

Megatrends push for composites market

The use of composites is increasing, especially in Asia, following the megatrends of urbanisation and population growth. Against this backdrop, the JEC Asia show in Singapore, held from 18-20 October, had 7,000 visitors and 10% more exhibitors than the previous event. Thus, it had 345 companies participating from 60 countries, including for the first time, exhibitors from Indonesia, Iran, South Korea, Russia, and Turkey. The show will be held in Singapore next year from 26-28 June 2012.

New industries making a play

Valued at US\$24.8 billion, the Asian market is projected to make up 51% of the worldwide composites market by 2015.

Nano-composites are high on the list for new uses, especially with R&D spending on composites having increased in the last few years, said Frederique Mutel, President and CEO of *JEC Composites Group*.

The construction and infrastructure industry still remains the highest user of the materials that offer light weight and high strength characteristics. New innovations range from the application of fibre-reinforced pipes to improve water delivery systems to new road infrastructure concepts based on the use of high performance composite materials.

A highlight at the Japanese pavilion was how composite materials can be used to build a makeshift house that can be set up in 60 minutes by four people and used as emergency shelter in the occurrence of tsunami or flooding.

"The wind energy sector is also showing great promise," Mutel adds. "Wind turbine blade suppliers are utilising advanced composites technologies increasingly in Asia and two major wind energy companies have recently opened research centres in Singapore to lead the development."

New kid on the block

A new player in carbon fibres is Turkish supplier *Aksa*, which started three years ago. "*Aksa* is one of the largest suppliers of the acrylic fibre precursor in the world (with a market share of 12%) so it was a natural progression for us to move into the downstream market," said Daniel Pichler, Carbon Fibre Director. It currently has one line with a capacity of 1,500 tonnes and will increase this to 1,800 tonnes at the end of this year as well as plans to start up a second line of 1,500 tonnes next year.

"It is finally getting interesting for *Aksa*. Earlier in June, we signed an MOU with *Dow Chemicals* to form a joint venture to



"Current megatrends underpin increasing demand for alternative energy resources as well as safer, more efficient vehicles. Therefore, innovative technologies that deliver strong, lightweight materials are in great demand," said Dan Pichler of Aksa

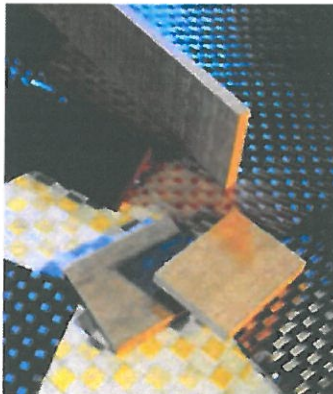
manufacture and globally commercialise carbon fibre and its derivatives," he said, adding that the company's main focus was on the wind energy market.

"The biggest complaint in the market is the unreliable supply and inconsistent pricing trends. We hope to correct this situation with our new supply," Pichler added.

Testing the waters with thermoplastics composites

Another company that participated in the show for the first time and is new to composites is UK-based *Victrix*. It currently possesses 4,250-tonne/year capacity for its polymers (PEEK and its even higher temperature variant polyaryletherketone or PAEK that is marketed as the HT and ST series).

"We have some projects in the pipeline in the aerospace industry, mainly for metal replacement to make lighter parts and offer fuel efficiency," said Sohee Jeong, IMC Specialist, Asia Pacific.



New fabrics using PEEK in powder or granule form are used to manufacture advanced thermoplastic composite prepregs with carbon, glass or aramid reinforcements

In a market research report titled "Opportunities in Global Thermoplastic Composites Market", research firm *Lucintel* stated that thermoplastic composites are becoming the material of choice for replacing traditional materials, such as steel, aluminium and wood, due to their higher strength-to-weight ratios, better chemical and impact resistance plus design flexibility.

The future of the thermoplastic composites market is projected to be extremely strong through 2014 and beyond. Use in automotive applications such as air intake manifolds, connectors and engine covers are forecast to grow at more than 50% CAGR (compound annual growth rate) over the period. *Lucintel* also noted that suppliers of thermoplastic composites are opening plants in high-growth markets in China and India.

Victrix concurs with the above adding that complex

shapes can be easily produced with thermoplastic composites. "They offer up to 50% weight reduction and five times the strength compared to metals and metal alloys," said Jeong, adding that in Asia the market is just beginning with companies "testing the waters".

But in Germany, *Victrex* PEEK polymer has been developed into composite fabrics by *Tissa Glasweberei*, eliminating the need for post impregnation during later press forming. The fabrics are tailored for use in aerospace, industrial and medical applications but are not suitable for complex parts.

Swiss prepreg manufacturer *Suprem* is reporting annual growth of more than 50% in its business from products made with PEEK. It has developed a proprietary impregnation method that enables rapid production of prepreg tapes optimised for automated processing equipment.

Winners of the innovation awards

French firm *Matrasur Composites* displayed its robot designed for GRP spray-up applications, a winner of the JEC Asia Innovation Awards. Called Robomat, it is said to be the only robot for the wet composites industry. "Its uniqueness lies in its programming technology. Unlike other robots, Robomat does not require specific programming skills," claimed Claude Chouet, Sales Manager, adding that ten of these robots had been sold to date.

He went on to say that the Robomat is able to replicate operator movements and is capable of spraying different materials (release agent, gel coat, barrier coat and resin and fibre glass) by utilising a continuous material supply system with automatic material change that feeds the desired material at a constant flow rate and controlled temperature. Robomat is available from six to ten-axis configurations, depending on the application.

Another winning entry came from *Hindustan Aeronautics* that has developed a new core stabilisation technology for the manufacturing of sandwich components, eliminating the problem of core crush/shifting and reducing part weight by 10-15%. The technology also boasts a considerable reduction in component fabrication cycle time. The process was approved by the *Regional Centre for Military Airworthiness (RCMA)* and the Director General of Aeronautical Quality Assurance (DGAQA) in India.

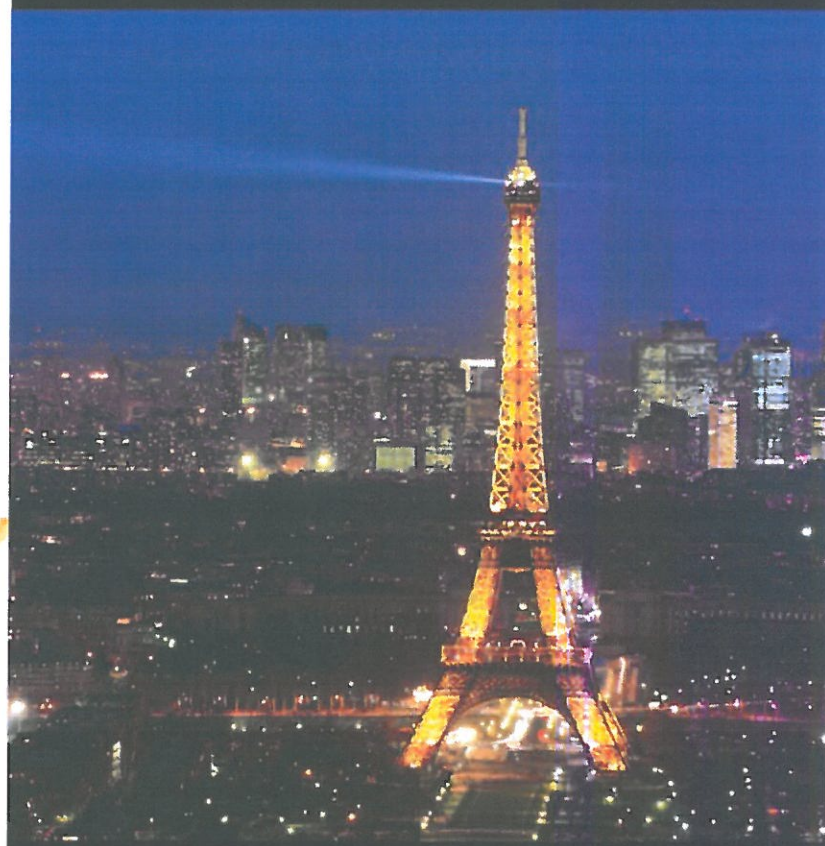
Meanwhile, *Tianhe Resin* from China also won the award for its new sheet moulding compound (SMC) technology for manufacturing a carbon fibre composite material suitable for industrial end use. Adopting a new resin thickening system and supplanting the traditional pre-impregnation technique used for most carbon fibre composite materials, *Tianhe* said its technology allows for the compounding of carbon composite materials with up to 55% fibre content. The resulting materials display the high strength and low density properties that offer advantages for reducing weight particularly in vehicle part construction, such as bumpers, hood shields and chassis frame covers. ♦

JEC europe

COMPOSITES SHOW & CONFERENCES

MARCH 27·28·29·2012

Paris Porte de Versailles



PARIS

World and European leader,
JEC Europe is strongly supported
by the industry and thus five times bigger
than any other composites exhibitions.

www.JECcomposites.com