Spun-blown Fiber Technology

Mohammad A Hassan, Biax-Fiberfilm Corporation

Available at: https://works.bepress.com/mohammad_abouelreesh_hassan/8/
Fitesa starts up new Swedish spunmelt line; Peru expansion to be completed in mid-year

Fitesa began the startup of its newest spunmelt machine, believed to be a 5.2 meter line capable of making nearly 20,000 tonnes of product, during this year's first quarter, Nonwovens Markets has learned. Meanwhile, a 5,000 tonne expansion planned for the company's Peruvian plant will come on-stream around mid-year, slightly later than the originally-announced first quarter date.

When the Simpsonville, South Carolina-based company originally announced the European expansion in 2013, it provided few details, saying "Fitesa spunmelt projects will expand capacity in Europe, at locations to be announced, to serve customer growth in Eastern and Western Europe. The European volume will be commercial in the 2Q of 2014 and 1Q 2015." At some point the initial phase was postponed or merged with the later phase.

**One more new line ahead.** The overall expansion plan, including a new 4.2 meter, 17,000-tonne machine in the United States that started in November 2014, was expected to add 50,000 tonnes to the company's capacity. Subsequently the company also announced plans to add a 20,000 tonne spunmelt unit in Brazil as well as the 5,000-tonne expansion in Lima. The new Brazilian line, to be installed at a site in the city of Cosmopolis, will start up in the first quarter of 2016.

Thrace Group announces a new spunbond line with bico capability; will be installed in Xanthi, Greece

Greece's Thrace Group will install a new spunbond machine with bicomponent capabilities, supplied by the Italian equipment manufacturer Faré, the two companies announced last week. At about the same time Thrace released its 2014 financial results, showing an operating profit increase from 2013 of almost 33% on a nearly 11% jump in turnover.

While Thrace Group is known mainly as a manufacturer of polypropylene-based products, the new line will be able to use polyethylene and polyester as well as PP, in various combinations. Startup date of the machine, at the company's Xanthi site, was not announced, nor was the machine's capacity or width.

**Reduced material consumption.** The companies noted that "Faré's unique technologies result in significant energy savings and reduced material consumption," adding that "this new production line incorporates numerous innovative features which will allow Thrace and its customers to develop unique products that do not exist today, satisfying future market needs."

"We are very excited with the purchase of this new line, which will allow us to remain true to our vision of being the most valuable partner for our

Chinese VSF and PSF prices take a step upward; is this just a pause in a years-long period of slippage?

Staple fiber prices in China have been trending down for the past three years, driven by a combination of capacity increases and, for the past year, a sharp drop in cotton pricing. In recent months, a dramatic decline in crude oil prices further undercut polyester. So far this year, however, prices for both polyester staple and viscose staple fiber have shown signs of turning upward – at least temporarily.

PSF has increased month-over-month two months in a row now, while VSF dropped slightly in January and February and then bounced upward slightly in March. The last time the two metrics moved up in tandem for any length of time was in late 2012. It is too early to proclaim a new trend, however, given the well-established volatility in both series.

**Regular coverage of Chinese prices.** Beginning with this issue, Nonwovens Markets will include a table and chart illustrating Chinese VSF and PSF prices, sourced from the China National Textile and Apparel Council (see page 4). The price for each product is taken from CNTAC data for the ninth trading day of the month, so both of our new series represent snapshots in time each month rather than an entire month's data.

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EU Raw Materials

PP and polyester prices rebound on purchasers’ moves to rebuild stocks

Both polypropylene and polyester markets saw a rebound in pricing during March in response to a restocking move by many customers. Viscose, however, remained flat.

Viscose. Viscose remained flat saw a rebound in pricing during March in

Polypropylene. As was widely expected, the March contract price for monomer rose – in reality by Euro 105 per tonne, at the top end of expectations. Demand had surged during the latter half of February as buyers rushed to replenish stocks run down after several months of hand-to-mouth purchases; and many chip producers closed their books early in February.

Chip producers were quick to announce they would be implementing this increase in full, with some talking of increases up to Euro 125 per tonne. Supply is becoming tight due to continued high demand, production issues and a strong export market helped by exchange rate advantages against the dollar. The weak Euro is also making imports far less attractive.

By the middle of March producers had succeeded in implementing the full increase in monomer costs with chip prices rising by 10 or 11 cents to between Euro 1.22 and Euro 1.25 per kg. However, many producers are still adamant that further increases will be implemented before the end of the month. The one exception to this is the U.K. market, where a strong pound against the Euro has actually led to a small price reduction.

Fiber producers, aware that the market has begun to swing upwards again, have passed on the increases in full with thermal grades rising by 10 cents to between Euro 1.80 and 1.85 per kg. Industrial grades have also risen by the same amount to between Euro 1.45 and 1.50 per kg.

Looking ahead, buyers are watching the forward naphtha situation where prices have started to soften recently, leading some analysts to speculate on the possibility of a lower monomer price in April; however most believe it is too soon to speculate.

Polyester. The situation on polyester is very similar to polypropylene. After months of reductions, virgin chip prices appear to have started to increase. By mid-March, chip prices were up as much as 9 cents to between 94 and 99 cents per kg. Producers are saying that projected increases in feedstock could lead to further price increases in the region of 5 to 8 cents per kg.

As with polypropylene, supply is described as tight as demand increased significantly in February ahead of anticipated price increases. The weak Euro has also made imports less attractive and volumes have dropped off significantly in recent months. These factors have led fiber producers to increase the price of fibers made from 100% virgin chips by 8 to 10 cents to between Euro 1.52 and Euro 1.57 per kg.

The increase in virgin chip prices has come as a relief to the recycled market which had seen the differential between virgin and recycled fibers reduced almost to zero. While they cannot increase prices, by rolling over at last month’s levels they can at least show some price advantage. Recycled flake prices remain unchanged at between 83 and 93 cents per kg.

Consequently, European viscose prices remained unchanged at between Euro 1.92 and 1.94 per kg. The weak Euro has led to an increase in the price of imported fibers although there is still some very low priced fiber on the market, particularly from China. This is still very much restricted to the textile market.

Looking ahead there seems to be no indication of any price movement and the European fiber producers seem adamant that stability is their greatest asset.

Viscose production worldwide with the exception of China rose by 5% in 2014. However, the majority of this increase was in high value viscose products such as Lyocell, Model and Tencel. By contrast Chinese viscose production rose by 7% but all aimed at the lower end of the market. This may explain why there was virtually no growth in the last quarter when cheap cotton imports impacted on the domestic Chinese viscose market. Domestic cotton prices have been kept artificially high in China to encourage viscose usage.

US PRODUCER PRICE INDEX: NW ROLL GOODS, PRODUCTS, RAW MATERIALS

<table>
<thead>
<tr>
<th>Product Description</th>
<th>February 2015</th>
<th>January 2015</th>
<th>February 2014</th>
<th>Monthly % Chg</th>
<th>Annual % Chg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nonwoven fabric mills (12/1985)</td>
<td>147.2</td>
<td>148.8</td>
<td>149.4</td>
<td>-1.1%</td>
<td>-1.5%</td>
</tr>
<tr>
<td>Primary products (12/1985)</td>
<td>151.1</td>
<td>152.9</td>
<td>152.9</td>
<td>-1.2%</td>
<td>-1.2%</td>
</tr>
<tr>
<td>Nonwoven fabrics (12/1985)</td>
<td>150.6</td>
<td>152.7</td>
<td>152.8</td>
<td>-1.2%</td>
<td>-1.3%</td>
</tr>
<tr>
<td>Pressed, punched, needled felts (except hats) (12/1985)</td>
<td>156.7</td>
<td>157.5</td>
<td>156.0</td>
<td>-0.5%</td>
<td>0.4%</td>
</tr>
<tr>
<td>Nonwovens and felt goods (1982)*</td>
<td>165.6</td>
<td>167.5</td>
<td>168.9</td>
<td>-1.1%</td>
<td>-2.0%</td>
</tr>
<tr>
<td>Surgical dressings (6/1983)</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.m.</td>
<td>n.m.</td>
</tr>
<tr>
<td>Disposable diapers and similar products (12/2003)</td>
<td>94.7</td>
<td>94.7</td>
<td>95.6</td>
<td>0.0%</td>
<td>-0.9%</td>
</tr>
<tr>
<td>Sanitary paper prods from purchased materials (12/2003)</td>
<td>130.6</td>
<td>130.6</td>
<td>132.0</td>
<td>0.0%</td>
<td>-1.1%</td>
</tr>
<tr>
<td>Noncellulosic organic (synthetic) fiber manuf. (6/1981)</td>
<td>121.7</td>
<td>123.7</td>
<td>127.3</td>
<td>-1.6%</td>
<td>-4.4%</td>
</tr>
<tr>
<td>Polyester fibers (12/1989)</td>
<td>96.1</td>
<td>97.3</td>
<td>105.1</td>
<td>-1.2%</td>
<td>-6.6%</td>
</tr>
<tr>
<td>Other noncellulosic organic fibers (6/2011)</td>
<td>101.3</td>
<td>102.9</td>
<td>105.1</td>
<td>-1.6%</td>
<td>-3.6%</td>
</tr>
</tbody>
</table>

The Producer Price Index measures the average change over time in the selling prices received by domestic producers. Data is relative to the base date, which equals 100. The base date is reported in parentheses. Source: US Department of Labor, Bureau of Labor Statistics. * Commodity data, rather than industry data. n.a. = not available; n.m. = not meaningful.
## Price Bulletin: Roll goods and raw materials

*DISCLAIMER: While the information contained in this index has been obtained from sources believed to be reliable, RISI does not warrant or guarantee the accuracy and completeness of the information. All prices are best estimates of factory prices before regular volume and contract discounts and are composite prices as opposed to median or average prices. Actual transaction prices may vary.*

### NORTH AMERICAN MARKET ($/lb)

<table>
<thead>
<tr>
<th>Roll goods</th>
<th>March 2015</th>
<th>February 2015</th>
<th>March 2014</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Airlaid pulp (2.0 osy/55 gsm)</strong></td>
<td>1.19 to 1.27</td>
<td>1.19 to 1.27</td>
<td>1.14 to 1.22</td>
</tr>
<tr>
<td><strong>Spunbond polypropylene, thermalbond (0.4 osy/14 gsm)</strong></td>
<td>1.30 to 1.48</td>
<td>1.30 to 1.48</td>
<td>1.24 to 1.42</td>
</tr>
<tr>
<td><strong>Spunlace viscose/polyester (1.6 osy/55 gsm)</strong></td>
<td>1.61 to 1.88</td>
<td>1.61 to 1.88</td>
<td>1.64 to 1.91</td>
</tr>
<tr>
<td><strong>SMS polypropylene (17 gsm)</strong></td>
<td>1.30 to 1.48</td>
<td>1.30 to 1.48</td>
<td>1.24 to 1.42</td>
</tr>
</tbody>
</table>

#### Staple fiber

| Cotton A Index (midmonth average)                | 0.70       | 0.68          | 0.95     |
| US Cotton Benchmark                              | 0.63       | 0.64          | 0.93     |
| Polyester (1.5 den.)                             | 0.94 to 1.09| 0.94 to 1.09  | 1.02 to 1.17|
| Polyester (4.0 den., PET/PET bico)               | 1.01 to 1.13| 1.01 to 1.13  | 1.09 to 1.21|
| Polyester (6.0 den.)                             | 0.83 to 0.98| 0.83 to 0.98  | 0.90 to 1.05|
| Polypropylene                                    |            |               |          |
| Thermalbond grade (1.5 to 2.2 den.)              | 1.07 to 1.16| 1.06 to 1.15  | 1.30 to 1.35|
| Industrial grade (4.0 to 10.0 den.)              | 0.89 to 0.98| 0.88 to 0.97  | 1.12 to 1.17|
| Rayon, regular                                   | 1.28 to 1.41| 1.28 to 1.41  | 1.33 to 1.45|

#### Polymers and pulp

| Polyester (bottle grade)                         | 0.97 to 1.04| 0.97 to 1.04  | 1.09 to 1.15|
| Polypropylene (fiber grade)                      | 0.80 to 0.89| 0.82 to 0.90  | 1.02 to 1.08|
| Superabsorbent polymer                           | 0.89 to 0.99| 0.92 to 1.02  | 1.01 to 1.11|
| Fluff pulp (untreated softwood kraft, rolls)     | $1030-1050/tonne | $1040-1050/tonne | $980-1000/tonne |

### EUROPEAN MARKET (€/kg)

<table>
<thead>
<tr>
<th>Roll goods</th>
<th>March 2015</th>
<th>February 2015</th>
<th>March 2014</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Airlaid pulp (latex bond, w/o SAP, 55-65 gsm)</strong></td>
<td>2.39 to 2.44</td>
<td>2.39 to 2.44</td>
<td>2.34 to 2.38</td>
</tr>
<tr>
<td>Multibonded airlaid (w/o SAP, 60-70 gsm)</td>
<td>2.45 to 2.49</td>
<td>2.45 to 2.49</td>
<td>2.40 to 2.43</td>
</tr>
<tr>
<td>Carded polypropylene, thermal bond (18-20 gsm)</td>
<td>2.23 to 2.82</td>
<td>2.23 to 2.82</td>
<td>2.27 to 2.86</td>
</tr>
<tr>
<td>Spunbond polypropylene, coverstock (15-17 gsm)</td>
<td>2.08 to 2.25</td>
<td>2.08 to 2.25</td>
<td>2.11 to 2.28</td>
</tr>
<tr>
<td>SMS polypropylene, barrier legcuff (15 gsm)</td>
<td>2.27 to 2.46</td>
<td>2.27 to 2.46</td>
<td>2.30 to 2.49</td>
</tr>
<tr>
<td>Spunlace viscose/polyester (50-60 gsm)</td>
<td>2.04 to 2.24</td>
<td>2.04 to 2.24</td>
<td>2.14 to 2.34</td>
</tr>
</tbody>
</table>

#### Staple fiber

| Polyester (1.5 den.)                             | 1.37 to 1.55| 1.29 to 1.47  | 1.44 to 1.61|
| Polyester (4.0 den., PET/PET bico)               | 1.63 to 1.84| 1.55 to 1.76  | 1.70 to 1.90|
| Polyester (6.0 den.)                             | 1.20 to 1.51| 1.12 to 1.43  | 1.27 to 1.57|
| Polypropylene                                    |            |               |          |
| Thermalbond grade (1.5 to 3 den.)                | 1.85 to 1.89| 1.75 to 1.79  | 2.02 to 2.05|
| Industrial grade (over 8.0 den.)                 | 1.27 to 1.33| 1.17 to 1.23  | 1.35 to 1.40|
| Rayon, regular                                   | 1.78 to 1.88| 1.78 to 1.88  | 1.80 to 1.90|

#### Polymers and pulp

| Polyester (fiber grade)                          | 0.99 to 1.05| 0.90 to 0.96  | 1.12 to 1.17|
| Polypropylene (fiber grade)                      | 1.09 to 1.13| 0.99 to 1.03  | 1.30 to 1.34|
| Superabsorbent polymer                           | 1.94 to 2.21| 1.94 to 2.21  | 1.97 to 2.23|
| Fluff pulp (U.S. untreated softwood kraft, rolls) | $1030-1050/tonne | $1040-1050/tonne | $980-1000/tonne |

1 Export list price in $ c.i.f. main European ports. P = Preliminary. r = revised.
Still, a clear trend can be seen over the last few years. On the ninth trading day of January 2013, according to market sources, VSF was over 14,000 yuan per tonne while PSF was close to 12,000 yuan. Both were well down from early 2012, when VSF was above 17,000 yuan and PSF was close to 13,000 yuan.

Lunar New Year dip? Our June 2014 benchmark for VSF was at 12,040 yuan and PSF was at 9,800 yuan. PSF dropped to 6,840 yuan in January 2015 before ticking up modestly in February and March; while VSF reached 11,280 yuan in February and then bumped up almost 1% in March.

Some commodities see an annual price pattern, although fiber prices last year were unusually flat during the first quarter – with no apparent holiday-related movements.

Nonwovens producers will be watching fiber price developments in coming months to see if they represent a new trend. Chinese fiber producers also export to overseas markets, with the potential for exports to decline if domestic prices in China begin a sustained recovery.

Filtration
China issues white paper on cabin air quality – to enforce guidelines strictly

China Consumers' Association's Shenzhen branch, along with the TÜV Rheinland, a global provider of technical, safety, and certification services, announced the official release of a White Paper on Cabin Air Quality last week. This release appears to coincide with a new regulatory push for cleaner air for occupants of automobiles, which manufacturers of filtration material are watching closely.

According to the China Automotive Maintenance and Repair Trade Association (CAMRA), TÜV Rheinland conducted a joint inspection on cabin air quality in China, aiming to raise awareness among auto makers as well as car owners.

TÜV Rheinland tested a total of 51 automobiles, among which 20 failed to have qualified air quality. The company noted that the test results showed a majority of the failed 20 vehicles were new cars with average mileage of less than 10,000 kilometers.

The White Paper also concluded the main sources of pollutants inside a vehicle were: car seat materials, adhesives, paintings, coatings materials and interior decoration textiles. However, the company did not specify the car makers used for testing.

The tests were carried out in accordance with China's Guideline for Air Quality Assessment of Passenger Car (GB/T 27630—2011, implemented in March 2012), which requires controlling the concentration level of some toxic gases, such as benzene, methylenzene, xylene, styrene, formaldehyde and cetaldehyde.

Formaldehyde inside a vehicle mainly comes from the manmade leather and adhesives used for car seats and the steering wheel, the report said, while cetaldehyde is formed by polyurethane materials used for decorating the vehicle.

In 2012, government released GB/T 27630 as a reference for car makers, but CAMRA said it will become a compulsory guideline, which auto manufacturers will be required to obey strictly. It warned that car makers and spare parts manufacturers should pay close attention to future developments of the guideline.

Funing officially named the filtration materials demo base in China

Funing Economic Development Zone in Jiangsu Province has become the official demonstration base for filtration materials, China Nonwovens & Industrial Textiles Association (CNITA) announced on its website.

Local government reported that currently the filtration materials base has attracted over 150 companies in the industry, including leading Chinese firms such as Shanghai Boge Nonwovens, Henan Gongyi Hualong Filter Factory, Jiangsu ZHENGDA SENYUAN Group, and Jiangsu Oriental Filter Bag Company, among others.

Funing County, 400 kilometers away from Shanghai, has a population of over 1 million. The economic development zone, established in 1998, is a provincial development zone approved by Jiangsu Province. Aside from garment and textiles, it also engages in chemicals production and process-
ing, raw materials processing, shipping and logistics.

The Chinese government aims to improve the nation's filtration technologies by offering better investment conditions for the companies within the industry. Local government said at the moment main filtration materials are aimed at water and air purification, two of the country's biggest problems.

THRACE GROUP
"continued from page 1"

customers," said Costas Halioris, Thrace Group CEO. "Listening closely to our clients' needs and utilizing our advanced technologies, we have developed this line which we can claim is probably the best for the spunbonds' market," added Marco Faré, Faré's General Manager.

More than 1,500 customers. With 14 plants, a workforce of over 1,700 in 10 countries and annual global sales approaching Euro 300 million, Thrace Group says it serves more than 1,500 clients in 80 countries. Nonwovens and other technical fabrics are its largest business, with packaging also generating a big share of revenues. Its technical fabrics business mainly serves durable applications.

Its nonwovens operations, operated by Thrace NG S.A., include Don & Low, based in Scotland, and Thrace Linq, in the United States, as well as the Xanthi plant. It installed a new needlepunch line in Summerville, South Carolina in 2009. Thrace Linq mainly serves markets in the Americas. Don & Low, understood to operate three Reifenhauser spunbond lines, says its biggest markets are in Europe and the Americas.

Xanthi is believed to include at least one Reifenhauser spunbond line and an NSC needlepunch machine.

Growing product range. Thrace NG's end-use markets include geosynthetics, agriculture and horticulture, construction, furniture and bedding, filtration, workwear and hygiene and medical. Its product range includes woven as well as nonwoven materials.

In February 2015, Thrace NG said it was expanding its product range to include "Geosynthetic Clay Liners" to be used in sealing applications and "Drainage Geonets and Geocomposites" to be used for drainage purposes.

At the time it said that it was setting up a joint venture plant to produce waterproof products using its Geosynthetic Clay Liner (GCL) technology. Thrace-Eurobent S.A. will be the operating company, and will be a JV of Thrace and Eurobent Sp.z.o.o. The product line will serve environmental end-uses such as sanitary landfills and irrigation projects. Sales will be made to international as well as domestic Greek customers. The product will be a sandwich of a nonwoven on one side and a woven material on the other.

2014 financials. According to the parent company's 2014 financial report, strengthened results of its technical fabrics business led the company's growth. Group turnover was up 10.7% from 2013 to Euro 278.2 million while earnings after interest, taxes, depreciation and amortization (EBITDA) jumped by 32.7% to Euro 23.5 million. The EBITDA margin improved from 7.1% in 2013 to 8.5% in 2014.

The group generated 35% of its sales in 2014 from the European Union excluding Greece and the United Kingdom, with 19% coming from the UK, 17% from Greece, 9% from the rest of Europe, 17% from the Americas and 3% from Asia, Africa and Oceania. Greece represented 52% of production, with the UK adding 24%, the Americas 13% and southeastern Europe excluding Greece 11%.

Technical fabrics generated 55% of the group's EBITDA for the year and packaging generated 45%.

For the technical fabrics business unit, including all the nonwoven operations and woven fabrics, the 2014 sales breakdown was as follows: the European Union excluding Greece and the UK, 34%; the UK, 27%; the Americas, 26%; Greece, 4%; the rest of Europe, 4%; Oceania, 3%; and Asia, Africa and "other", 2%.

Innovation
'What's next' theme of RISE/N3M event brings innovation to forefront

"What's next?" in engineered fabrics was the question of the day at INDA's recent Research, Innovation & Science for Engineered Fabrics Conference (RISE®) and Nanofibers for the Third Millennium (N3M). Attendees heard answers ranging from evolving forming and bonding technologies to new uses for materials as old and familiar as fiberglass, to ideas for folds for tissue, bone or cartilage regeneration, and beyond.

INDA said the event, which took place last month in Miami, "continues to draw increasing attendance since it started in 2010." The nanofiber sessions were new this year, while networking opportunities such as a harbor cruise and a "Dinner with Industry Thought Leaders" were also reported to be popular.

Noting that the event's timing was moved to the winter, Dave Rousse, INDA President, said "RISE continues to bring together Technical Scouts in the engineered fabrics sector with fascinating new technologies to add features and value to their fabrics. We are delighted with its continued growth, even with the change in the calendar. And this year we added the N3M component for added value."

New directions for spunlaid. In his talk on "The Future of Spunlaid and Spunmelt Fabrics Based on Reicofil Technology," Hans Georg Geus, Ph.D., technical director at Reifenhauser Reicofil GmbH & Co. KG told delegates that a new class of nonwoven benefiting from a somewhat modified standard bico spunlaid technology is now available.

Unlike fabrics that have been designed to be thin and lightweight, the technology also permits the manufacture of materials that are lofty and soft, with substantial three-dimensionality using self-crimping bicomponent fibers, carefully selected polymers, the type of bicomponent structure used and the deniers and shapes of fibers.

Multi-layer structures. Dr. Geus reiterated to Nonwovens Markets that in multi-layer structures each layer can have different properties; e.g. one layer is standard flat spunbond with good tenacity and low elongation and the second layer…is lofty, or the different layers…have different properties in terms of hot air bonding capabilities. The real big benefit with this technology is the possibility to differentiate, which also means that there are several different solutions to create certain web properties."

He added that "there will be a lot of new developments during the next years." The new technologies are available today, and the company wants to work with customers to learn what specific properties might be required in each case, potentially leading to further applications development collaboration with Reifenhauser and the individual customer.

As one of many possible examples of how the technology is evolving into new end-use areas, applications where a carded lofty product are now used could be substituted with a spunbond product made more efficiently due to the evolution in the spunbond process.

Spun-blown fiber technology. Mohammad Hassan, Ph.D. of Biax-FiberFilm Corporation, in his paper on "Advanced Filter Media Structures Using Biax Spunblown Fiber Technology", talked about his company's development to of a new evolution of meltblowing technology "developed by Biax-Fiberfilm Corporation to bridge the gap between the conventional meltblown and spunbond processes."

Dr. Hassan noted that "the spun-blown process has a multi-row spinnerette similar to spunbond technology but the filaments are attenuated at the nozzle's tip using high speed air similar to meltblown process."

As a result, the process allows for the production of materials with strength approaching that of spunbond but with fiber size similar to meltblown.
Fiber size is wide but controllable. Dr. Hassan explained that "Tensile strength is between SB and MB but with greater elongation than either, which would result in highly extensible products without being easily torn or ruptured, which is more desirable in wipes and filters application. The process can handle high operating pressures up to 2000 psi, which enables it to spin a wide variety of resins and operate at lower temperatures that would result in more flexibility and higher energy cost savings."

He added that "Spun-blown fabrics tend to have a wide fiber size distribution...but controllable...due to the multi-row design of Biax's spinnerette. Thus submicron fibers are naturally comingled with big microfibers which would result in strong and high efficiency filter media with higher dust holding capacity at low pressure drop. Because of the high productivity and throughput of the Biax system, it is cost-competitive with traditional spunmelt technologies. It also offers a wider range of both mean fiber size and nozzle density than either traditional technology, giving it more flexibility in terms of end-product attributes."

Lofty materials. In one area of potential applications, Dr. Hassan talked about the ability to produce lofty materials for acoustic insulation — for example, for automobiles or appliances — or thermal insulation, depending on the specific thermal properties of the fibers chosen.

In one comment in his paper, talking about potential filtration applications, Dr. Hassan explained that "In this test we are looking at the multi-pass oil filtration test for a polybutylene terephthalate (PBT) spun-blown sample versus a PBT meltblown sample made with a conventional meltblown process. As shown from the test results, Biax's spun-blown samples possess higher filtration efficiency at the same test time and higher dust holding capacity. The primary reason for that is the perfect mix between big and small fibers that are in-situ coagulated together from the multi-row Biax spinnerette."

Filter media. Thinking about types of filter media that could logically move to a spun-blown technology, Dr. Hassan said "Generally speaking it can fit with any filtration media that can be made with the traditional meltblown process except for fabrics with average fiber size below 0.5 microns.

"The primary competitive advantages of spun-blown technology over the standard meltblown technology are: Spun-blown can handle much higher back pressures, because of the robust spinnerette built, that allows it to spin polymers that are not spinnable or very difficult to spin on traditional meltblown lines. So you can spin high molecular weight polymers to achieve higher strength and elongation. You can operate at lower temperatures and save energy. You can also spin elastomers...which are highly viscous and very difficult to spin on a traditional meltblown line."

Another competitive advantage for spun-blown, according to Dr. Hassan, relates to fiber size distribution. He noted that "Naturally it is wide but it can be easily controlled. Wide fiber size distribution allows for higher dust holding capacity in case of a filtration application — two to four times higher than traditional meltblown — and higher absorbency in case of wiping applications."

Another advantage is in production capacity: "Because of the multi-row design of the Biax's spinnerette, it is 1.5 to 5 times more productive than the traditional meltblown process."

Current evolution of fiberglass insulation. Senior engineering leader Steven Thaxton of Owens Corning talked about the current evolution of fiberglass insulation. He explained that fiberglass is a material that has generally been considered mainly as an end-product. However, he pointed out, it could play a useful role as an input material for a number of applications where its physical properties can be useful. Among the potential applications are various thermal and acoustic end-uses as well as filtration and certain applications where the material's hydrophobic and oleophilic qualities are useful.

Thaxton talked about Owens Corning's work to develop an improved fiberglass nonwoven without a binder using needlepunching. While needlepunching fiberglass is "not completely new", he added that "doing it through a live fiberizer at these fiber diameters, material thicknesses and thermal properties is pretty new."

'Beyond just polymers.' A theme he mentioned more than once was that "needlepunch can be beyond just polymers." He pointed out that "the three most successful products we have commercialized to date include acoustic appliance insulation, thermal appliance insulation (smoke and odor free — no binder), and high temperature flexible pipe insulation."

Because the glass fibers can be made in quite a fine size, around 4 microns, it may be suitable for many filtration applications. It may be also made with a substantial amount of recycled raw material, adding a "green" element. He added that "as a general rule — the finer the fiber, the better the insulation rating."

"You could sleep on it." While fiberglass has historically been dusty and abrasive, Owens Corning's latest development eliminates these problems to the extent that, according to Thaxton, "you could sleep on it."

He added that "fiberglass is pretty underside and comparatively inexpensive," at least on an incremental cost basis. Setting up a plant to manufacture it "requires immense capital, as even the smallest economic lines need millions of pounds" — investments Owens Corning, however, as already put in place.

Wearable robotics. INDIA reported that, "in her presentation on Soft Active Materials for Soft and Wearable Robotics Rebecca Kramer, Ph.D., Assistant Professor, School of Mechanical Engineering, Purdue University, told attending top researchers, scientists, academia and thought leaders from around the world she is looking for partners to work with on new products."

Among the other presentations were:

- "Nonwoven Materials with Extraordinary Functions: From Tough Hydrogels to Graphene Supercapacitors" presented by Xuande Zhao, Ph.D., Assistant Professor of Mechanical Engineering and d'Arbeloff Career Development Chair, MIT
- "Retrofitting: Breathable New Life into Old Machines," by Timothy Robson, Business Development Manager, Hills, Inc.
- "The Use of Renewable Feedstock in Superabsorbent Polymer Manufacturing," Jim Robinson, Technical Services Manager, BASF Hygiene Product
- "Golden Isles Co<sup>TM</sup> Fluff Pulp: Cellulose with a New Purpose," Arthur J. Nonni, Ph.D., Senior Director Process and Product Technology, GP Cellulose, LLC, Georgia-Pacific

INDA announced RISE2016 will be held Jan. 25-Jan. 28 at Le Meridien Hotel, 333 Poydras St., in New Orleans, La. For more information, see: www.inda.org/inda-events/events-calendar.

In Brief

Freudenberg & Vilene Nonwovens said this week it will install a new production line to manufacture automotive headliners at its Suzhou facility in China, with production scheduled to start in the summer of 2016. Freudenberg & Vilene Nonwovens is a joint venture of Freudenberg and Japan Vilene Company.

According to the JV, "The automotive market in Asia is growing, and is particularly dynamic in China." It commented that "Demand for high-quality products is rising steadily, with automotive headliners enjoying a particularly strong trend. Asian OEMs prefer printed headliners that meet the high design standards of Japanese and Korean car manufacturers."

"Freudenberg & Vilene Company introduced printed headliners in 2010 and is currently the only manufacturer with in-house printing capabilities. As a result, Freudenberg is able to offer customers innovative, individualized products with the most up-to-date designs while at the same time delivering on consistently high quality."

"Freudenberg headliners are based on nonwovens and can be finished in various ways to provide additional functions. Apart from excellent abrasion resistance, outstanding..."
ing acoustic properties and improved stain resistance, these products in combination with other vehicle components contribute to a marked reduction in vehicle weight. Lenzing AG named Stefan Doboczky as the new chairman of its Management Board (CEO). He will assume his new function on June 1. He takes over from Peter Untersperger, who will step down from his function as CEO effective May 31 "at his own request prematurely", according to the company’s announcement. Untersperger has been with Lenzing for 30 years and has been CEO since 2009.

Since 1998 Doboczky has worked in various management positions for the Dutch Life Science & Material Science group Royal DSM in Europe and Asia, most recently as Member of the Managing Board. Lenzing noted his nearly 10 years of management experience in Asia and a "strong technical background". A group of five associations, representing the water sector and the nonwoven fabrics industry, announced that they are working together to develop a new edition of guidelines regarding product design and marketing of nonwoven products labeled as "flushable." The associations also said they will meet March 26 in Washington, DC, to explore the establishment of a "collaborative product stewardship initiative to promote greater responsibility for the proper disposal of nonwoven products, including wipes not designed to be flushed."
The association group includes INDA, the Association of the Nonwoven Fabrics Industry; NACWA, the National Association of Clean Water Agencies; APWA, the American Public Works Association; WEF, the Water Environment Federation; as well as CWWA, the Canadian Water & Wastewater Association. Work began on the new edition on January 27, 2015, with completion expected by July 2016. The new "Fourth Edition" guidelines will build on the framework of the "Third Edition Guidance Document for Assessing the Flushability of Nonwoven Disposable Products," which is the current voluntary guidance used by the wipes industry. Low & Bonar PLC issued its interim management statement for the period since November 30, 2014.

It said that "Overall, the Group has made a solid start to the year. Despite volumes being a little lower than anticipated, profit remains in line with expectations due to raw material benefits. Our Saudi JV, Bonar Natpet, has secured a number of important product approvals albeit sales development remains slow. Since the year end, the Euro has continued to weaken but the effects of this are broadly neutral due to the continued strength of the US dollar and the benefit from increased export sales from Europe. Based on current trading, the Group is confident of meeting expectations for the full year."

Ontex Group NV has completed a two-year long effort to develop a plan to combine two adult incontinence plants in France into one site midway between the existing facilities. The new location is in the vicinity of the adjoining communes of Dourges and Noyelles Godault.

According to the company, "The laying of the foundation stone is scheduled for September 2015 and the end of construction for the summer of 2016. The move of production lines will gradually happen in 2016 and 2017." The total project cost is estimated at Euro 45 million.

In April 2013 Nonwovens Markets reported that Ontex's inco business in Europe had been growing but that the two plants - at Arras and Wasquehal, in the north of the country - were not considered to be right for expansion. In order to operate more efficiently, the company wanted to shift from the two sites located within 60 kilometers of each other to a single facility. Neither of the current plants is big enough to absorb the equipment and people from the other.

According to an analyst’s note posted on the Seeking Alpha website, Polymer Group Inc. could launch its initial public offering (IPO) "in late April". The company announced in early February that it had filed a registration statement with the US Securities and Exchange Commission related to a possible IPO. PGI is owned by the Blackstone investment firm.

Marketing Technology Service is organizing an Absorbent Products Design Seminar, scheduled for April 29-May 1 in Kalamazoo, Michigan. The event will take place at the Radisson Plaza Hotel, and will include a tour of MTS’s airlaid and testing facilities along with the seminar. Topics to be covered in the two and a half day conference include core integrity evaluation, a discussion of pulpless and near-pulpless designs, what MTS calls "instructive designs" of the past, preformed airlaid cores and "roll good absorbents, synthetic alternatives, and other options for thin cores". Information can be obtained and registration can be arranged at www.marketingtechnologyservice.com.

INDA will offer its Wipes Academy immediately prior to the annual World of Wipes conference this year. Both the Academy and WOW will take place at the Hotel InterContinental Buckhead in Atlanta, Georgia. The Academy will take place June 15-16; WOW is on for June 16-19. Instructor for the Academy will be Rob Johnson, P.E., of Smith, Johnson & Associates. Topics will range from nonwoven substrates for wipes to liquid ingredients, converting processes and packaging, as well as market applications and statistics, and a discussion of product development and manufacturing. For information, contact Tracie Leatham at tleatham@inda.org.

Saudi Basic Industries Corp. (SABIC) announced it has launched a range of non-phthalate polymer products developed at its technology center in Riyadh. It said the new products were developed "in order to fulfill customer demands for advanced solutions in various segments such as hygiene fabrics and flexible packaging." Commenting specifically on the nonwovens area, SABIC said "the spun bond fiber has several applications such as baby and adult diapers, medical masks, feminine care, absorbent pads and swabs, and surgical garments and drapes."
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