textile weekly

News that keeps you ahead

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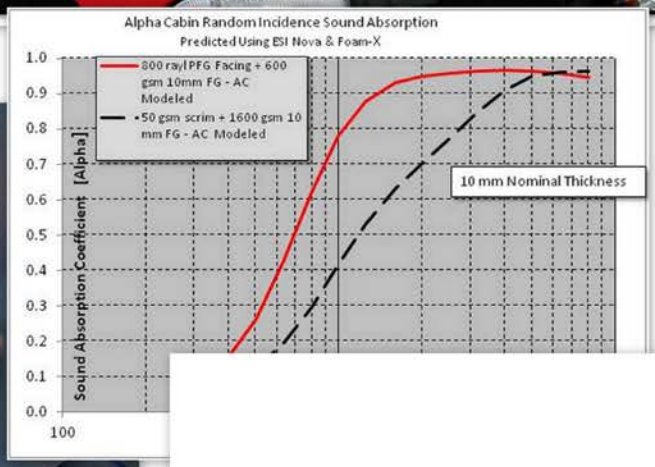
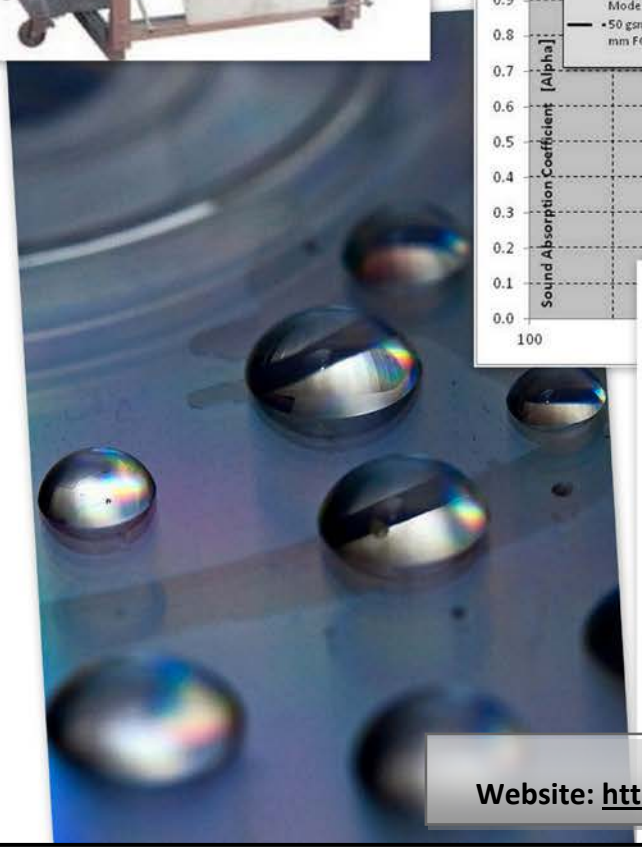
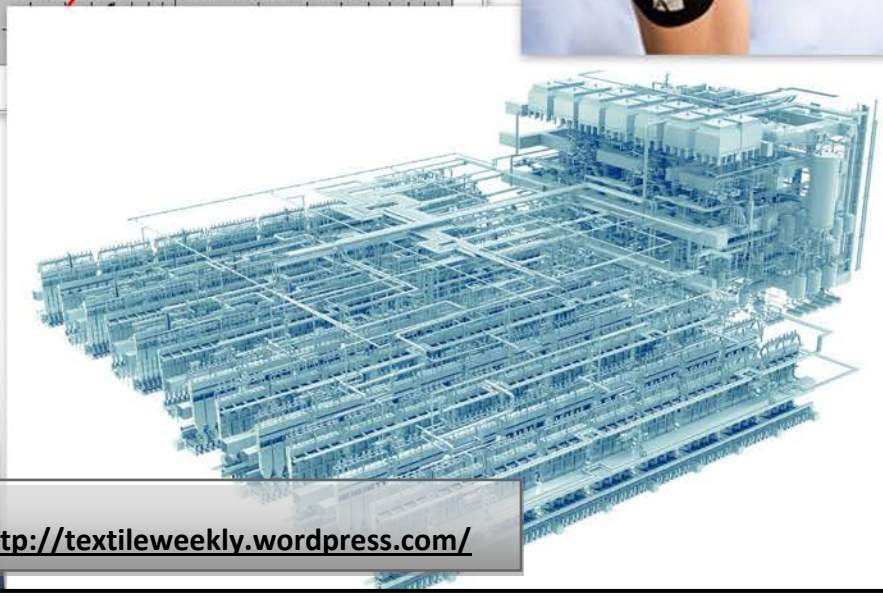
research & innovations







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Using the Physics of Acoustics to Reduce Weight in Cars

As automotive manufacturers continue to push for improved fuel consumption and lower carbon emissions, they are squeezing every single gram of weight out of every single part that goes into a car. Meanwhile, however, the pressure to save money and create a smoother, quieter driver experience is also increasing.

Greensboro, North Carolina headquartered Precision Fabrics Group, has commercialized a unique nonwoven fabric called Nexus AFR which helps solve the car makers need to improve acoustics and reduce weight without breaking the bank.

The Precision Fabrics solution is based on the 'physics of acoustics' and the science focuses on two dominant properties in part design - thickness and resistance to airflow. Because sound moves through air in waves of minute pressure variations, the solution has to work for long wavelengths (low frequency) and for short wavelengths (high frequency).

The thickness of the existing insulation layer is important and determines what low frequency wavelengths can be absorbed. The new Nexus AFR nonwoven material replaces the traditional black scrim on the surface and controls the mid and high frequency wavelength by managing the sound pressure level variations and 'trapping' the energy in the insulation layer of the part. This makes the composite more efficient than just the Homogeneous insulation material by itself.

Advantages over traditional homogeneous insulation

According to Precision Fabrics' Richard Bliton, this two material approach has many advantages over the traditional homogeneous insulation, one material approach.

"Traditional black scrim - the commodity black scrim used in the auto industry is a descendent of the fabric interlining and lining materials. The typical nonwoven manufacturing technology is a chembond or thermalbond technology," explains Bliton.

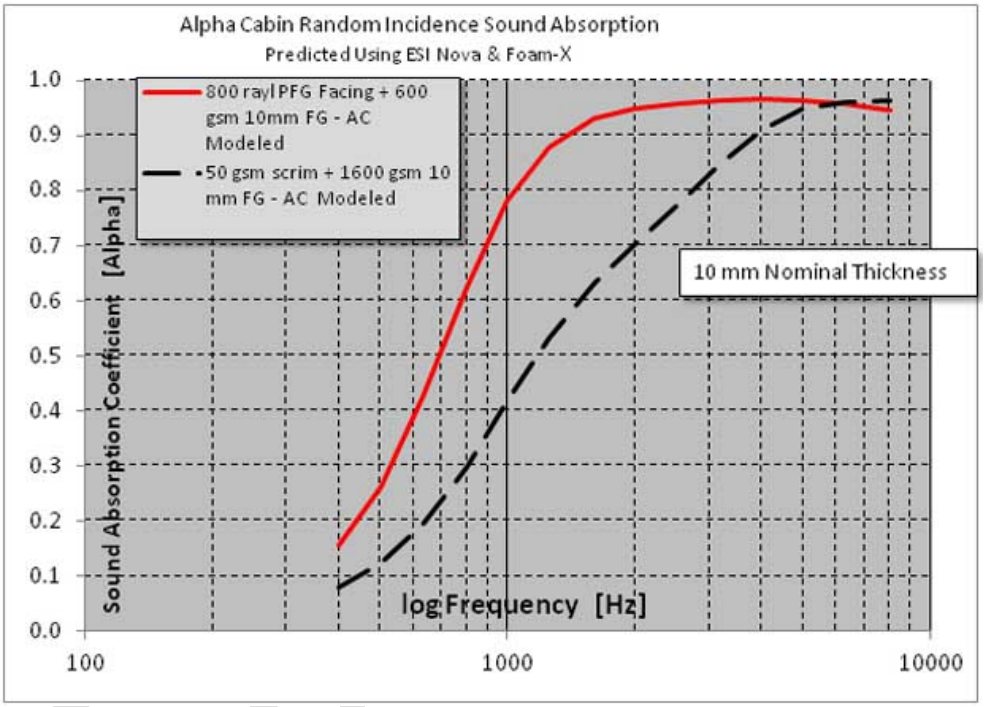
Low cost fibres are carded and oriented primarily in the machine direction and a chemical spray or waterfall coats the web and it is compressed and dried. The web then has a hot melt adhesive powder sprinkled on the face which is to be reactivated during on processing. Properties such as FR or repellency can be added to the waterfall treatment.

"The strength of this type of web is low compared to other nonwoven structures, but the prime advantage is that it is low cost. Most of the purchasing specifications for this type of material only specify- fabric basis weight, colour, width, and amount of adhesive. Acoustic characteristics such as Rayls are not controlled, tested or reported," Bliton continues.

An example, Bliton says, is an automotive hood liner. A traditional design would have a 30 gsm black nonwoven scrim on the back (B) side, 1600gsm resonated fibreglass about 10mm thick as the insulation layer and a 50 gsm black scrim on the front (A) side.

A recently launched next generation hood liner with Nexus AFR was made up of 30 gsm B side, 600 gsm Fiberglass insulation 10mm thick and 100 gsm Nexus AFR on the face. The weight reduction is 950 grams/m² which is more than 2 lbs/m². In this particular case, the acoustics stayed the same and there was cost reductions generated in the raw material line, and additional improvements in manufacturing related to shorter cycle times required to mould a 600 gsm fibre glass part as compared to a 1600 gsm part.

Automotive industry quick to adopt solution



According to Precision Fabrics Group, the automotive industry is moving quickly to implement this new approach. Parts using the AFR nonwoven are commercial in 10 platforms within 5 OEMs and one major OEM has adopted the low density fibreglass with AFR facing design approach as a worldwide corporate best practice.

The focus on reducing weight and cost is one of the drivers for the adoption of the new material, but in some cases a vehicle may have a sound problem that has to be solved. In these cases, the company says, a properly selected AFR facing can significantly improve that acoustic absorption of the part. The physics based solution offers the acoustic engineer some flexibility to tailor the part to focus the acoustic absorption on mid to high frequency ranges.

"Some of the commercial parts on the road are last minute 'fixes' to acoustic problems found during pre-launch road tests. The switch to an AFR facing is an easy change for a part manufacturer and an OEM to make," Rich Bliton adds.
The new fabric meets or exceeds all of the fabric specifications that are in place, the modified part can be made on the same tooling and the improved part will have the same fit as before.

"The design approach to build a part with low density material for thickness and an acoustically tuned fabric facing for impedance opposed to the traditional parts where performance was defined by the weight/thickness of the insulation is a new paradigm. The science can be applied all types insulation materials. Each situation will have to tuned and validated, but early feedback is generating 30-40% weight reductions without of acoustic absorption performance," Bliton concludes.

The frequency of sound, the wavelength of sound, and the speed of sound are related:

$l = c / f$

l = wavelength (m)
c = speed of sound (343 m / sec)
f = frequency (Hz)

In general, a homogeneous materials must be thicker than 1/10 of a wavelength to provide significant absorption

Frequency (Hz)	Wavelength (in)	Theoretical Material Thickness needed
125	108.0	10"
500	27.0	2.7"
2000	6.8	.6"
8000	1.7	.1"

as

of

be

loss

About Precision Fabrics Group

Precision Fabrics manufactures, markets and sells value-added products and services to selected, highly specified markets. The company's high-performance products play a key role in several diverse markets, which demand engineered, finished fabrics, the common thread amongst which is the technical nature of their requirements. Precision Fabrics was the first ISO-qualified textile supplier in the USA. – and ISO continues to provide the discipline and framework for effective and efficient product development, customer service, and manufacturing. Precision Fabrics has been ISO-registered to 9001 since 1993 and upgraded to 9001-2008 in October 2009.

Precision Fabrics was created in 1988 via a leveraged buyout from Burlington Industries and continues as a privately-held company today. The company has evolved from a traditional textile company into an engineered materials business, focused on highly technical, high-quality woven and nonwoven fabrics.

Today, Precision Fabrics employs approximately 600 people and operates plants in North Carolina, Virginia and Tennessee. Corporate headquarters are located in Greensboro, North Carolina and sales offices are maintained in Greensboro and in Bamberg, Germany. Precision's Vinton, VA, Plant specializes in weaving some of the most technically challenging continuous-filament fabrics in the world. The Greensboro and Madison facilities are world-class in the range of nonwoven products that they produce. [22.]

Arvind to showcase protective clothing at NSC

The Advanced Materials division of India based textile conglomerate – Arvind Ltd, will participate in the National Safety Council (NSC), Chicago to be held from Sept 30 to Oct 2, 2013.

Arvind will showcase its wide range of protective clothing for various applications such as flash fire, molten metal, welding, electric arc, etc.

All these protective clothing are certified as per international safety standards like NFPA 2112, NFPA 70E, EN/ISO 11612, EN/ISO 11611, etc.

The Arvind team will be available for consultations at stall no – 1840 at NSC.

About Arvind Advanced Materials Division:

In a short span of time, Arvind has established itself as the largest Fire Protection Fabric Producer in India. Arvind's range of Fire Resistant Fabrics consists of Meta-Aramids, Modacrylics, FR Viscose and blends. Arvind has been licenced to manufacture and market the PROBAN brand of Flame Retardant Fabrics and Industrial Clothing in select 16 countries in Asia Pacific including India. [26.]

Shima Seiki at A+A 2013

Shima Seiki, of Wakayama, a leading manufacturer in the computerised flatbed knitting machine industry, will participate in the A+A 2013 Safety, Security and Health at Work International Trade Fair that will take place in Dusseldorf, from 5-8 November.

'SFG-I' knitting machine

On display will be the latest version of Shima Seiki's original computerised glove knitting machine 'SFG-I' in 15 gauge. The company will be demonstrating its new option for knitting gloves that support the use of smart phones, tablets and other touch-control devices.

The new option is also said to address work safety issues, such as proliferation of touch-control devices increase throughout the work environment. The 15 gauge machine also addresses issues related to precision work that require both bare-hand sensitivity as well as safety protection.

Also on display

The company will also be showcasing its Wholegarment knitwear, knit in one entire piece without the need for sewing afterward. The manufacturer is planning to demonstrate the practical application of seamless knitwear that could serve as comfortable innerwear for safety applications.

In addition to knitted garments, the exhibits will include technical samples for industrial textile applications with specialty fibres using seam-free Wholegarment technology.

Shima Seiki

With complete systems integration from planning, production to sales promotion and retail sales, Shima Seiki has been dedicating its products and services to the knitting industry worldwide through the latest in computerised knitting technology.

Shima Seiki is also a pioneer in complete garment manufacturing technology—called Wholegarment —wherein an entire knitted garment is produced on the knitting machine without the need for linking or sewing afterward.

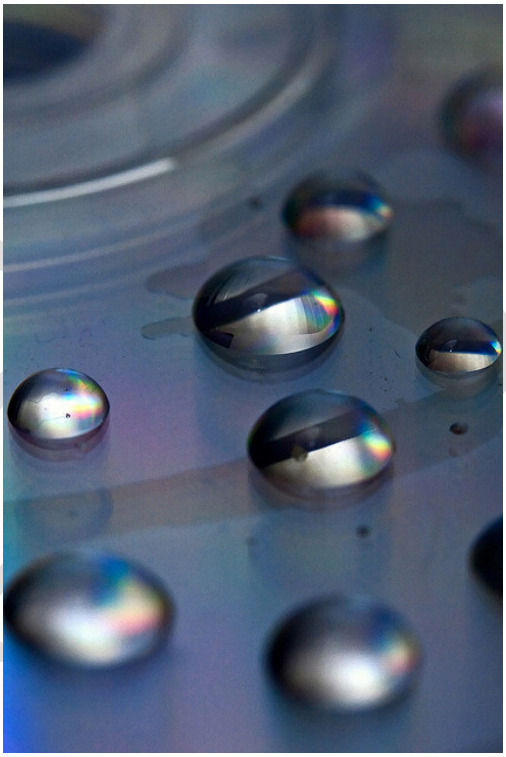
Since its commercial introduction in 1995, Shima Seiki has been the leader in Wholegarment knitting technology with over 25 years of on-going research and over 15 years of proprietary field experience and know-how. [23.]

US Air Force to test Alexium's treatment with live CWAs

Alexium International Group has moved its Cleanshell CB repellency treatment forward for testing with live chemical warfare agents (CWAs) under its research contract with the US Air Force after evaluation on different fabric types and simulated CWA's.

Alexium's Cleanshell CB treatment is targeted specifically to the treatment of the outershell fabric of chemical and biological protection ensembles.

The company reports, that the Cleanshell CB has shown dramatically increased repellency to simulants of CWAs such as sarin and mustard nerve agents but has also been optimised to provide excellent water and oil repellency as well as allowing for ease of movement in the field.



Slow penetration

Over the past year, Alexium has been working with the US Air Force for the evaluation of Cleanshell CB on various fabrics. The goal of this work has been to evaluate the best fabrics for this application and to assess its efficacy with live CWAs.

According to the company, the benefit of the Cleanshell CB treatment is that it functions by repelling CWAs and inhibiting the absorption of agents into the fabric. Relative to a standard repellency treatment, the Cleanshell CB treatment is said to increase the time for chemical warfare agent penetration from minutes to weeks (>1000 times slower penetration).

Based on recent work with simulants for CWAs, the samples of Cleanshell CB treated fabrics have progressed to studies with live agents.

Protection against real CWAs threats

The Cleanshell CB treatment is applied via Alexium's patented Reactive Surface Treatment, which uses microwave based technology to apply sub-micron coatings to a wide range of substrates.

The resulting nanoscopic coating may chemically bond to the substrate or simply form an intractable coating at the substrate surface. This flexibility is said to allow a wide range of materials to be treated — many of which cannot be functionalised with a durable coating via other traditional methods.

"The Cleanshell CB treatment has been an exciting product from our Reactive Surface Treatment technology, and its progression to live agent testing is a key milestone. These live agent tests, which are undertaken under strict conditions in a secure US Department of Defense installation, are only undertaken after complete validation against simulated agents. The live agent test results will provide a definitive measure of Cleanshell CB protection against real CWAs threats," said Dr Bob Brookins, Head of Research and Development for Alexium. [24.]

FACC launches new technology & engineering test center

FACC AG officially opened its new Technology Center at its St. Martin location in Upper Austria. The newly-constructed office building with 500 workplaces was completed on schedule in August after a construction period of 14 months.
In future it will serve to bundle the company's worldwide R&D activities. Yesterday also saw inauguration of the new Engineering Test Center. Annexed to the Technology Center, this is one of the most modern plants for the analysis, testing and certification of composite materials and components.

Numerous representatives of customers, suppliers and business partners from all over the world participated in the festivities, along with figures from politics and the business world.

Hub of global R&D activities
Through intense research activity and development of cutting-edge innovations, FACC has in the last few years successfully pressed through its technological advantage. Investment in research and development increased in the last financial year by 37.5 percent to €96.8 million and is set to keep rising.
The company received a specific acknowledgement of its innovative strength in the form of the "Frontrunner" award from the Austrian Ministry of Traffic, Innovation and Technology (bmvit), which was presented to FACC as the first company in Austria by Innovation Minister Doris Bures during her visit in May this year.

The global presence of its engineering organization with locations in Germany, Slovakia, USA, Canada, China and India enables FACC to develop components and processes in cooperation with leading customers across the world. The new technology center will in future serve as the hub of the company's global R&D activities. Additionally, the engineering departments of the divisions Aerostructures and Interiors, which have to date been situated in separate facilities, will be brought together in the new building.

Innovative strength bundled, growth secured
In line with the motto "growth through innovation", FACC is setting a clear signal with its new Technology Center that the company intends to continue developing its innovative strength in the future. "The challenges which the aviation traffic of the future presents for aircraft are immense and various. Therefore the development of aircraft and their components will require further innovations in lightweight construction", stresses Robert Machtlinger, COO at FACC AG.

The new Technology Center has created the ideal preconditions for research and development. Its focuses of work include research into process and material technologies, component design and development, including stress engineering, testing and certification, tool design and production, right up to the introduction into serial production. With the additional capacities FACC can continue its growth successfully and set new standards in advanced lightweight aircraft construction.

Testing everything that moves...
Following formation of the etc Prüf und Test GmbH in July 2013 and the partial spin-off from 1 September, the Engineering Test Center in St. Martin is now operating as an independent company with 35 highly-qualified staff. FACC AG holds 91% of the shares, the remaining 9% are held by Techno-Z Ried.

The core competence in material and component testing with the current clear focus on composite materials, as required in the aviation industry, is intended to be rapidly expanded to the automotive sector, products for the sports and leisure industry, renewable energies and special machine construction.

Whenever something moves or is moved, it must be borne in mind that masses are involved which will use up energy. The lighter the better – what applies to the aviation industry also applies to other branches. Now in the Engineering Test Center, not only FACC but also other regional and transregional companies have a highly specialized service provider.
“Growth through innovation” assures the sustained competitiveness of FACC for the future. The new Technology Center and Engineering Test Center have given this slogan a modern future-oriented twist.

"Modularity - Identity – Prestige"
The architecture of the new Technology Center satisfies the demands of future-oriented research, clearly exhibits the corporate identity and presents the character of the company to the public. The contrast between the glossy and matt materials in the façade together with the bays create an interesting dynamic. The open construction and short distances are intended to promote communication and cooperation between departments. The design pursued the targets of high flexibility and modular use of space. Experts worked together with FACC employees to create a modern office and workplace concept for the building. The Engineering Test Center offers state-of-the-art equipment for analysis and testing, which are ideally suited to the materials, products and processes to be tested. [25.]

Artificial turf picks pace for environmental benefits

As consumers continue to seek environmentally-responsible solutions, many home and business owners have recognized synthetic turf as an attractive alternative.
In fact, the Synthetic Turf Council identifies the landscape and recreation market as the fastest growing segment in the synthetic turf industry.

Pesticides are widely used in commercial agriculture, as well as home and garden use, and are a growing public concern. According to Beyond Pesticides, 78 million households in the U.S. use pesticides. When using artificial grass, keeping a natural looking lawn requires no pesticides, water, or polluting lawn equipment.

The Synthetic Turf Council estimates the total amount of synthetic turf installed in North America annually conserves close to a billion pounds of fertilizers and pesticides. The EPA notes runoff of pesticides and fertilizers is a principal cause of water pollution, which can cause algae blooms, depleted oxygen and damage to aquatic life.

Global water supplies are also shrinking, and communities across the world are facing challenges in maintaining healthy and affordable water. Every square foot of natural grass replaced with turf can save 55 gallons of water per year.
John Baize, director of Act Global, says “A growing number of people are seeking artificial landscape turf for its environmental benefits. Artificial turf has been used for decades in sports fields for a variety of reasons, from improving the condition of worn out natural grass to extending playing time.”

He adds, “The realistic appearance of our synthetic landscape products, coupled with the environmental and maintenance benefits, has spurred rapid growth in this segment. We are projecting this trend to continue.” [73.]

Caterham Cars unveils AeroSeven concept at Singapore GP

Caterham Cars has unveiled the AeroSeven Concept at the SingTel Singapore Grand Prix –an exciting new performance concept road car.
As the first model designed with significant input from all of the Caterham Group's specialist business arms, the AeroSeven Concept signals the brand's intentions in terms of product engineering processes, speed to market, as well as a hint to its styling direction for future models, including the all-new sports car being developed in conjunction with Renault and due for release in early 2016.

The AeroSeven Concept, which draws heavily on methods used by the F1 team, will be the first ever Caterham model to be fitted with traction control. Thanks to a newly developed Caterham Engine Management System, drivers will be able to enjoy fully-adjustable traction and launch control functionality.

Based on an updated interpretation of the highly acclaimed Seven CSR platform, the carbon-fibre bodied concept vehicle, which will reach 100kph (62.5mph) in under 4 seconds, will initially draw its power from the normally-aspirated, EU6-approved, 240ps (237bhp) engine developed by Caterham Technology & Innovation for the recently launched Caterham Seven 485. Other engines are also being assessed for suitability.

The AeroSeven Concept is stacked with race car-inspired features, including aerodynamic styling, an exclusive steering wheel with driver-focussed functionality, and an intuitive fully active Graphical Display Unit (GDU).
Graham Macdonald, Managing Director of Caterham Cars, said: "Over the coming years, we will be expanding our range of sportscars as we look to meet the differing needs and desires of potential customers – from the lifestyle customer to the ultimate thrill-seeker. The AeroSeven Concept is the first model in that journey."
Delivery of the production version of the concept model will begin in autumn 2014.

Body
Caterham Design styling incorporating Caterham F1 aerodynamic features Caterham manufactured full "dry pre-preg" carbon fibre body panels

Interior
Inside, more innovations give a firm nod towards Caterham's future ambitions.
A brand new fully active graphical display unit (GDU) developed by Caterham Technology & Innovation integrates all display and instrumentation in a high-resolution, centrally mounted unit. It displays information such as engine speed, gear selection, vehicle speed, traction and brake settings, fuel and oil levels in a smart, intuitive 'next-generation', real-time 3D rendered display.

Additionally, the race-inspired steering wheel incorporates 'Road' mode, 'Flash-to-Pass' and 'Pit Lane Speed Limiter' functions. The car's default setting is 'Race' mode, the reverse of even the most track orientated vehicles. When the steering wheel-mounted button is depressed, 'Road' mode is engaged, altering the engine's character by reducing peak power through a reduced rev limit. [27.]

Hexcel to display composite innovations at JEC Americas

At this year's JEC Americas show Hexcel will bring to the forefront its composite innovations for both industrial applications and the aerospace industry. Of note, visitors to the Hexcel booth will see some of the latest developments for the Industrial market – from advanced PrimeTex reinforcements to HexPly M79 resin systems for wind energy and automotive applications.

INDUSTRIAL PROMOTIONS:

HexPly Carbon Industrial Prepregs

At the Hexcel booth, there will be a substantial showing of our new HexPly carbon industrial prepreg product line. These carbon reinforcement prepregs are available with a 250oF cure resin system that is flexible for a variety of processes and manufacturing variables. On display will be two automotive parts, brake ducts and a wheel cover made by Indy Performance Composites that highlight the combination of our 200 gsm and 670 gsm twill prepregs.

HexPly M79 Low Temperature Cure Prepreg for Large Industrial Composite Structures

NEW HexPly M79 prepreg from Hexcel has been developed to be a game-changer in the wind blade industry – now offering a real option for those who currently manufacture large, thick wall composite structures by infusion to move to prepreg technology and benefit from superior mechanical performance.

HexPly M79 has been developed to respond to the industry requirements for a lower temperature curing prepreg that cures more quickly than 250°F cure-systems currently on the market. A number of cure cycle options are possible with HexPly M79 including a very low temperature cure cycle of 8-10 hours at just 158°F or a more rapid cure cycle of just 4-6 hours at 176°F. This is a significant time-saving on established industry prepregs where a typical cure cycle for a 176°F curing resin matrix is 10 hours.

With HexPly M79 there is also a 60% reduction in the risk of an exothermic reaction than with standard wind energy prepregs - yet the new system is based on standard epoxy chemistry that has more than 20 years of proven performance for wind blades. HexPly M79 also has a very long out life at room temperature of at least two months, which is unusual for such a low temperature curing product.

Due to the low cure temperature of HexPly M79 the system is compatible with any liquid epoxy resin used for infusion processing. This means that prepreg and infusion processes can be combined in the same blade, combining the twin advantages of stronger laminates and cost-effective processing.

The ultimate performance for wind blades is achieved when HexPly M79 is reinforced with carbon fiber to provide exceptionally strong laminates that are lighter than those made with glass fiber. This is an enabling technology for the increasingly larger wind blades that are being manufactured – now approaching 100m in length.

PrimeTex Light Weight Gap-Free Fabrics

As a further development of its highly successful PrimeTex proprietary spreading process technology, our booth will showcase the lightest 3K gap–free carbon fabric ever produced: PrimeTex Very Light Weight 98 g/m². This new range of 3K carbon fabrics breaks through the conventional limits for Fiber Areal Weight and opens the door to the cost-effective use of very light plies in composite lay-ups.

PrimeTex Very Light Weight is also 12% thinner than conventional 1K carbon fabrics, which results in lighter structures making it the perfect candidate for surface plies, sandwich construction, structural parts or any other composite components requiring extreme lightness.

PrimeTex is Hexcel's patented carbon fiber weaving technology in which the fibers are spread in both the warp and weft directions to produce a uniform weave and gap-free finish. The PrimeTex spreading process increases the closure factor in the fabric by 5-8% compared to conventional weaving processes (depending on the carbon tow and FAW).
Laminates made with PrimeTex have reduced porosity, leading to better mechanical performance and when used in sandwich structures the thin PrimeTex skins have particularly high resistance to water ingress.
On Hexcel's booth at JEC Americas will be a ski made by Fischer using PrimeTex to benefit from the twin attributes of high performance and a highly attractive finish.
PrimeTex is also used to great effect in the contoured roof of the new BMW M6 Gran Coupe - combining elegant design with luxurious appearance. BMW notes on their website that the contoured roof effectively lowers the weight and centre of gravity of the M6 Gran Coupe for even better driving characteristics.

AEROSPACE PROMOTIONS:
HiTape Advanced Reinforcements for Out of Autoclave (OOA) Processed Aircraft Primary Structures
HiTape combines the benefits of automated processing and the cost-effectiveness of infusion technologies with the high performance achieved with primary structure prepregs. The UD tape based on HexTow carbon fiber allows dry preforms to be manufactured in a fully automated lay-up process with deposition rates as high as 50Kg/h without any material splicing or removal of polythene film.
Parts produced with HiTape reinforcements and HexFlow infusion resins can be up to 30mm thick with a 58 to 60% Fiber Volume Content. The mechanical properties are therefore as high as those found in parts made with the latest generation primary structure prepregs.

In the booth, a primary structure demonstrator provides an example of HiTape's new dry carbon reinforcement and the HexFlow RTM6 resin system. The self-stiffened panel has demonstrated that significant cost-savings are achievable with HiTape and the associated vacuum infusion process. HiTape has been used to great effect by Aerocomposit for wing prototype components. Video footage from Coriolis and M Torres will demonstrate the speed and efficiency of the HiTape preform lay-up process.

HexTOOL Tooling Material
Hexcel's patented composite tooling material enables the tolerance accuracy achieved with metals to be combined with the extreme lightness of carbon fiber composites. HexTOOL molds are easy to repair and are simple to modify. This new concept for lightweight, efficient large-scale tools is cost-effective compared with conventional composite tools and metal molds, especially those made from Invar.

On display at JEC will be a monolithic carbon tool constructed of a HexTOOL M61 face sheet and high temperature carbon header boards. Formed in an egg crate support structure, the tool is attached using a classic wet tie process.
The tool's construction simulates a section of a spar tool. Five plies of HEXTOOL M61 are laid up against an IML master manufactured from General Plastic's FR 4718 high temperature foam and cured at 375° F with a 425° F post-cure. The HexTOOL face sheet is then machined to a nominal 0.4 inch thickness and benched to achieve the final surface profile suitable for aerospace production parts.

HexTow Carbon Fiber
30 years ago, Hexcel launched the revolutionary HexTow IM (Intermediate Modulus) Carbon Fiber for the world's most advanced commercial and military programs including GEnx Engines, F35, 787 Landing Gear Brace, Eurofighter Typhoon and

A350 XWB. Hexcel has since extended its IM Carbon Fiber product range by introducing HexTow IM10 – a true breakthrough in IM Carbon Fiber development offering the highest commercially available Tensile Strength Carbon Fiber meeting the demands for next generation aerospace programs and applications.
SpaceX a company that designs and manufactures the world's most advanced rockets and spacecraft has included IM10 in a test program to further advance the boundaries of space technology; proving yet again Hexcel's commitment in offering leading edge technologies that enable the success of the space industry's most demanding missions.
Hexcel also offers a wide range of commercially available fibers to support the increasingly demanding world of the industrial marketplace including the automotive, sporting goods, and performance marine segments.

Hexcel is proud to partner with Innegra Technologies in accepting the JEC Americas Innovation Award for Fibers. The award will be presented on October 3rd at the JEC Americas show in Boston in recognition of the highly successful combination of Hexcel's HexTow carbon fiber with Innegra fiber to maximize the high strength and toughness in composite laminates.
Innegra S Fiber is an ultra-lightweight (0.84g/cc) high modulus polypropylene fiber technology that provides a significant weight reduction in composites while increasing the ability to absorb energy for impact resistance when combined with other fibers.

Innegra Technologies primarily uses Hexcel's high strength HexTow carbon fiber as a co-mingled product with Innegra fiber. Hexcel and Innegra worked in partnership to optimize the fiber mix, for which typical applications are safety helmets, automotive structures, and sporting goods.[28.]

Gerbing launches new wearable heated collection

For over 40 years, Gerbing has been developing self-heating technology and with the launch of a new collection, Gerbing solidifies itself as the leader in the wearable heated and wearable technology industry.
The new collection consists of three segments: Gerbing's coreheat12 motorcycle heated gear, Gerbing's coreheat7 wearable heated clothing and Gerbing's coreheat1 base layers.

Julio Grullon Motochanic Co-Founder on Gerbing's products and its future said, "We believe in Gerbing's heated technology, and most importantly in the direction Tom Nolan will take this company."
New to the Gerbing Core Heat 12 family is the redesigned heated jacket liner, this liner is designed to fit under your favorite motorcycle jacket. Also for this year is the long awaited Gerbing EX Jacket with a Cordura shell and a max heat of 135 degrees Fahrenheit including certified protection on the back, shoulders, and elbows makes this heated jacket one of the most desirable products for this winter season.

Another great product in the 12v line is the Gerbing EX Heated Gloves. This glove features leather on the palm and palm sliders for added protection and is also capable of a 135 degree Fahrenheit max heat, Gerbing is making sure you are as warm and cozy as any winter Holiday morning.

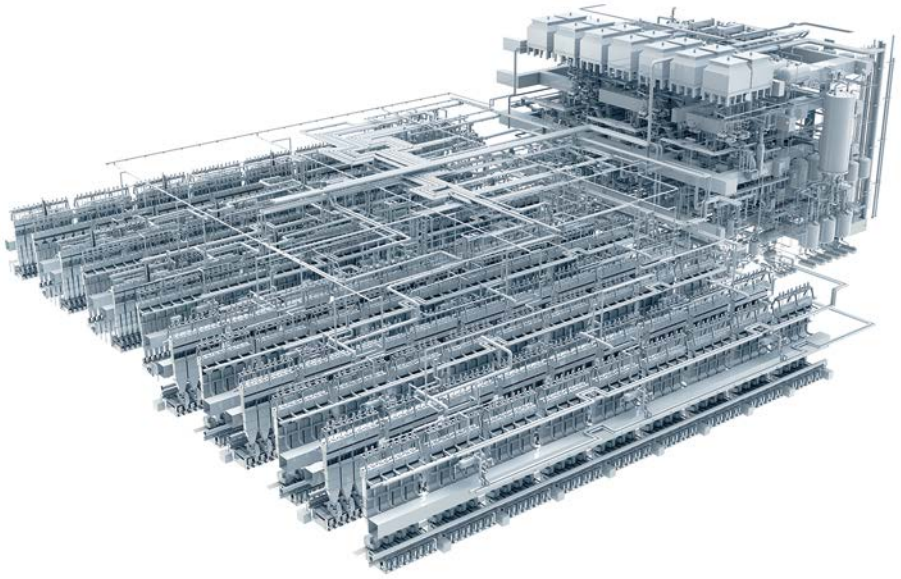
New to the Gerbing Core Heat 7 line are a series of products that continue to keep the Gerbing reputation high. These products can be worn for any occasion and any outdoor use from commuting to skiing. The new Core Heat soft shell vest for men and women features a micro-poly lining and a max heat of 135 degrees Fahrenheit, this new soft shell vest also has built-in wind proofing. [43.]

Focus on increasing systems and components productivity

Oerlikon Barmag, a leader for spinning systems and equipment for manmade fibres, will be exhibiting at this year's K 2013 international trade fair for plastics and rubber, that will take place from 16-23 October in Düsseldorf.
The machine and systems builder will be showcasing pump construction and extrusion system innovations.

Benchmark in productivity

New tape production solutions will be the primary focus. The company's new developments are aiming at significantly increasing profitability for tape manufacturers. With increases of up to 50% vis-à-vis conventional standard systems, Oerlikon Barmag is said to have managed a quantum leap in efficiency.



This increase in efficiency has been made possible by the revolutionised process in the new EvoTape tape system in conjunction with the also newly-developed, automatic WinTape winding system, the company reports.

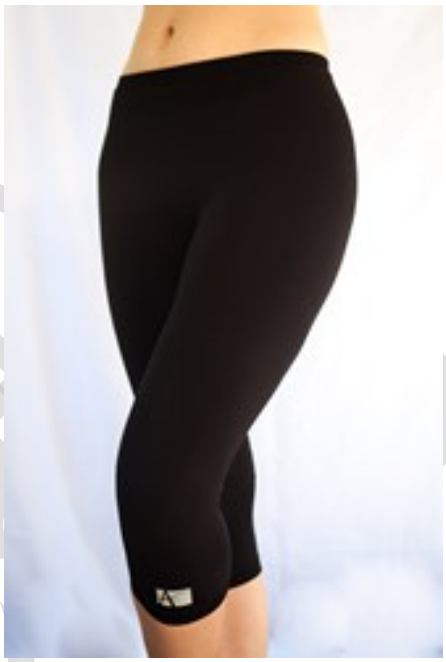
High-speed extruder pump

Oerlikon Barmag's pump specialist will be presenting the new high-speed extruder pump, which is said to generate higher throughputs for lower investment.
The higher speeds permit a considerably greater throughput adjustment range with simultaneously lower pulsation, the company reports. The reduced friction surfaces also said to ensure lower melt temperature increases and hence more efficient and energy-saving production.
According to Oerlikon Barmag, the familiar benefits of the extruder pumps already include pronounced volumetric efficiency, particular compressive strength, high impermeability and extreme durability.

Self-sufficient metering unit

Oerlikon Barmag will also be showcasing the GM Control system, self-sufficient metering unit that can be directly controlled, but can also be retrofitted to existing process control units. The core of it, the GM pump, is available for numerous different conveying capacities, allowing operators to choose the most suitable metering unit for the most diverse range of throughput volumes.
The mobile and compact GM Control unit can support various tasks more simply than in the past, the company reports. There include casting PUR moulded parts, laminating composite components, metering additives into a running extrusion process, applying cold adhesives and for flexible deployment in production systems with changing requirements.
The user-friendly touch screen-operated control unit permits the definition of metering volumes. Other required parameters can be defined, while all important process data is displayed on the touchscreen. Communication with other metering or mixing systems is achieved using CAN bus interfaces or network (LAN) connections. [39.]

Aspaeris now offers compression tights for female athletes



Aspaeris, a company that provides performance-enhancing, injury-prevention compression sportswear for female athletes, announces the arrival of the new Aspaeris Capri, a compression running tight with Dual Sensory Compression Bands designed for female athletes. The Capri is now available for purchase exclusively at AspaerisPivotShorts.com.

In response to a growing community of athletes using Pivot Shorts, the Aspaeris team has developed the Capri with feedback and testing from female endurance runners. Like the Pivot Short, the Capri has an inner layer with Dual Sensory Compression Bands that help guide the athlete into proper position while she pivots and runs, which powers performance, speeds recovery, and prevents injuries.

In addition to the unique compression features of the Aspaeris brand, the Capri also boasts a soft, moisture-wicking, anti-microbial fabric with reinforced seams and comfort waistband, as well as a reflective logo.

"Our testers have been thrilled with the new Capri," remarkek Aspaeris Marketing Director, Kari Ricigliano. "The original patent-pending technology used in the Pivot Short is intended to benefit various muscle groups throughout the female body. Development of the Capri was the logical next step, and it is already providing fantastic results with our endurance-running testers."

Alyssa Lindsey, a multiple ultra-marathon runner who tested the capri for over three months, commented, "I thought they might be too hot, but just like the shorts, they are perfect, even in summer! I loved having the compression on my knees, especially during longer runs."

"Aspaeris compression capri pants have everything I love about the shorts, but in an attractive capri length that provides additional compression," remarked Kara Kramer, also a multiple ultra-marathon runner. "And it really helps on my runs when my legs are tired and sore when I start!"

About Aspaeris

Founded by Samara Innovations, LLC in 2010, Aspaeris is a female-centric sportswear company that strives to protect athletes from injury and enhance their performance with advanced compression apparel. Aspaeris is the only compression sportswear designed specifically for females that improves performance, speeds recovery, and prevents injuries by using a unique two-layer system. The outer layer is a high-performance compression material designed to support muscles. [40.]

NASA announces advanced composite research partnership

NASA has selected six companies from five U.S. states to participate in a government-and-industry partnership to advance composite materials research and certification.
The companies are:
- Bell Helicopter Textron Inc. of Fort Worth, Texas
- GE Aviation of Cincinnati
- Lockheed Martin Aeronautics Company of Palmdale, Calif.
- Northrop Grumman Aerospace Systems of Redondo Beach, Calif.
- Boeing Research & Technology of St. Louis
- United Technologies Corporation and subsidiary Pratt & Whitney of Hartford, Conn.

They were selected from 20 proposals submitted by teams from industry and academia in response to a call from the Advanced Composites Project, which is part of NASA's Aeronautics Research Mission Directorate's Integrated Systems Research Program. The project sought proposals to reduce the time for development, verification and regulatory acceptance of new composite materials and structures.

A panel of experts from NASA, the Federal Aviation Administration and the U.S. Air Force Research Laboratory reviewed the submissions and assessed them according to specific criteria. The six firms were chosen for their technical expertise, willingness and ability to share in costs, certification experience with government agencies, focused technology areas and partnership histories.

The first task for the partners is to develop articles of collaboration and establish how the alliance will work and how companies may be added in the future. [42.]

ZSK to display Technical Spreading Machine at JEC Show

ZSK Stickmaschinen GmbH will display the Technical Spreading Machine JCW 0100 at the JEC Composites Show, the most important trade show for the American Composites Industry at booth B 14.

ZSK will present a JCW 0100-500, a technical spreading machine showing the laying of a carbon preform with integrated wires. This technical embroidery machine is strongly demanded by automotive, medical and aerospace industries.
The machine has an embroidery field width of 450 mm and a depth of 650 mm up to endless! Further features are active double-wire / carbon suspension, automatic wire-changer and trimmer, pneumatic clamping and a roll-to-roll system for the carrier material.

A major advantage of this new process is to be able to lay the rovings according to the distribution of forces within a structural component. [67.]

Mount Vernon debuts new cotton-tencel blend FR fabrics

Mount Vernon FR announces its newest innovation in the flame resistant fabric industry, AMTEX TC. AMTEX TC is a collection of cotton and Tencel blends created for Total Comfort, and the new line addresses the challenge of maximizing both comfort and durability in protective workwear fabrics.

Mount Vernon FR will officially launch the AMTEX TC collection at the National Safety Council (NSC) Congress and Expo, which will be held 30-Oct. 2 at McCormick Place in Chicago.

AMTEX TC combines comfort, strength and a high level of protection so workers don't have to make any trade offs. Currently offered in 7.9-ounce and 8.4-ounce twill, AMTEX TC fabrics are unique in that they increase both comfort and durability without sacrificing the protection demands of the FR industry.

One of the primary fibers in AMTEX TC fabrics, Tencel, is a cellulosic fiber similar to cotton, but with added strength to create protective fabrics that withstand tough jobs. Despite their strength, AMTEX TC fabrics feel lighter than they actually are, which enhances the comfort of garments made with the fabric. Enhanced comfort increases the probability that workers will wear garments correctly, and reduces risk of injury due to improper wear.

"Innovation is key to success in this industry as our customers continue to demand more from their FR garments," said Craig Tutterow, technical director of Mount Vernon FR Fabrics. "That means we have to continue to develop new fabrics – such as our AMTEX TC collection – that improve optimum physical performance and provide our customers with value-added products and benefits."

Safety managers are looking for FR garments that will keep their workers safe and productive – workwear that combines comfort, durability and flame resistance. Mount Vernon FR AMTEX TC fabrics accommodate these industry needs while also meeting the standards for NFPA 70E, ASTM F1506 and NFPA 2112.

"We're always aiming to provide new fabrics and finishes to our customers that provide solutions to industry demands, but as a manufacturer of flame resistant fabrics, our number one priority always has to be protection" said Mike Woods, vice president of FR fabrics for Mount Vernon FR. "We're excited to launch AMTEX TC because it not only meets protection needs, but also maximizes comfort, which is often overlooked in protective garments."

The NSC Expo is considered the world's largest "must attend" event for safety, health and environmental professionals. Mount Vernon FR will be among hundreds of exhibitors highlighting industry-leading technology, and the 100-year-old expo provides a distinguished platform to highlight Mount Vernon FR's commitment to meeting workforce demands in the evolving FR industry.

About Mount Vernon Mills & Mount Vernon FR:

Mount Vernon Mills is a 165-year-old manufacturer of textile, chemical and related products for the apparel, industrial, institutional and commercial markets. Mount Vernon FR is part of Mount Vernon Mills' Apparel Fabrics Group, which produces denim, flame resistant and piece-dyed fabric. It is the largest of all the Mount Vernon Mills groups, accounting for more than half of all company sales. [68.]

Carbon-fibre-reinforced plastic-made first car from BMW

The BMW Group entered a new era in automotive construction with the start of series production of the BMW i3.
The world's first premium electric vehicle to be purpose-designed for this form of drive system is the result of an all-encompassing development approach targeted at reducing fuel consumption and emissions in urban areas.
Exceptionally high standards of sustainability and resource efficiency have also been achieved in the selection of materials and production processes employed.

This is the first time that carbon-fibre-reinforced plastic (CFRP) has been used in automotive volume production.
The body structure of the BMW i3 consists entirely of this extremely lightweight and durable material, allowing the extra weight of the batteries for the electric drive system to be cancelled out.
By industrialising the manufacturing process for CFRP, the BMW Group has become the first company worldwide to make its use in vehicle production economically viable.

At the Leipzig plant alone, some €400 million has been invested in new structures and machinery for the production of BMW i models and 800 new jobs have been created. The production network for BMW i also sees key components for the BMW i3 manufactured at BMW Group plants and joint venture facilities at Moses Lake in the USA and Wackersdorf, Landshut and Dingolfing in Germany. The company has invested a total of around €600 million in the BMW i production network and generated over 1,500 jobs.

Series production of the BMW i3 got under way in the presence of the Minister President of the state of Saxony, Stanislaw Tillich, Mayor of Leipzig, Burkhard Jung, and BMW AG Board Member for Production, Harald Krüger.
The first BMW i3 off the line has been recruited as the lead car for the International Berlin Marathon on 29 September and was handed over to German marathon runner Jan Fitschen. Deliveries of the BMW i3 to customers in Germany and other European countries will begin in November, with the car's launch in the USA, China and other markets to follow in early 2014.

"Today represents a milestone in our company's development," said BMW production chief Krüger. "We are making history with the BMW i3. Not only is our first electric car about to hit the road, we are also completely redefining sustainability with regard to personal mobility thanks to groundbreaking technologies and processes."
Indeed, the entire value chain is firmly committed to sustainability and efficiency: "We require 50% less energy and 70% less water, and source the electric energy for production of the BMW i models CO2-free from the wind turbines at the plant," added Krüger. This huge reduction in energy and water consumption can be attributed primarily to the elimination of the traditional painting process for steel and aluminium bodies.

Stanislaw Tillich was delighted that this new chapter in automotive history would be written in the federal state he heads: "I'm proud that, in BMW, we have such an innovative carmaker here in Saxony and that BMW is building the i3 at its plant here in Leipzig. This proves that Saxony is an attractive location in terms of its research and educational institutions, its infrastructure and, most importantly, its highly qualified and motivated people."
Leipzig's mayor Burkhard Jung concurred: "The BMW plant has been a boon for our city from the beginning and continues to act as a growth engine for jobs. With BMW also basing production of its electric vehicles here, the prospects for the local area are extremely healthy." [69.]

Fitesa launches 100% bio-based spunbond nonwoven fabrics

Fitesa, Braskem and NatureWorks engineers have worked together to produce a new performance nonwoven product composed of not one, but two biobased polymers in a sheath-core, bicomponent configuration.
The sheath is made of Braskem's I'm green 100% biobased polyethylene while the core uses NatureWorks' 100% biobased Ingeo polylactide. The resultant nonwoven is extremely soft, thanks to the bio-PE outer sheath, yet remains strong and robust due to the Ingeo core.

Fitesa will offer the fabric in a comprehensive range of basis weights with physical properties designed to allow drop-in replacement in existing bicomponent spunbond applications. "The fabric softness is exceptional," noted Ray Dunleavy, Fitesa Marketing, Strategy, and Business Development Director, "and counters the misperception some have in the market that there must be some compromise in performance to achieve a 100% renewably sourced product."
The three companies collaborated to develop a product that highlights and supports Fitesa's commitment to performance and sustainability by replacing traditional petrochemical based materials with renewable products made from plants.
The production of both the Braskem and NatureWorks polymers provide significant carbon footprint reductions by removing CO_2 from the atmosphere. Each ton of Braskem I'm green plastic produced sequestrates more than 2.0 tons of CO_2, a significant gain compared to traditional plastic, whose production releases CO_2.

Additionally, Braskem's Code of Conduct for Ethanol Suppliers has been established to ensure responsible sourcing. Braskem has been making the I'm greenTM polyethylene since 2010 at its Triunfo Petrochemical Complex, in the state of Rio Grande do Sul, in the south region of Brazil. The plant's capacity is 200 kton/year and the total investment amounts to US$290 million.

Each ton of Ingeo produced provides 60% reduction in CO_2 emitted compared to traditional polyester, and a 30-40% reduction in CO_2 emitted compared to traditional polyolefins. NatureWorks has been producing Ingeo at its flagship Nebraska US facility since 2002, and recently expanded capacity there to 150 kton/year.
The company has just announced that front end engineering design has commenced for a 2nd Ingeo facility in Southeast Asia.
In 2012, NatureWorks achieved 3rd party certification from both the International Sustainability & Carbon Certification (ISCC) Association and the Institute for Agriculture and Trade Policy (IATP), a U.S. based Non-Governmental Organization (NGO), ensuring responsible materials sourcing and sustainable agricultural practices.

ABOUT FITESA
Fitesa is a leader in the design and manufacture of nonwoven fabric solutions for the global hygiene market. Enjoying global reach from its manufacturing sites in North and South America, Europe and Asia, Fitesa employs a wide range of nonwoven production technologies to meet customer requirements for service, quality, and flexibility. Fitesa specializes in the development of innovative products, both independently and in collaboration with customers. [70.]

Powermetal partners Colt on composites-made hockey stick

PowerMetal, in collaboration with COLT Hockey, has successfully re-designed and engineered a hockey stick utilizing cutting-edge, nano-technology. The hockey stick performs like an elite composite with the added strength and durability of steel.
As part of a direct-to -consumer grass roots development and sales initiative, completion of the final product and the establishment of a manufacturing base in Canada is being supported by the Kickstarter "crowdsourcing" platform.
The COLT hockey Kickstarter campaign was launched only 2 weeks ago and has already achieved a significant fraction of its original funding goal.

The COLT hockey stick is a multi-layer structure which combines high performance carbon fibre with PowerMetal's patented high strength, light weight nanometal. The result is a light weight, high performance hockey stick that possesses superior impact resistance and durability.

Feedback from test groups has shown that the COLT also provides exceptional 'power' and superior stick handling arising from enhanced responsiveness (i.e., feel and control).
In particular, players mentioned that their carbon fibre sticks tend to "weaken" and become less responsive after a few games. PowerMetal's technology helps maintain the required stiffness and preferred flex of the stick for an extended period of time.

Until October 9th, introductory sticks are being provided as part of the available rewards to supporters of the COLT Kickstarter initiative. [71.]

EasyTurf to debut artificial turf range 'RVLawn'

EasyTurf is scheduled to debut RVLawn, its latest line of artificial turf, at the Recreation Vehicle Industry Association's (RVIA) 61st Annual California RV Show Oct. 11-20 in Pomona, Calif.
RVLawn is the lush green, alternative to the typical RV Park dirt and concrete lots.
"Outdoor living with an RV used to mean dry, dusty roads at camper's favorite parks, KOA's and beachside parking lots," said David Hartman, President at EasyTurf. "We have given RV enthusiasts an opportunity for a lush, green lawn wherever and whenever they travel."

RVLawn features EasyTurf's industry leading synthetic turf cut and rolled for easy transportation. Aside from aesthetic improvements, RVLawn will keep travelers, pets and kids cleaner and more comfortable. EasyTurf looks and feels like real grass, and eliminates dirt and debris from being tracked in to the RV.

"We want to give RV lovers the same comforts homeowners have with an outdoor living space to relax in. They can pull in to a campground or RV site, and unroll a beautiful green lawn," Hartman said. "The environment around the RV will be more comfortable and enjoyable, and when it's time to move, simply roll it up and roll out."

RVIA's 61st Annual California RV show will take place October 11-20 at the LA Fairplex. According the RVIA website, this is the longest running and most attended RV show with an expected 20,000 attendees. [72.]

Aurora delivers composites fuselage for Raider helicopter

Sikorsky Aircraft Corp., a subsidiary of United Technologies Corp., begins final assembly of the prototype S-97 RAIDER helicopter following acceptance of the fuselage structure from Aurora Flight Sciences.

Consisting of an integrated cockpit, cabin and tail cone, the composite fuselage arrived September 20 at Sikorsky's Development Flight Center in West Palm Beach, Fla., where the company will complete a light tactical rotorcraft designed to outmatch conventional military helicopters in speed, maneuverability, payload, range, and high altitude operations.

"The first fuselage marks a significant milestone for the industry-funded RAIDER helicopter program," said Debra Zampano, Sikorsky S-97 RAIDER Program Director. "Aurora has delivered an advanced composite aerostructure designed for our rapid development program. The Sikorsky team is now ready for final assembly of the prototype RAIDER aircraft. We look forward to showcasing the aircraft's exceptional performance and value to the U.S. military."

Sikorsky will convert the fuselage into a 36-foot-long, 11,000-lb.-gross weight S-97 RAIDER prototype aircraft. Configured to Sikorsky's X2 coaxial design, the fly-by-wire controlled helicopter will feature counter-rotating rigid main rotor blades for lift and forward flight, and a pusher propeller for high speed acceleration and deceleration.
Sikorsky proved the efficiency of the rigid rotor co-axial design in 2010 when its 6,000-lb. gross weight X2 demonstrator helicopter achieved 250 knot flight speed, or twice the speed of conventional helicopters. It also demonstrated low pilot workload and low acoustic signature.

The RAIDER prototype aircraft will improve on the X2 demonstrator by showcasing precision maneuvers in low flight speed, high G turning maneuvers at over 200 knots, hot day hover performance at altitudes up to 10,000 feet, and significant improvements in payload and flight endurance compared with conventional light tactical helicopters.
Aurora Flight Sciences is one of 36 industry teammates fabricating components for the Sikorsky-led RAIDER program. The mostly carbon fiber fuselage structure was fabricated at Aurora's manufacturing facility in Bridgeport, W. Va.

"The RAIDER fuselage was designed around a set of rigorous requirements necessary for this next-generation aircraft," said Aurora President and Chief Operating Officer Mark Cherry. "We applied our experience developing the composite main rotor pylon for the Sikorsky-built CH-53K heavy lift helicopter, and consequently our understanding of Sikorsky's design and manufacturing methodologies, to influence the RAIDER fuselage's preliminary and detailed designs, and subsequent development of the associated tooling."

From the start of conceptual design in late 2010, Sikorsky has pushed development of the S-97 RAIDER helicopter within a rapid timeline. Sikorsky intends to begin demonstrating the RAIDER helicopter's game-changing flight capabilities to the U.S. military and other potential customers in 2015.

"Sikorsky chose its teammates in 2011 based on their capability to deliver mature advanced technology products and systems," said Mark Miller, Sikorsky's Vice President of Research & Engineering. "Following completion of a system-level critical design review in early 2013, the entire RAIDER team has moved quickly into parts fabrication. We thank Aurora for delivering a fuselage on which we can build an aircraft with a generational leap in performance capability." [74.]

FHL creates smart sock for treatment of venous leg ulcers

A breakthrough compression sock that targets a multi-billion dollar global market for effective wound care management will be showcased to decision makers in the medical technology industry.
Kiwi start-up Footfalls & Heartbeats Limited (FHL) has developed a revolutionary process for manufacturing intelligent textiles where functionality is integrated into the fabric structure to make the textile itself the sensor. FHL has used its textile to create a 'smart sock' to support treatment of venous leg ulcers that will help reduce the downstream complications and costs often associated with the condition.

The smart sock, when combined with a multilayer bandage system can measure and convey information to medical staff, allowing health practitioners to ensure optimal pressure, which medical literature suggests will improve treatment outcomes.
The compression level can be transferred through a detachable interface which is about the size of a matchbox, opening the way for easy remote monitoring of people with venous leg ulcers.
FHL is working with researchers at North Carolina State University (NCSU), selected as a research partner because NCSU hosts one of the world's leading smart textile groups as well as the Centre for Robotics & Intelligent Machines which has specialist expertise in the interface between textiles and information output.

FHL's founder and Chief Operating Officer Simon McMaster says the company's skin friendly sock is truly disruptive technology for the wound healing market and he expects keen interest in the product at Advamed.
"It's an opportunity for us to meet people working at the front line of wound healing and for movers and shakers in the medical technology field to see first-hand what our product can do.

"Our technology has a wide range of other potential applications in the medical technology area, including compression therapy for burns rehabilitation and lymphedema. AdvaMed is a perfect forum to progress some of these future opportunities."
There is strong interest in FHL's technology, with the company expecting to begin commercialising its compression sock through a partner in the United States early in 2014.

FHL is also offering a range of licensing opportunities, which it will be discussing with potential partners at AdvaMed.
FHL's Managing Director Brent Ogilvie says AdvaMed is a forum for the company to make new connections and highlight its technology in the world's largest market for wound healing and other healthcare products.
"FHL has already attracted funding and resources from a number of quality investors and developed promising business relationships with potential licensees. AdvaMed will build on that and I am confident it will help the company move to the next level," he says. [41.]

thank you,

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Kindly provide your valuable suggestions for our improvement.

If anybody having complaint related to any information/content which we had incorporated in this newsletters please mail us.

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