; London, UK;
www.smartfabricsconference.com

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12-15 April; Geneva, Switzerland;
www.edana.org

Techtextil 2011

24-26 May; Frankfurt, Germany;
www.techtextil.com

World of Wipes Conference

14-16 June; Atlanta, Georgia, USA;
www.inda.org

Composites India Expo (CIE'11)

17-19 June; Chennai, India;
www.cieonline.in

July-September 2011

50th Dornbirn Man-Made Fibres Congress

14-16 September; Dornbirn, Austria;
www.dornbirn-mfc.com

ITMA 2011

22-29 September; Barcelona, Spain;
www.itma.com

Outlook Conference 2011

28-30 Sept.; Budapest, Hungary;
www.edana.org

October-December 2011

SINCE 2011

12-14 October; Shanghai, China;
www.since11.com

JEC Show Asia 2011

18-20 October; Singapore;
www.jeccomposites.com



BCH TechTex India

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2010- The Last Quarter

JEC SHOW ASIA 2010 12-14 October, 2010; Singapore



Live demonstrations



'JEC Asia Innovation Awards' ceremony



Attentive audience during presentations



Mr. Samir Gupta, MD, BCH, at the BCH booth



Exhibitors in full grandeur

The JEC Show Asia 2010 exhibition & conference was held successfully by marking the presence of major players of the entire value chain of the composites industry. There was a special focus on urban solutions in key application markets such as mass transportation and aeronautics, energy solutions, infrastructure and environmentally friendly technologies.

Highlights of the JEC Show

- 346 exhibitors
- 10 sectoral or national pavilions (China, France, Japan, India, Malaysia, and others)
- Support & participation of Singapore institutions (EDB, STB, A*Star, NUS, SUTD, and others) & industry associations
- 7,010 visitors including high proportion of key decision makers in the global composites arena
- Launch of the Innovative International Composites Summit (IICS) comprising of eight economic and technical seminars
- 9 companies and their partners received awards for their application developments at the JEC Asia Innovation Awards 2010
- Launch of the JEC Global Scientific Network (GSN)- an integral step to connect industry players with research & educational institutions

The 6th China International Filtration & Separation Exhibition & Conference 17-19 November, 2010; Shanghai, China



Technology display evoked huge interest



Mr. Samir Gupta, MD, BCH at the conference



Exhibitors offering new age products



Separate technical sessions on vibrant topics



Mr. Wang Yanxi, Vice Chairman, ANFA at the BCH booth

The 3rd Filtration & Separation Asia combined with the 6th China International Filtration & Separation Exhibition & Conference was a huge success. Each edition of this event reflected the development of trends in the filtration & separation market and brought together the entire industry from raw material manufacturers to brand owners, from machinery producers to research institutes. The event provided a good opportunity to all sectors of the market to present the latest market developments and provided an important platform to all exhibitors and visitors.

Highlights of the Conference

- A total of 156 exhibiting companies from 10 countries and areas
- 19 paper presentations with speakers from 10 countries
- Around 4,000 professional visitors and purchasing groups from Japan, Korea, India, Russia and Middle & Far East
- Participation from global companies like H&V, Ahlstrom, Johns Manville, Delstar, Lenzing & Andritz Kusters

International Conference on Technical Textiles & Nonwovens 11-13 November, 2010; New Delhi, India

ICTN 2010, the 4th International Conference on Technical Textiles and Nonwovens, was organized by Department of Textile Technology at IIT Delhi. The conference gathered participants from the technical textiles industry and institutions worldwide and received enthusiastic support from Government of India, industry & academia. The conference was inaugurated by Mr. A. B. Joshi, Textile Commissioner, Ministry of Textiles, Government of India. The 3 day conference constituted various technical sessions with papers covering topics related to protective textiles, geotextiles, filtration, medical textiles, composites and product development. Apart from oral papers, there was an exhibition which saw exhibitors from all over the world & poster presentations made by students and faculty covering a variety of technical textile products, processes, applications and raw materials. A lively cultural program was arranged which gave a glimpse of the myriad beauty and variety of Indian culture.

Highlights of the Conference

- 20 paper presentations from industry participants and 26 papers from academic institutions, research organizations, consultants and Government of India participants
- 300 participants, 46 oral and 23 poster papers



Prof. V. K. Kothari, during the inauguration



Release of conference souvenir



BCH booth at the exhibition



Mr. A. B. Joshi, Textile Commissioner, inaugurating the exhibition



Packed sessions during the conference



Cultural programme in the evening



B2B meetings at the booths



Ms. Ritika Gupta, ED, BCH, presenting the 'Indian Filtration Industry'



Speaker felicitation during the conference



Exhibitors explaining about their products



Speakers deliberating upon interesting issues & topics

Netherlands: New, Breakthrough Dyneema® Diamond Technology Takes Cut-Resistant Gloves to the Next Level

Innovative new production technology developed by DSM Dyneema enables the manufacture of yarn that delivers significantly increased cut resistance performance. New Dyneema® Diamond Technology now makes possible the production of protective gloves that combine the ultimate in cut resistance with extreme comfort. Developed over a period of four years, the patented ultra-high strength yarns produced with Dyneema® Diamond Technology enable production of light-weight gloves that provide outstanding comfort and durability at the higher levels of cut resistance standards (ANSI level 3 and EN388 level 4) for the first time. Wearers will enjoy the same comfort levels as before with Dyneema® based gloves but now with higher protection. This means that they will be considerably more comfortable than gloves made with competing materials, some of which contain metal or glass reinforcements to achieve the higher level of cut resistance but which adds to their weight, restricts movement and means a less comfortable wearing experience. "Our new Dyneema® Diamond Technology will raise the cut resistance performance of Dyneema® yarns by as much as 200%," says Noud Steffens. Gloves made with Dyneema® fibres incorporating the new technology are lighter, thinner, more tactile and keep the wearer's hands considerably cooler than those made with other materials - including aramids.



USA: DAK Americas to Acquire Eastman's U.S. Integrated PET Business

DAK Americas LLC (DAK) announced that they have agreed to acquire the integrated PET and PTA business of Eastman Chemical Company ("Eastman"). Total cost for the transaction is expected to be approximately \$600 million. The transaction is expected to close in the fourth quarter of this year pending regulatory approvals. The acquisition includes three production facilities in Columbia, SC, USA; including two PET resin units and one PTA (Monomers/Ingredients) unit. The transaction includes the intellectual property for IntegRex™ PET and PTA. Both PET resin production units have a combined annual capacity of 6,75,000 tons. The PTA unit has an annual production capacity of 6,00,000 tons.



USA: INDA Names Five Finalists for 2011 Visionary Award

Five consumer products ranging from disposable diapers to wipes to filtration media have been nominated as finalists for the 2011 Visionary Award. Now in its tenth year, the Award which is given annually to a new consumer product that utilizes nonwoven fabrics in its final form will be presented at the VISION 2011 Consumer Products Conference, January 10-12, 2011 at the Park Hyatt in Carlsbad, California. The finalists will make presentations during VISION 2011 and conference attendees will vote on the recipient of the 2011 Visionary Award. The five finalists are: Global Safety First- *Readi Mask™*, Kimberly-Clark- *Huggies® Jeans Diaper*, Nutek- *Simply Soy® Biodegradable Wipes*, Procter & Gamble- *Pampers® Swaddlers and Cruisers with Dry Max™* and Rockline Industries- *Flushable Moist Toilet Tissue*.



Thailand: Indorama Ventures Acquires Polyester Assets in Poland and Indonesia

Thailand's Indorama Ventures Public Company



Limited has signed agreements with Korea's SK Chemicals Company Limited to acquire the entire issued capital of SK Eurochem Sp. z o.o., in Poland and PT SK Keris together with its subsidiary PT SK Fiber in Indonesia. The acquisitions will consolidate Indorama Ventures (IVL) position in the two important emerging markets of East Europe and Southeast Asia with Polyethylene Terephthalate resin (PET) and Polyester Fibres and Yarns businesses. SK Eurochem is a 140,000 tons per annum PET manufacturing facility while SK Keris is a 160,000 tons per annum PET and Polyester Filament Yarn manufacturing facility and SK Fiber Indonesia is a Polyester Filament Yarn manufacturing facility with a capacity of 36,000 tons per annum. The acquisition in Poland is virtually integrated with a third party supplier of Purified Terephthalic Acid (PTA), further consolidating the company's low cost structure. Indorama will now be amongst the largest producer of polymer for films to serve markets in Asia, Europe, USA and Latin-America.

India: Autoliv Expands in India Starts Weaving of Seatbelt Webbing



In response to the rapid growth in Asian vehicle production, Autoliv Inc. the worldwide leader in automotive safety systems has begun the construction of a seatbelt weaving plant in Mysore near Bangalore, which will be India's first plant for this seatbelt component. Currently, most seatbelt webbing is imported from Autoliv's plant in China. However, demand in Asia has grown so sharply during the last few years that more webbing capacity is urgently needed in the region. The Mysore webbing plant will have capacity to produce 100 mn meters of webbing when the floor space of 10,000 m² will be fully utilized. The cost for the initial phase amounts to approximately 10 mn US dollars, which includes the cost for the 24,000 m² site. The new weaving facility will produce state-of-the-art seatbelt webbing. The new plant will increase Autoliv's global weaving capacity for seatbelt webbing by 20% to more than 0.5 bn meters (or approximately 12 laps around the earth). Currently, Autoliv has five webbing plants (in the Netherlands, Romania, Canada, China and Brazil). Autoliv estimates that its existing plants account for more than 40% of the annual global seatbelt webbing production. The customers of these plants include not only Autoliv's own seatbelt system assembly plants but also assembly plants of other seatbelt manufacturers.

India: Rieter and Nittoku Inaugurate New Plant in India

Rieter Automotive Systems and Nihon Tokushu Toryo (Nittoku) officially inaugurated their newest plant: the "Rieter Nittoku Automotive Sound Proof Products India" plant in Chennai, India. This opening is the latest step in the partners ongoing strategy in Asia of meeting demand in the region's booming markets. The Chennai plant is located in the SIPCOT Industrial Growth Center on the outskirts of Chennai in Southern India and expands the capacity of the Rieter Nittoku joint venture to supply acoustic systems and components as well as heat shields to clients in India and across the Asia region. These acoustic packages use proprietary RIETER ULTRA LIGHTTM technology that can reduce the weight of the acoustic package of a car by up to 40% as well as improve the vehicle comfort. The new Chennai plant is equipped with the latest production technologies from Europe and Japan, including the first fully robotic water jet system in India for cutting carpets. The facility is spread over 11 acres (45,000 m²) and has been running since May 2010, producing molded carpets, acoustic dashboard solutions, engine compartment parts and aluminum heatshields. The next expansion phase is set already for 2011, which will result in a growing number of automotive jobs in Chennai.

Thailand: Toyobo Develops Recyclable Coated Fabric for Airbags

Toyobo Co., Ltd. (Toyobo) has developed a new coated fabric for airbags that can be recycled. The product applies a newly developed nylon polymer in place of the silicone polymer used so far for side and side curtain airbags, which are increasing in recent years. The new coated fabric can be recycled without separating the coating material from the base fabric. The existing coated fabrics have generally used silicone as the coating material. Such fabrics are not only difficult to recycle but the cost required to separate the silicone coating from the base fabric in the recycling process also becomes a problem. The new coated fabric developed by Toyobo can be recycled without separating the coating material from the base fabric because the newly developed nylon polymer is chemically friendly to the base fabric woven from Nylon-66 yarn. Decreasing the amount of coating is one approach to lowering the costs of coated fabrics, but deterioration of fire-resistance and other problems occur when the amount of conventional silicone coating is decreased. Combining the excellent yarn and fabric manufacturing technologies they have developed for driver and passenger frontal airbags with the newly developed nylon polymer coating, Toyobo has created a new coated fabric which uses less than half the coating amount of conventional silicone polymer coatings, with good fire-resistance and maintaining equivalent air permeability to existing coated fabrics.

India: IFF Commissions Technical Felts Manufacturing Unit

Filter products manufacturer, Industrial Filters and Fabrics (IFF) on 9th November 2010 commissioned India's first technical nonwoven felts manufacturing unit in Indore. The unit set up with an investment of about Rs. 25 crores, has an installed capacity of 1,00,000 linear meters. Technical nonwoven felts are used as filter intermediary-a fabric used to separate dust particulates from dusty gases. These efficient and cost effective dust collectors can achieve a collection efficiency of more than 99 percent for very fine particulates emitted by various industries-cement, steel, aluminium, carbon black, chemical, power generation and fertiliser. This manufacturing unit replaces the need to import technical nonwoven felts and strengthens the company's backward integration chain by producing world class products in India. Officials said that IFF's investment will further deepen its foothold in the territory and act as a catalyst in expanding the market in India. IFF's comprehensive filtrating solution will position them to meet the growing needs of various sectors and make India self reliant. Headquartered in Indore, IFF has an advanced automated facility for filter bags and cages.



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Italy: 3D Fibrin Textiles for the Biomedical Sector: A Research Project for New Applications



The use of textiles in the medical sector has been expanding continuously for a number of years now, a high technology field of application whose economic viability is undisputed. One interesting project in course,

dubbed "PANAGENESI", aims to optimize the implanting of human pancreatic islands through the use of fibrin scaffold.

This project is financed by the region of Lombardy and is being developed by five different entities bringing together their respective know-how and multi-sector expertise. Among the research partners are three Italian manufacturers operating in the textile sector: TORCITURA DI MENAGGIO- a silk yarn twisting company; GAETANO ROSSINI HOLDING- specializing in the production of 3D fabrics; and COMEZ- a global leader in the manufacturing of narrow fabric technology machinery. These manufacturers are partnering their efforts with the Stazione Sperimentale Per La Seta [Experimental Silk Centre], one of Italy's most renowned research centres specializing in the textile sector and Milan's Niguarda Ca' Granda hospital which is Italy's most important medical research centre in the field of histotherapy, focusing on in vitro regeneration of human tissue. Also involved in this project are the Diabetes Research Center of the University of Miami in Florida, headed by an Italian researcher, Dr. Camillo Ricordi.

The goal of the PANAGENESI project is to optimize the rooting of islands in the transplant site through the use of fibrin variable circular section scaffolds, consequently reducing the number of pancreatic islands necessary for the transplant's full success and prolongation of their function over time. The scaffold is essentially a tubular textile article with a small diameter, comprising a sequence of lobated structures (choked sections alternating with broader sections), with a variable cross-section and three-dimensional type internal structure (internal criss-crossing), produced using fibrin yarns. For the manufacturing of this tubular textile, COMEZ has designed an innovative electronic double needle bed warp knitting machine, with a working width of 800 mm, in gauge 20 n.p.i. and with 8 knitting bars for independently controlled pattern making. The knitting bars as for the finished product take-down and yarn feeders are controlled by versatile electronic actuators which provide excellent dynamic performance and positioning accuracy.

This machine is especially suited for the production of complex articles that can find applications in a variety of medical/hospital fields and technical and industrial sectors in general. The double needle bed machine can create spaced (3D) fabrics comprising two external fabrics forming the two faces of the fabric itself combined by an internal structure.

Germany: Outlast Develops First Climate Regulating Polyester Fibre With Phase Change Material

Outlast Technologies broadens its product offering by maintaining a steady pace of innovation. After intensive research and development, Outlast Technologies, Inc., Boulder/Colorado, the market leader in temperature regulating phase change materials (PCMs), is pleased to announce the introduction of Outlast® polyester fibre. The newest member of the Outlast fibre family is a bi-component fiber with a PCM core and a polyester sheath. Staple fibres will launch in market first, followed by filament fibres once the production process has been fully refined. The new Outlast® polyester fibre offers the added value of balancing temperature coupled with the characteristics of a conventional polyester fibre (e.g. low moisture absorption; ability to transport moisture; improved wrinkle resistance; superior light, water and wind resistance and an above average durability). The result is increased comfort- chilling and sweating are reduced due to the optimum climate regulation. The new fiber with temperature management aligns particularly well with underwear and other products worn next to skin such as socks, t-shirts, shirts and trousers. At ISPO, the International Fair for Sports Equipments and Fashion held in Munich, Outlast will exhibit and present this latest innovation. Come visit and experience the Outlast® difference, keeping with the slogan: not too hot, not too cold, just right.



India: Mandhana Industries Enters into Exclusive Agreement with Being Human- The Salman Khan Foundation

Mandhana Industries Limited, Mumbai based Textile and Apparel Manufacturing Company, announced that it has entered into an exclusive license agreement with Being Human- The Salman Khan Foundation for designing, marketing and distributing Being Human Clothing Products. By virtue of this agreement, the company shall have exclusive rights to promote and use the Being Human brand name worldwide for its Clothing Products for the next 9 years and 3 months with actor Salman Khan as the Brand Ambassador. The company has agreed to pay license fees to the trust in order to use the brand name. Being Human- The Salman Khan Foundation is a charitable trust promoted by Salman Khan. The company plans to launch stand-alone stores in metros followed by around 10 more stores in Tier I and Tier II cities. In the 1st phase, Mandhana will be entering into Men's casual wear segment and then follow it up with women and kids wear range."



Impurity is passe, we only look forward to Purity.



Eco Friendliness being top on the priority, we serve on a global level. We prefer everything being safe, cool and healthy. What more, we are on a mission for quality and standards and yet we never believe in over pricing

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State-Of-The-Art Test Rig

KANSAN PAPER CONVERTING MACHINERY CO. WET WIPES MACHINERY & EQUIPMENT SUPPLIER



An Industry Leader from a Workshop

Kansan Paper Converting Machinery Company -today one of the major wet wipes, tissue napkins, toilet papers/towels machines and complete converting lines manufacturers- was established in 1992 in a small size workshop. The company is now serving hundreds of customers all around the globe and considered to be a significant player of the industry.

The essence of its growth lies in Kansan's commitment to development, fully satisfactory after sales customer service and the application of innovative technology with advanced craftsmanship to ensure the top quality machinery.

Success on Both Sides

Research and development is the key factor when it comes to targeting market leadership. With this motto, Kansan always expands its machinery portfolio by closely observing market needs and responses.

By the time wet wipe machines were first introduced the market was well covered by competitors from Europe and USA. However Kansan's commercial strategy was plain but effective. The company set realistic goals and positioned itself very delicately. Customer service had to be excellent. The cost of investment to the customers had to be reasonable yet the quality could not be compromised. As a result of this accurate marketing strategy Kansan also found the way to commercial success.

Expansion in Progress

By far, the company has sold more than 200 converting projects to domestic and global customers. During these business activities it was noticed that many customers were not comfortable dealing with various machinery suppliers for a single wet wipe production line. Normally investment must be made on wet wipe making and horizontal packaging machines separately.

So the strategic action was taken to satisfy this gap. A completely new organization was formed within Kansan and a new brand was created for this purpose (www.dynamicpack.com). Promising results came out earlier than expected. New partner could make the R&D of packaging machines fully compatible with Kansan's main units less than a year. In the following 6 months more than 15 complete wet wipe/towel lines orders were received.

Looking Ahead

The future competition will be tougher and the margins will be tighter. However Kansan already set its strategies and expansion plans to move further. The investment of 8000 square meter new factory will be completed by the end of this year.

Within this year the packaging machines manufacturer partner Dynamic Pack is preparing to introduce its latest technology, a picking and boxing robot in addition to plastic lid applicators and horizontal packaging machines for wet wipes, napkins, toilet papers, kitchen towels.

Kansan is now serving with its next generation high speed machines to wet wipe producer professionals. This series stand out with their following qualities.

- High capacity:
 - 3600 to 14000 wipes per minute according to model of the machines.
 - 500-600 cuts per minute
 - 150 stacks per minute
- Automatic Splice
- Sensor controlled automatic discarding system of product with splice tape
- Jumbo Roll Edge Control



In addition to the state-of-the-art production systems, Kansan offers design & engineering solutions to increase operational efficiency, to lower labor cost, to enable future progression of equipment allocations in production facilities. Kansan machines are always available for demonstration in Kansan's Factory. Moreover you can see them in upcoming INDEX11 show in Geneva Swiss.

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Dynamic Pack Packaging Machinery

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- ▶ Substrates: Airlaid / Spunlace / Cr pe Paper
- ▶ Full servo control to all axis
- ▶ On screen error notification & troubleshooting

Our machines are always available for demonstration. Please contact for appointment.

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Show Preview

INDEX 11

12th - 15th April 2011,
Geneva, Palexpo

**An opportunity to discover all that's
new in nonwovens!**



The multi-faceted contributions made by nonwovens to today's quality of life will be showcased at INDEX 11 which takes place in Geneva, Switzerland from 12-15th April 2011. Almost 450 exhibitors have already confirmed their attendance at INDEX 11, covering an impressive 50,000m² of exhibition halls, attracting more than 12,500 visitors from over 100 countries to this leading global event for a unique industry. Nonwovens are perhaps best known for their contribution to the hygiene sector, for their use in baby diapers & other absorbent hygiene products, also in wipes but the diversity of applications utilising these highly-engineered materials today also extends far beyond.

Some Highlights

During INDEX 11 a number of the growing sectors for nonwovens have been selected for particular emphasis, to illustrate the broad range of applications for which these versatile materials can be used.

Automotive

The average car, for example, already contains some 40 separate nonwoven products, all contributing through weight savings, insulation, filtration or added protection to the vehicle's comfort & performance. The rapid development of hybrid and electric vehicles (HEVs) is presenting many new and exciting opportunities - not least for nonwovens, as essential separators in the 50 to 200 batteries by which such vehicles are powered. China alone is aiming to produce 500,000 HEVs this year, which represents a huge new market opportunity, and the automotive industry will be the subject of a dedicated focus during INDEX 11.

Filtration

The role of nonwoven filter media in contributing to indoor & outdoor air quality or providing cleaner water for everyone is also increasing worldwide. Filter media made from nonwoven materials can now effectively compete with other media in the removal of viruses & bacteria, with improved performance characteristics & cost advantages. *"The challenge for producers of nonwovens in the filtration sector is to balance stricter regulations, sustainability requirements & increasing costs, with improved performance & longer-lasting products,"* says Pierre Wiertz, General Manager, EDANA.

Packaging

The expanding role of nonwovens in packaging will be highlighted in a special workshop held by specialist Dr. George Kellie of Microflex Technologies. *"Whilst currently only accounting for about 2-3% of all the nonwovens produced in Europe, packaging is certainly one of the fastest growing applications for their use,"* Dr. Kellie explains. *"New solutions include the incorporation of active components into food packs, for example, which can play a vital part in extending the shelf life of food without the use of additives. These processes are also playing an important part in dealing with food waste."* The replacement of disposable shopping bags with more durable, nonwoven alternatives has also boomed in many countries. *"In the UK, for example, the consumption of disposable plastic shopping bags has reduced from 18 mn annually to around four mn in the space of just a few years, and what is partially replacing*

them is a range of durables, including a large number of nonwovens," says Dr. Kellie. *"What's equally exciting for the industry is that this is getting many designers involved in working with nonwoven materials & providing different perspectives on what it's possible to do."*

Innovation

None of these developments would be possible without a thriving culture of innovation within the industry, which will be amply illustrated by two more special events at INDEX 11. The Senior Management Workshop on Innovation, to be held at Geneva Palexpo during INDEX 11, has been specially designed for the senior managers, and will be limited to three participants per company to ensure maximum access to all. This free workshop will provide a practical set of tools for managers to help them judge the strengths & weaknesses of innovation management within their own companies & take appropriate action. They will be tutored by Dr Karl-Michael Schumann, former R&D director at Procter & Gamble and now a future business development and innovation coach. Dr Schumann will share insights, best practices and stories of success and failures, as attendees learn how to build and sustain superior innovation capabilities and how to cascade that dynamic down, through all levels of an organisation. Participants will be required to register their intention to participate in advance.

Awards

The INDEX 11 Awards, which reward innovation & sustainability in the nonwovens & related industries, have become a well-established means of identifying & honouring some truly game-changing developments. For this next edition, the categories have been expanded to seven, to include two new categories which provide recognition for the most significant sustainable product & the best-developed sustainable process or management practice. Machine developer Andritz Küsters has received an INDEX Award not once, but twice, for the development of its neXcal twin calendar in 2005 & the neXdetect system in 2011. *"The Index Awards directed the market's attention towards our technologies and resulted in a remarkably increased demand,"* says Andreas Lukas, Vice President of Andritz Nonwoven. Any company who is a member of EDANA and/or exhibiting at INDEX 11 is eligible to enter the Awards competition, whose closing date is 31st January 2011.

For more information on the INDEX 11 event and for visitor & exhibitor registration, please log on at www.index11.org ■

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Requirements from the field: from textile reinforced concrete through membrane construction
- **Smart Clothes**
Intelligent clothing: applications for sports, outdoors and medicine
- **Medtech**
The market for medical textiles: healthcare technologies for industrialized countries?
- **Market development**
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Testing Absorbent Hygiene Products: The EDANA Approach

Jean-Michel Anspach, Technical & Education Director; Pierre Wiertz, General Manager, EDANA

One of the key aspects of the mission of EDANA, the International Association serving the nonwovens and related industries, over its almost 40 years of existence has been to provide these industries with harmonised test methods constituting the common technical language for all interested parties to refer to when dealing with essential product features. This is particularly important to all stakeholders in the supply chain for absorbent hygiene products (AHPs), who need to have an agreed approach for testing these products or their components in a uniform standardized way. Such an essential work has been extended to the important requirements of critical performance and safety requirements of nonwovens and nonwoven-based products. Lately, "Product Stewardship" has been the wording of choice to describe the holistic approach taken by the industry as represented by EDANA.

Development and performance testing of components of AHPs

Today's absorbent hygienic products are high technology items: from superabsorbent powders to breathable backsheets, from repellent leg cuffs to permanent-hydrophilic cover materials, times are long gone since a bulky cellulose pad between a sheet of plastic and a rudimentary piece of nonwoven would form what was presented as the ultimate baby diaper!



Source: Lenzing Instruments
Instrument for measurement of liquid strike-through time



Source: EDANA
Apparatus For measuring absorbency, under pressure, of PA superabsorbent powders

EDANA has always been on the leading edge of the evolution of absorbent disposables. Basic procedures for testing nonwovens were already available in the 70's, the most representative among them having been the basis of ISO standards, which are highly regarded worldwide. Later, new test methods have been developed and introduced to satisfy the ever growing demand for representative testing: cover wetback, liquid penetration time for cover materials, run-off and many others have been added when cover dryness became a diaper facing's most desired property, and that legcuffs made their entrance in the market, following the major technological advantage offered by spunbonded and meltblown webs in a unique combination called SMS. Methods were added to the list, to measure film breathability and assess the integrity of film nonwovens laminates (See Table 1). Ever since producers have been busy shaping the quick evolution of absorbent hygiene products, EDANA managed to have them around the table to simultaneously develop methods to quantify properties that were not meaningful before. Superabsorbent materials alone represent a very important part of the composition of modern absorbent hygiene products: the percentage of that component has steadily increased over the years from a very small amount (justified by the high cost of that component, when it first appeared on the marketplace), to 100% of the absorbent core material in a recently launched, internationally patented execution of one of the major diaper brand on the market. EDANA has published eleven test methods describing different, meaningful properties of superabsorbent polyacrylates. All are recognized as ISO standards, to guide the industry in developing products that match ever more challenging consumer needs.

Table 1: Some INDA-EDANA WSP test methods applicable to components of absorbent hygiene products

| Super Absorbent Materials | | |
|--|----------------------|----------------|
| Product Properties | WSP Reference | ISO Reference |
| Fluid Retention Capacity in Saline, After Centrifugation | WSP 241.2 | 17190-7:2001 |
| After Absorption Under Pressure, Gravimetric | WSP 242.2 | 17190-8:2001 |
| Method For Testing The Performance of Adult Incontinence Devices | | |
| Product Properties | Test method | WSP Reference |
| Absorption Before Leakage | Adult Mannequin Test | WSP 354.1 (10) |
| Nonwovens and/or Film Permeability | | |
| Product Properties | WSP Reference | ISO Reference |
| Water Vapor Transmission Rate (Mocon/EDANA, Part 1) | WSP 70.5 | |
| Water Vapor Transmission Rate (Lyssy/EDANA, Part 2) | WSP 70.6 | |
| Liquid Strike-Through | WSP 70.3 | 9073-8:1995 |
| Repeated Liquid Strike-Through Time | WSP 70.7 | 9073-13:2001 |
| Wetback After Repeated Strike-Through | WSP 70.8 | 9073-14:2002 |

EDANA's position on testing converted (finished) AHPs

A very small number of EDANA methods address directly the finished, converted hygiene products: Apart from the method to test the absorption capacity of menstrual tampons which is an adaptation of an American standard only the recently launched method for testing absorption before leakage of products designed for adult incontinence can be described as a method dealing with converted products. Although there is a real possibility to see that method

Medical Textiles

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derive into more methods aiming at assessing the absorption capacity of other devices, this apparent gap deserves an explanation. An EDANA position paper summarizes the views of the European Absorbent Hygiene Products industry concerning the qualitative and comparative "performance" testing of diapers, feminine hygiene products and incontinence care products:

"The purpose of such testing is to provide the consumer with representative and objective data which will help them in their buying decision. Leaving aside aspects like price, the criteria for each type of absorbent hygiene product is wearer comfort, providing maximum mobility and discretion, protection of the underwear and clothing (no leakage) and, last but not least, skin dryness. Furthermore individual likes and dislikes during usage determine the preference for certain products. As can be seen from the above, the common thread running through all these criteria is the importance of real life "in use" data; either direct feedback from the consumers themselves or observations made by carers. This is not too surprising when one considers the complexity of the usage situation, taking into account the inter-individual differences in body size and shape, the degree of mobility, the individual habits and practices, not to mention the subjective (but difficult to measure) parameters which also play a critical role in the consumer buying choice; all these factors will significantly and decisively affect the "objective" values obtained in the laboratory. We agree that laboratory tests have their role to play, e.g. in the area of individual raw material assessments as indicators for potentially interesting avenues in developmental projects; taken alone however, they give an incomplete picture of real finished product performance and consumer preferences. Only a combination of laboratory and consumer tests can provide an accurate and representative picture of a product's performance in consumer-relevant terms."

Interestingly, health authorities in certain countries e.g. Sweden, U.K. and lately the Netherlands, have already been using such consumer tests for quite a number of years as the basis for reimbursement of incontinence care products. These involve an in-use test with questionnaires being filled out by the users. In this way, the authorities feel that they can identify the most appropriate products for consumer, based upon relevant criteria.

Two examples shall illustrate the essential nature of consumer tests:

- Traditional "thick" feminine protection pads had a much higher theoretical absorbent capacity than the real life observed load (about 70 grs compared to 7 grs). Despite this apparently more than sufficient capacity approximately 60% of women using those products (still commonly used until the late 90's and still preferred in certain regions nowadays) experience soiling during the period. In contrast, thin pads (newly introduced in the 90's) have a reduced theoretical capacity (as measured in the laboratory) but due to design improvements, e.g. conical perforations in coverstock, wings, distribution layers, etc., significantly less soiling is experienced
- Work in the ISO Incontinence Work Group (ISO TC 173 SC3 WG2) clearly confirms that it is only through a combined approach that performance properties can be properly evaluated. Some properties can be measured by laboratory tests, but the results can be very misleading if not confirmed through user tests (ISO 15621 Urine absorbing aids - General guidance on evaluation)

The EDANA product stewardship concept.

Using a definition of the American Chemistry Council as a basis, EDANA defines product stewardship as "the practice of making health, safety and environmental protection an integral part of the life cycle of products. It is a shared responsibility between producers, their suppliers and their customers based on close, sustained dialogue and working relationships across the supply chain, to help companies and their partners meet the increasing demand for safe and environmentally-sustainable products." EDANA has recently set up a committee to apply these principles. The vision of the Product Stewardship Committee can be expressed as aiming at excellence, by providing the absorbent hygiene products industry with technical guidance and advice. Member companies can count on the existence of fora and platforms to anticipate and discuss common issues and their impact on the hygiene value chain. It is organised in such a way that the actors in the entire Value Chain of the EDANA sector groups can engage in dialogue around topics of common interest. Additionally, it acts as a review/advisory body for the validation of the association's technical activities.

Conclusion

EDANA has been highly praised, ever since its foundation in 1971, for excellence in developing test methods. These test methods serve essentially to assess properties of nonwovens, which are the main component of absorbent hygiene products. A special place has been developed for superabsorbent polyacrylates, another essential constituent of absorbent products. When it comes to finished, converted goods, EDANA has chosen to bring up a philosophy of overall quality rather than pure technical tools. This approach truly helps EDANA member companies and in general all industry stakeholders to keep up with the aspects of sustainability and safety, as well as with basic technical tools. ■

Blood Filtration - A Forgotten Necessity in India...

Today, transfusion of blood products can be considered safer than ever before in the history of medicine. This is the result of continuous improvements in blood donor selection, donor testing including Nucleic Acid Amplification Testing (NAT) for transfusion relevant viruses, Good Manufacturing Practice (GMP) in blood donor services as well as quality management & control for the whole chain of processes before & during transfusion in some of the more developed nations. However, one has to take into account that blood products are individually donated biologicals. Therefore, blood products vary in their contents of active ingredients & contaminants within specified ranges &, from a pharmaceutical producer's perspective, must be considered as single batches. The transfusion of blood & blood components are life saving & well-accepted therapeutic treatment for a wide variety of patients including trauma & surgery, those with chronic haematological disorders & a host of other medical anomalies such as severe anaemia or thrombocytopenia caused by a blood disease. People suffering from haemophilia or sickle-cell disease may require frequent blood transfusions. Early transfusions used whole blood, but modern medical practice commonly uses only components of the blood.



Current Situation in India

India has a population of more than one billion and has a huge burden of patient population requiring multiple transfusions. As per the National AIDS Control Organization, there is a requirement of 8.5 - 9 million units of blood in the country annually, and this includes the existing Thalassaemic population requiring regular transfusions and the rapidly growing size of the haemato-oncology patients requiring different types of blood component support.

Pre-requisite for the safe and effective use of blood and blood products is a well-organized Blood Transfusion Service (BTS), with quality systems in all areas. For any healthcare delivery system this is of vital importance. An integrated strategy is required for elimination of transfusion transmitted infections (TTI) and for provision of safe and adequate blood supply to the people.

The Blood Transfusion Service in India is highly decentralized and lack many vital resources like manpower, adequate infrastructure and financial base. The main issue that plagues blood banking system in the country is fragmented management. The standards vary from state to state, cities to cities and centre to centre in the same city. The blood component production/availability and utilization is extremely limited. There is shortage of trained health-care professionals in the field of transfusion medicine which needs to be addressed.

Testing of Blood Pre and Post AIDS Era

Before the onset of HIV / AIDS, VDRL was the only test needed to ensure blood safety. The spread of AIDS epidemic in the early 1980's vastly contributed to improvements in transfusion services. For nearly 100 years before 2000, all resources went into understanding blood groups & making clinicians understand the importance of blood components & safe testing of donors. This accomplished, it is believed that the next 20 years will see great improvements in the way blood is processed. The world is slowly moving away from testing of blood by various technologies like ELISA & Nucleic Acid Testing & is focusing on better methods of making blood safer. Post 2000, the focus is on improving blood processing technologies & decontaminating blood or killing the viruses and bacteria in donor blood rather than just eliminating infected donors, In this transition

phase however, India needs to give equal emphasis on improving testing methodologies & simultaneously adopt the newer blood processing techniques so that we quickly catch up with the rest of the world. To understand what action we need to take we need to critically understand the gaps in our system.

Gaps in Transfusion Service- India vs Developed Countries

- In terms of voluntary blood donation, we are far behind other Asian countries. For example, in Japan blood donation is 100% voluntary.
- Methods of collecting blood need to be worked upon; infection control in most blood donation camps is not upto the mark with significant potential for bacterial contamination
- Testing methodologies have not kept pace. Many blood banks are yet to graduate to ELISA testing from the Rapid tests, yet alone adopt Nucleic acid technology
- Leuco-reduction of blood components is hardly practiced
- Few Blood banks that practice leuco-reduction selectively have no quality control for the filters or the instruments being used
- Irradiation of blood components is rarity but yet use of blood from patient's relatives is rampant. Blood bankers employ rapid tests for aphaeresis & accept relatives as blood donors on the pretext of "emergency" or non-availability of donors, knowingly or unknowingly
- Emphasis is more on cost rather than concept of quality. If a patient who paid Rs. 30,000 for a cardiac stent in the year 2000 are willing to pay Rs. 1 lakh and upwards for a medicated stent today on account of increased clinical benefits. Surely, transfusion fraternity can impress upon the patients on the importance of preserving this stent by spending a few hundred/thousand rupees more, on safe blood. A person spending a few lakhs on a stem cell transplant will not mind the additional cost of filters or irradiation if the hazards & costs associated with non-use are explained

Blood Safety after 2000

In the new century, developed countries are dedicating more time & effort in adopting Leuco-reduction

Industrial Textiles

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techniques, pathogen inactivation & bacterial detection methods, but in India we are still trying to establish voluntary blood donation & remove the focus on replacement donation from our hospital based blood banks with few exceptions. Most NGO blood banks may be with few exceptions, collect blood only from voluntary donors for lack of access to captive patients (& relatives) enjoyed by hospital based blood banks. While hospital blood banks give great importance to donor selection & testing this is not the case with NGO based blood banks whose focus is on numbers & cost reduction & not quality. Their interaction with patients & their treating physicians is minimal & many times restricted to one time blood issue. The problems of poor quality education, poor quality equipment, low cost testing strategies are aimed at survival of blood banks & not the patient.

Focus on Reducing Viral Transmission

NAT testing, Leuco-reduction, Pathogen inactivation techniques are all aimed at reducing viral transmission. Testing methodologies are always going to be inadequate, with the new threat posed by new viruses. How many viruses are we going to test, for Chikungunya, Dengue, H1N1, CMV, Human Papilloma Virus. The list can go on.

Leukocyte reduction

This was a step forward, as along with removal of leukocytes most contaminating viruses get automatically removed. Leuco-reduction of blood components serves three important purposes:

- Removal of viruses most importantly CMV
- Secondly, prevents febrile transfusion reactions due to the cytokines and interleukins they release
- Finally prevents alloimmunization to HLA antigens or platelet specific antigens

Whole blood products consist of cellular components (such as red & white cells & platelets) & the non-cellular protein containing aqueous fluid. Blood products have to be filtered to ensure their safety, efficiency, & consistency, but the processing can be complicated & may also consist of many stages. The complexity comes from the very composition of the blood. The filter must deal with such materials as water, dissolved salts, fats (lipids), protein fractions, enzymes, & other sub-protein groups. These components vary in concentration, molecular weight, shape, size, sensitivity, & value. There is also variation in chemical makeup. A leukocyte blood filter may consist of up to 40 different layers generally of meltblown nonwovens, normally in a graded density construction with fibre size in the nanometer range. Within 3 days if you do not filter blood the leukocytes start disintegrating.

Leuco-reduction is of two types- Pre-storage & post storage.

1. Pre-storage Leuco-reduction -at time of manufacture
2. Post storage: Immediately before or concurrent with administration

Just like everyone cannot afford an expensive filter & drink filtered water, so also everyone cannot afford the cost of a blood filter. Hence it is sparingly used in our country. However, with better knowledge of its benefits

& reduction in cost it is good to use it. After all, we don't take transfusions every day. However, blood banks engaging in Leuco-reduction should calculate the number of leukocytes in the bag post donation as part of Quality control to ensure that it has less than 5×10^6 (American guideline) or 1×10^6 (European guideline) white cells.

In India only 2% of the total blood is only filtered for leukocytes removal where as 21 countries have universal leukocyte reduction as a mandate. In most of the developed countries there is one centralized blood bank to cater to a town so which enables an effective quality control over blood collection in contrast to India where blood banks are too many and decentralized.

Advantages of Leuco-reduction

- White blood cells (WBC) carry Viruses
- WBC release inflammatory mediators - cytokines - NHFTR
- Pre-storage filtration of platelet concentrates and red cells diminishes the accumulation of leukocyte-derived cytokines
- Reduces viral infections-CMV/EBV(HHV-4)/Herpes viruses(HHV-6&8)
- Leuco-reduced products certainly will result in reduction in primary HLA alloimmunization
- Leuco-reduction filters T.cruzi thereby reducing Chagas disease
- Bacterial sepsis from Yersinia enterocolitica may be reduced by pre-storage Leuco-reduction of the Red cells
- Inconclusive evidence that Leuco-reduced blood reduces postoperative infections following abdominal surgery
- Reported reduction in morbidity and mortality in cardiac surgery in patients receiving Leuco-reduced blood

What is required to bring about a change?

Much of the emphasis is laid understandably on controlling / preventing / managing the viral infections like HIV / HCV etc., however, not much attention is given towards the implementation of other elements in the safety chain like NAT (Nucleic Acid Testing), Leuco-reduction & bacterial testing. Each one of these could improve the safety but may seem to add to the cost of blood; but by ensuring safety, mitigating the associated adverse events / infections, the incident costs could very well be recovered by the healthcare system as proven by those who have adopted these modern technologies. A million dollar question though is who will bell the cat? It is imperative that a country having 2,600 blood banks and edging towards 10 million plus transfusions adopt these modern technologies at least selectively giving the benefit to high risk patient groups. Poverty cannot be the answer to all the ills plaguing the transfusion service. Poverty is a common challenge for all health care workers. As more experience develops, with increased awareness, patients / relatives themselves may make a more informed choice in time to come.

Need of the hour is centralisation & consolidation of transfusion services with total quality management as the core driving principle can lead to a safe blood to citizens of India. ■

A tête-a-tête with Dr. G. V. Rao

Dr. G. Venkatappa Rao has a distinguished career of over three decades at the Indian Institute of Technology, Delhi, during which he served as Head, Civil Engg and Dean (Student Affairs). He guided 22 Ph.Ds. and over 100 M. Tech. theses, while authoring over 200 research papers, many of which have won awards for best theses and best papers internationally. He set up the Geosynthetic Engineering Laboratory for quality testing and standardization, the first and only one of its kind in the country. His invaluable contributions have been recognized with over 25 prestigious awards. Dr. Rao authored over 10 reference books, several standard text books and manuals and state-of-the-art volumes for the IRC and CPCB which include: Geosynthetics- An Introduction (2007), Geosynthetic Testing - A Laboratory Manual, and Solid Waste Management and Engineered Landfills etc.



Dr. G. V. Rao
Prof. Osmania
University

BCH brings you an interview with Dr. G.V Rao, Honorary Professor, Osmania University College of Engineering, Chairman- SAGES, Technical Advisor to National Geotechnical Facility and an Independent Director, Ircon International Ltd. who had the vision to realize the potential and the need for advanced, indigenous and environment friendly construction materials and is committed to accelerate the integrated development, expansion and modernization of infrastructure in India.

BCH: Yours is a very well-known name in the Geotextile fraternity. Could you highlight your accomplishments in this industry?

GVR: I have been one of the fortunate few to have been introduced to geosynthetics as early as 1985 through the first workshop on geotextiles & geomembranes organized by the Central Board of Irrigation and Power (CBIP). My fellow geotechnical engineers at IIT Delhi & colleagues in the textile department were excited about the prospects of this "modern civil engineering material" and together we organized a 3-week short course on 'Applications of Geosynthetics in Civil Engineering', in the year 1987. Over the next few years I identified topics that are relevant to the infrastructure problems plaguing our country, such as reinforced soil structures, pavements and erosion control. I focused on the development of test methods/equipment as an immediate necessity for this technology to be implemented in India. I also recognized the need for development of geotextiles with natural fibres like jute and coir for an ecologically sustainable development. I spearheaded the establishment of the first Geosynthetic testing laboratory in India. With more and more fundamental and application oriented research, IIT Delhi was a sought after destination by the manufacturing industry as well as the practicing engineers. With the inclusion of geosynthetics in the Orange book of specification of the MOST, the geosynthetic applications were taken up in a big way by the Govt. agencies. Material testing, design of reinforced soil structures, vetting of the design and quality control aspects were taken up in earnest. Thus, the last decade of the 20th century has been very eventful which not only led to some successful geosynthetic constructions but also motivated the industry to establish state-of-art manufacturing facilities in the country. I had the unique privilege of serving the geosynthetic industry in many capacities, particularly as President of the International Geosynthetic Society, India Chapter (IGS) for nearly more than a decade and also as Member of the International Council of the International Geosynthetic Society (ICIGS). For long I have been the Chairman of the Geosynthetics committee of the Bureau of Indian Standards.

BCH: Everybody in the industry seems to feel that the Geotextile industry in India is growing at a fast pace. However some feel negatively by way of 'more hype than realism'. What are your views?

GVR: I must say that the expected growth in the geosynthetic industry has not been materialized. On one hand the practicing engineers complain of lack of codes & manuals which they can understand & implement. On the other hand, the industry is in a kind of dilemma. Elsewhere in the world they are only called upon to supply a specified geosynthetic product. In India however, the supplier needs to be a total technology provider which includes designs-duly vetted with site supervision. Moreover, all this is expected to be done free of charge. The geosynthetic supplier rather than the engineer is expected to provide the answer. One must understand the basic fact that geosynthetics provide an alternate feasible & in most cases economically viable or durable structures in comparison with the conventional structures.

BCH: Could you throw some light on the consumption of nonwoven & woven geotextiles & its types in India?

GVR: Nearly all types of conventional geosynthetics are in use today namely: woven and nonwoven geotextiles, extruded and woven geogrids, geomembranes, geocomposites and to a smaller extent, GCL's and geotubes. We have no established channels for collection of data regarding use, but one can say the annual consumption of nonwovens is about 5 mm² and wovens is about 2 mm².

BCH: Which application in this industry in India has the maximum usage of geotextile products and of which type?

GVR: The maximum use of geotextile products in the country is for nonwovens in filtration and drainage in roads. Use is also being made of wovens and nonwovens for coastal erosion protection and ground improvement works on soft marine soils. Another common application is as reinforcement in reinforced fills, the consumption however being much smaller.

BCH: How much of the above is being met domestically? Does the industry face any problems with the domestic product offerings or

Geotextiles

...contd

are they at par with international supply?

GVR: There have been a few indigenous pioneers for domestic production like M/s Garware-Wall Ropes and M/s Supreme Nonwovens. More recently, M/s Techfab India has developed into a major manufacturing entity which manufactures nearly all types of geosynthetics. M/s Skaps Industries India produces both woven and non-woven products. Of late, M/s Macafferri and M/s Strata India have started production in the country. On the whole, one can presume that 50% of consumption is due to domestic products.

BCH: India being a developing country, the need is high but still the usage is much less. Why?

GVR: As already mentioned, geosynthetics provide an alternate solution to conventional civil engineering solutions. Hence, the designer needs to be fully conversant with both the systems to be able to judge the relevance of the system being recommended. This obviously requires an in-depth knowledge of the subject. As many organizations that today prepare Detailed Project Reports for the vast infrastructure projects do not develop the required expertise, either they end up with inadequate design or specifications or become totally dependent upon one product/system without recourse to all the products that are seemingly feasible.

BCH: What is the supply chain for Geotextile materials in the Indian context?

GVR: Geosynthetics are the products developed by researchers in conjunction with (textile) industry, sold by sales teams and purchased by end users to be installed by contractors in applications designed by engineers.

BCH: How will this industry move in future by way of technology up gradation, domestic manufacturing and usage in India?

GVR: With hardly any major initiative taken by the Indian industry it is left to the well-proven foreign brands who originally pioneered the development of geosynthetic technology to start their production and advisory services even in India. Some organizations are also likely to establish test houses.

BCH: On what note would you like to end this interview?

GVR: Over the years I estimated that there are about 200 user departments in our vast country who have high potential and need for geosynthetic use of geosynthetic solutions. Having said that, there are a few things that need urgent attention. Approval procedures in our country have been far from perfect. We are also missing detailed on site quality control checking of geosynthetics delivered to the site thus allowing far easier access into the market for cheap substandard products. Engineers and clients must insist and check that materials supplied do in fact meet their specification and are also used appropriately. For a geosynthetic to perform it is not just sufficient to be in place but actually needs to serve the designed function during the life time of the structure. If this is ensured by our engineers and practitioners, the future of the industry will be brighter and effectively serve infrastructural growth. To help in this endeavour, my long cherished dream is to establish 'A GEOSYNTHETIC INSTITUTE OF INDIA' to serve both the industry and the engineering fraternity. ■



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The Meltblowns in India...

Dhiren Shah, Founder & Managing Director, Aim Filtertech Pvt Ltd

Meltblowns are a unique segment of the Nonwoven industry, distinct from their peers due to their very low fibre size and air bonding quality. They are known for their efficient properties of absorption, drapeability and filtration. Melt blowing is a process for producing fibrous webs or articles directly from polymers or resins using high-velocity air or another appropriate force to attenuate the filaments. Commonly weak in their strength, meltblowns are exceptional and perform where most conventional fibres fail, thus delivering a sense of safety under tough conditions. Potential threats of virus, bacteria, corrosive chemicals and dust to human life can be eliminated by these nonwovens at fractional costs. These materials have been successfully used to safeguard against various pandemics like Swine flue, SARS, Avian flue etc. In everyday industrial life too thousands of people need to be protected from occupational safety where they may be exposed to drugs, pathogens, hazardous smoke, cancer causing substances and severe environments like those in the mines. Not only this, these specialty fabrics are used as air filters within masks which protect people in public places too like the airports or shopping malls.

Meltblown technology is one of the most modern technologies in the nonwoven segments and is constantly being researched upon. The basic technology patents were developed by Exxon and there are many lines that run on this principle. The most basic form of this technology consists of spinning a high MFR, low viscosity polymer through holes as low as or less than 250 microns in diameters. The fibres are then bonded and simultaneously partially oriented using hot air. This forms a web of finely formed fibres which are drawn down to about 1-10 microns in size. Further treatments are added like electrostatic charging, calendaring and surface treatments to suit the fibres for various applications.

The 3 basic systems that exist generally for meltblowing are:

Exxon style or coat hanger type drawing system:

In Exxon style patents the materials are extruded through fine orifices. These orifices are about 250 microns in diameter. The dies are coat hanger style dies. The hot air is passing on both sides of the die tip.

Biax style system: In Biax style dies the materials are extruded through several holes along with the length and width of dies. There are usually multiple rows and columns of holes and air is passed through these holes concentrically around the polymer. Biax systems are high throughput capability lines.

Bicomponent system: Another variation at the top end of technology is use of bicomponent spinning systems. Hills Inc. of Florida, USA owns several patents in this technology where use of 2 different polymers will give a sheath core or side by side formation of basic fibres. The hot air is passing on both sides of the die tip.

Indian Scenario

Though a lot of literature is available on Meltblowns, people hardly understand the beauty of this fabric. Most of the time end users or converters overlook its importance and end up replacing them with low quality alternate materials.

Applications of Meltblown

- Filtration media- Face mask, Cartridge & clean room filters
- Medical fabrics- Disposable gowns, Bandages
- Apparels- Thermal insulation, Industrial
- Sanitary products- Sanitary napkin, Diaper, Adult inco products
- Electronic specialities- Battery separators, Insulation in capacitors
- Hot-melt adhesives
- Oil Absorbents



Meltblowns in India have been introduced across many applications but have still not seen their presence across various applications where meltblown nonwoven fabrics should be essentially used.

- There are several cases where extremely high and critical levels of filtration is needed but due to lack of availability of meltblown materials and standardization this need is often sufficed by locally available low end nonwovens which do not perform well. The final results are either a pharmaceutical manufacturing unit which cannot maintain its particle count to deliver drugs or perhaps a car that does not have good paint finish inspite of the cost being in hundreds of thousands of rupees
- For the sake of cost cutting the lives of innumerable medical professionals and patients are put at a risk. A commonly used surgical mask is expected to deliver Bacterial Filtration Efficiency (BFE) of more than 95% as per standard norms. However most masks sold in India are sold without any form of filtering layer commonly called as 2-ply masks which deliver only 35% bacterial filtration efficiency. The medical safety authorities need to take into account that the patients and doctors are at amplified risks in operation theatres around India for lack of correct performance being delivered by the product

Technical Textiles

...contd

- Most of the Indians travel in cars assuming that the air that they are breathing inside a car is safe and clean which is not the case in India. Most of the cars in India do not use good quality filters or cabin air filters. They tend to use non polyurethane foam for filtering cabin air. The efficiency of these filters is always questionable
- In operation theatres one has come across surgical gowns that do not show any barrier against pathogens or bacteria thereby turning the places meant for treating diseases into those which spread diseases
- Clean filtered drinking water is also a big issue in India and most of the diseases spread today is due to this reason

The global meltblown markets have seen several ups and downs during the last few years. Several plants were commissioned in 2010 who all owe their birth to the spike in demand during the swine flue upsurge. The market estimation globally for stand alone meltblown lines is about 80,000 tons. About fifty percent of these capacities are dedicated for oil sorbents and the rest focus on stand alone air filter medias, medical and hygiene markets. Many capacities have been set up for SMS type Reicofil lines which are very high throughputs and have much higher capabilities. The Indian market of meltblowns is at a nascent stage and many efforts are needed to grow the same. This market is estimated to be of only 50 tons per annum. Lack of regulation, awareness and availability are keeping the demand low.

In the developed countries, human life safety is the top agenda of governments and hence regulations, safety measures and environment protection works are undertaken with a very serious attitude. Filtration and that too sufficed with meltblown fabrics is commonly done to cater to various such needs. Use of meltblowns is essential to live a better life which is clean, hygienic and safe. While most developed nations have regulations in place which promote use of nonwovens, Indian laws and industry are yet to educate themselves on the benefits delivered by this product.

Some of the novel applications that may change the way meltblowns are used in India are:

Automotive roofings:

These will be used in inner insulation areas of automotives to provide a safe environment and insulation to the passengers. The bulk of automotives in India still use PU foam and in the coming days due to the Euro IV norms meltblowns will be more in use in these segments.

Food plates:

We have experimented with food plates coated with meltblowns. The current problem in Indian food is the heavy use of oil in curries. If a blotting paper is used to remove oil before consumption, it absorbs water as well, thus drying up the food. Meltblowns absorb oil and not the water thus making the food safer and hygienic when being eaten in food plates lined with metlblown fabrics.

Meltblowns for medical applications:

Several researches are making use of this novel technology. Some of the uses have been in commercial segments to prepare orthopedic bandages where cotton & plaster of paris bandages are replaced with meltblown combinations. Wound care areas need high level of antibacterial properties & absorption. Meltblowns are used in these segments to make a novel web which helps in healing the wound faster.

Earnings of common man in India are going up and one can now afford good health, hygiene and safety as compared to before. At a tipping point of earnings where safety will not be expensive, people will demand better performances from products and just like the story of water, disposable cups or mobile phones there will be vertical boom seen in this area of the industry.

Aim Filtertech has been in the business since 2001 to cater to the requirements of the air filtration market by providing innovative solutions. With customers in 22 countries around the globe, the company provides filter products like pockets, pleats and filter medias to filter producers. Aim's growth has been from a converter of nonwovens to producer of nonwovens. They have a state-of-the-art facility to produce bi-component meltblowns using the patented Hills system from Florida, USA. The line is 1.6 meter wide with world class control systems and round the clock inspection systems. AIM is a pioneer to set up plant to manufacture meltblown media in India with nearly a 1000 tons per annum capacity. They cater to various products segments such as hygiene, filtration, wipes and oil absorbents and have had an yearly growth of 30% over the past 10 years.

AIM Filtertech was founded by Dhiren Shah - Polymer Engineer by profession with about 10 years experience in the field of nonwovens. The company is currently run by Dhiren and Paresh Pungliya-Director who has done his MS in Plastics Engineering from USA and has 8 to 10 years experience in the field of Polymers. The company is guided by Dr. Vikas Nadkarni, a world renowned expert in polymers and synthetic fibres with a 40 years experience in fibre extrusion and a number of patents under his belt. Aim plans to set up a state-of-the-art-spunbond line in India and also to increase its existing meltblown capacity during the next two to three years. ■

Textile Fibres in the 'GASKET' Basket



What are Gaskets?

A gasket is a material or combination of materials clamped between two separate members of a mechanical joint. Its function is to affect a seal between the members (flanges) and maintain the seal for a prolonged period. The gasket must be capable of sealing the mating surfaces, impervious and resistant to the medium being sealed and able to withstand the application temperature and pressure. Thus gaskets are an integral component of any device which requires the confinement of a gas or liquid. They compensate for the unconformity of mating surfaces. These surface irregularities may be minute or large depending on the purpose of the device but in all cases, the gasket is required to compensate for the difference while limiting the flow of fluid or gas in either direction.

As gaskets are an integral part of components, sub components or the equipment itself these are used in a number of industries such as waterworks, irrigation, agriculture, refineries, marine, oil and gas, power, nuclear, fertilizer, automobile, construction, earth moving equipment, petrochemical and chemical processing etc.

Gaskets are manufactured using variety of materials like gasket paper, plastic polymer, rubber, fiberglass, silicone, metal, cork and felt. These gaskets have various designs, specifications and shapes and could be molded into a number of forms such as solid material, sheet, double jacketed and spiral wound etc. The gasket is preformed or precut to the desired shape and thickness and should be able to bear both low and high compressive loads. Holes through the gasket allow it to seal in fuel, oil or coolant. The designing of the joint and gasket are interdependent on each other and are in accordance with the properties of not only the two mating surfaces but also the fluid or gas contained in them.

Owing to their specific usage which may be in very oily spaces or in hot components or for very high pressure applications- gaskets need to be tuned to offer a number of properties, listed below in (Table 1).

Table 1: Required Properties of Gaskets

| | |
|---|--|
| Should accommodate surface finish conditions of flanges | Should accommodate thermal expansion and contraction |
| Reduce or control flange distortion | Should have zero leakage through the gasket |
| Have antistick properties | Should be heat and media resistant |
| Minimize torque loss | Should transfer heat as desired |
| Possess adequate recovery | Zero leakage over the gasket |

Gasket Materials

It is usually desirable that the gasket be made from a material that is compressible such that it tightly fills the space it is designed for including any slight irregularities. The most common misconception when selecting a gasket materials thickness is to choose a gasket material that is too thick. The thicker the material, the more likely the material being contained can weep through the pores of the gasket material itself. This is a greater issue with some materials than others. A rule of thumb is to have the material thick enough to compensate for any surface irregularities and to permit some compression. One of the more desirable properties of an effective gasket material in industrial applications is the ability to withstand high compressive loads. Effective material selection is very crucial for gasket manufacturing. Important properties for effective sealing performance in a gasket material are listed in Table 2.

Table 2 : Important Properties of a Gasket Material

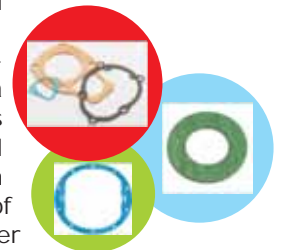
| | |
|------------------------|------------------|
| Chemical compatibility | Heat resistance |
| Compressive strength | Shear strength |
| Dimensional stability | Recovery |
| Erosion resistance | Creep relaxation |
| Tensile strength | Compressibility |

Generally gaskets are classified on the basis of the material they are made of such as:

● **Metallic:** Fabricated from one or a combination of metals to the desired shape and size

● **Semi-metallic:** Fabricated from composites of metal and non-metallic materials. The metal is intended to offer strength and resiliency, while the non-metallic portion provides conformability and sealability

● **Non-metallic:** Most non-metallic materials consist of a fibrous base with various fillers and miscellaneous chemicals held together and strengthen with an elastomeric binder. The selection of the base, binder and the filler depend on the media being sealed and the conditions of the sealing environment as well as the load bearing requirements of the application. Non-metallic gaskets are manufactured from aramid fibre, glass fibre, ceramics, polyaramid acrylics, carbon elastomer, teflon (PTFE), graphite



Textile Fibres and Gaskets

Gaskets are commonly produced by cutting from sheet

Industrial Textiles

...contd

gasket materials such as Gasket Paper (Beater Addition), Non-asbestos, Rubber, EPDM, Nitrile, Buna, Neoprene, Flexible Graphite, Grafoil, Aflas, Kalrez, Viton, Silicone, Metal, Mica, Felt or a plastic polymer such as Teflon® (PTFE), Peek, Urethane, or Ethylene Propylene (EP).

In the past, the gasket material selected for specific applications may have contained asbestos but due to environmental and health considerations asbestos has been virtually eliminated.

Today's sealing products manufacturers in the developed world no longer produce or offer any asbestos containing products. Gasket materials containing asbestos have been claimed to have caused Asbestosis.

Asbestos gasket material is however still used in many parts of the world and is a very effective low cost material. Some textile fibres other than asbestos used for gaskets are cellulose, glass, polyaramids, acrylics, carbon and various inorganic fibres. Some of these fibres can provide temperature resistance from 750° to 24000° F. Textile fibres form one of the main components of a gasket material. They are gaining popularity as they control a gasket's compressive strength and extrusion resistance.

Main characteristics of these textile fibres used for manufacturing gaskets are:

●**Cellulose**: This is a natural fibre, suitable for low temperature and medium pressure applications. Raw fibres can fibrillate. Cellulosic fibres are resistant to most of the fluids except strong acids and alkalis and can resist temperature of approximately 3000° F. But changes in humidity may result in dimensional changes and/or hardening. Cellulose fibre are used individually or as part of a compound in the construction of sheeting of non-asbestos gaskets

●**Asbestos**: Asbestos fibres can resist temperature upto 8000° F and are non-combustible. They are chemically inert and have very low compressibility. This fibre is permitted to be used only in special industrial applications

●**Aramid**: Aramid fibre have been progressively used to become the general purpose material for the low to medium pressure and temperature range of gasket materials. Gaskets are made of aramid fibres as they are economical and are suitable for use at low to medium temperature and pressure with oil, water and some fluid chemicals

●**Carbon fibre**: Carbon fibre based non-asbestos gaskets are ideal for application in extreme conditions such as hot oils, high pressure, heat and saturated steam. Utilized in applications with severe conditions, carbon fibre based gaskets are able to handle a maximum temperature of over 9000° F and a continuous temperature of over 6500° F. High thermal conductivity ensures rapid heat dissipation and allows high temperature capability (except in oxidizing atmospheres). This fibre has a wide chemical resistance



and may be used in the pH range of 0-14. It is however not suitable for oxidizing environments

●**Glass**: Glass fibres offer good strength and moderate chemical resistance. They are suitable for medium to high temperature applications. The fibres do not fibrillate

Many technologies are put together to make gasket materials and may involve the techniques of nonwoven, knitting and composite manufacturing.

The basic components of the non-asbestos materials used in gasket construction are elastomer and filler. The elastomer composition corresponds to the application of the gasket assisting in the categorization and selection of the gasket best used for the service it will be performing. Fibres provide tensile strength in all dimensions along with providing media resistance, heat resistance and aid in processing. Fillers on the other hand provide the necessary void arrangement for desired sealability &/or saturation along with crush and heat resistance. The binder bonds the ingredients of the material & provides resilience whereas the additives provide aid in the entire process.

Gasket's material can be made by four main processes:

●**Beater addition (Fourdrinier and cylinder machines)**: It consists of a basic beater addition process and the machine used is called fourdrinier. The beater addition process consist of a slurry of water, rubber latex, fibres and fillers which are deposited on a belt, the water is drawn off and finally the sheet is passed through the calendar stack to compress the material to the proper gauge and density

●**Compressed (Calendaring)**: In this process uncured rubber, solvents, fibres and fillers are squeezed together between the calendaring rolls. Sheet materials made by this process are called compressed products

●**Graphite process (Exfoliated and calendaring)**: In this process the mined graphite is treated with acid, heated and then placed on a web and compressed in a calendaring line. This gives rolls of graphite material. Here no adhesive is used as the material adhesively bonds itself

●**Reinforced process (Calendaring and combining)**: It is somewhat similar to beater addition of the fourdrinier process. Here the material is placed on the support sheet or plate and is calendered and combined to it. After heating, which is done for curing purpose, the material is coiled Gaskets and seals are vital to the operation of many types of equipment. Though they are not as glamorous or voluminous, but these materials are of great importance to keep the parts of a machine running and performing as intended. The United States represents the largest gaskets and seals market globally. However, emerging markets such as Asia-Pacific are expected to drive growth in the global market for gaskets and seals. Automotive constitutes the largest end-use industry for gaskets and seals worldwide. Process industry represents the second largest end-use market for gaskets & seals worldwide. The global market for gaskets & seals is projected to exceed US \$32 billion by the year 2015. ■



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Reifenhäuser Announces an Open Innovation Contest on Plastics Extrusion that Comes with a 20,000 € Prize



To promote the innovative spirit and the passion for technology, the Reifenhäuser Group wants to tread new paths in supporting young engineers. In an open innovation contest directed to students, that will start at the beginning of 2011, Reifenhäuser is looking for the best idea on the subject of plastics extrusion. Unlike other contests previously conducted by the plastics industry, the Reifenhäuser open innovation contest will use a web-based platform creating an online community for the plastics extrusion sector that will enable students to network and exchange ideas.

Dr. Bernd Kunze, CEO of Reifenhäuser REICOFIL and project leader explains: "We want to create a public platform where the ideas submitted can be developed further and inspire others. We want to bring together young people interested in plastics extrusion and promote talented young professionals." The best ideas will be awarded with a total of 20,000 €. An additional prize will be awarded by Reifenhäuser to the most active participant who contributes to the community with suggestions, the right questions and good critics. "We need participants of the contest, just as we need people in our company, who might not have an inspiring idea, but who's comments help others to advance. With our innovation contest we are not only aiming at looking for the best ideas but also for motivated young professionals and out-of-the-box thinkers", says Dr. Kunze.

Detailed information on the contest will be available at the beginning of 2011 under www.reifenhäuser-innovationcontest.de

Super Absorbent Technology Within Medical Textiles



Within the medical industry, use of super absorbent technology is an essential requirement of fluid management, particularly for products used in wound exudates management. Super Absorbent Fibre (SAF®), manufactured by UK-based Technical Absorbents is already well established for use in specialist medical care products such as wound care dressings, disposable mats in operating theatres and medical waste fluid management. It can also be incorporated into diagnostic transportation solutions, such as packaging medical testing kits, blood and bodily fluid-testing materials thus ensuring potential loss of fluid is locked within the fabric for safe disposal.



Being extremely effective and versatile, SAF® can be easily converted through many existing nonwoven and textile routes and is available in a wide range of highly absorbent grades. It has been extensively tested to establish its safe-for-use status in applications that require a high degree of toxicity and regulatory approval. Studies and research undertaken include allergenicity, irritation, dermal, genetic, reproductive and ingestion.

Due to strong relationships with some of the world's leading converters, producers and end product manufacturers, Technical Absorbents can offer the supply of nonwovens, yarns, woven fabrics and finished consumer goods all containing SAF®.

For further information, please visit www.techabsorbents.com or contact our Sales team via sales@techabsorbents.com or telephone +44 1472 244053

Huntsman Completes First Phase of REACH Registration



EVERBERG, Belgium Huntsman Corporation (NYSE: HUN) today announced that it is fully compliant with REACH legislation European Regulation (EC) No. 1907/2006. From its inception, Huntsman has fully supported the REACH program to "Register, Evaluate and Authorize Chemicals" in order to improve safe use of chemicals and protect human health and the environment. Reflecting this, the business acted as lead registrant for more than 40% of the substances it submitted during the first phase of registration. In addition, substances manufactured & imported by Huntsman with a later registration deadline have all been pre-registered & are therefore also REACH compliant.

Teijin to Launch Bio-derived PET Fiber in 2012



Tokyo, Japan, Teijin Fibers Limited, the core company of the Teijin Group's polyester fibers business, announced that it will begin in April 2012 the full-fledged production and marketing of new plant-based polyethylene terephthalate (PET) fiber as the world's first commercially produced bio-derived PET fiber. Named ECO CIRCLE PlantFiber, the new product, also available as a textile, will become Teijin Fibers' core biomaterial for applications ranging from apparel, car seats and interiors to personal hygiene products. Teijin Fibers expects to sell 30,000 tons of ECO CIRCLE PlantFiber products in the initial fiscal year ending in March 2013, and 70,000 tons by the third year of business.

INDIA NONWOVEN AND WOVEN FABRICS FOR FILTRATION (Dry and Liquid Filtration)

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Samir Gupta

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