Von Roll launches new armor material based on high performance fiberglass

Thanks to the development of HiPer-tex high-performance glass fiber from 3B, Battice, Belgium, Von Roll, Wädenswil, Switzerland, extended its armoring products range, launching its new Para-Lite PHT20 phenolic prepreg for hard armoring applications. The material solves both challenges of weight reduction and affordability for hard armor systems. This enables Von Roll to offer a wide range of ballistics solutions.

3B's HiPer-tex glass formulation delivers a high level of performance in composite parts allowing a ballistics solution that has a high level of protection and long-term durability thanks to the high mechanical and high impact resistance properties of the glass fiber.

Hard armor ballistics materials protect against bullets, IEDs (improvised explosive devices), and EFP (explosively formed projectiles) while providing structural integrity in naval ships, planes, and vehicles. www.vonroll.com; www.3b-fibreglass.com.

Alcan Engineered Products introduces future-ready innovations

Alcan Engineered Products (Alcan EP), a business unit of Rio Tinto, London, introduced a range of innovative aluminum-based products at ALUMINIUM 2010 in Essen, Germany, offering custom ready solutions to key industry sectors such as aerospace, automotive, transportation, packaging, and renewable energy.

Among the innovations are:
- Solar Surface Selfclean: an innovative functionality for solar mirrors with two protective coatings that give mirror surfaces a self-cleaning effect.
- Airware: complementary and high-performance low density alloys, which are strongly suited to feature in all parts of the aircraft primary structure.
- New high-tech aluminum profiles for hybrid engines produced within extremely tight tolerances and integrated into the stator section of the electric engine.
- Supply of 100 km of aluminum power rail by Alcan Extrusions and Automotive Structures (part of Alcan EP) for a metro project in Bangalore, India. Alcan also will provide an engineering and service package through the Railtech-Alu-Singen Joint-Venture.
- Strengthening of Alcan EP’s innovation program based on a multiyear cooperation agreement with Swiss Federal Institute of Technology. The objective of the cooperation between Alcan EP and EPFL is to accelerate the technical, commercial development of lightweight materials for applications in major industry sectors.

A-Star researchers develop super-clean glass

Gao Han and co-workers at the A-STAR Institute of Materials Research and Engineering, Singapore, fabricated a transparent palladium-functionalized TiO₂ nanotube array on a glass substrate. They studied how the photocatalytic activity of the TiO₂ nanotube array changes as the wall thickness or height of the nanotubes was adjusted, and identified the nanotube configuration that gave the highest photocatalytic activity.

To grow the nanotube array, TiO₂ was deposited atom-by-atom onto a glass substrate masked with a porous alumina template. By sequentially passing titanium- and oxygen-bearing gases over the masked substrate, TiO₂ nanotubes grew up through the pores. The

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briefs

AK Steel Corp. reached a new milestone in October, marking 100 years of innovation at its research facility in Middletown, Ohio. The company’s predecessor, Armco, announced the creation of a research department on September 22, 1910. Since that time, AK Steel has been an industry leader in new product development, customer technical services and steelmaking process improvements. www.aksteel.com.

BASF, Ludwigshafen, Germany, introduced a new member of its ABS product line (acrylonitrile butadiene styrene copolymer) that was specifically developed with an eye towards the requirements made in electrolating. The material is called Terluran BX 13074, and is intended particularly for plumbing fixtures, the household sector, and automotive construction. Terluran BX 13074 has a broad processing window when it comes to its residence time and the temperature of the electrolating bath. It can be used in all commercially available baths. www.basf.com.

Dulhunty Power Ltd., Australia, opened what is said to be the world’s first full-scale production facility making breakthrough composite power distribution poles. The composite poles are the first to provide strength, durability, and fire resistance by combining the three technologies of filament-winding, high-performance concrete, and alkali-resistant glass reinforcements. www.titanpoles.net.

State-owned Anshan Iron & Steel Group Corp.’s (Beijing) signed an agreement to invest in a Mississippi steel mill. The investment is seen as a test of American willingness to accept Chinese investment. Anshan said it would hold a 14 % stake and supply some technology for the mill being built by Steel Development Co. in Amory, Mississippi. Anshan said it would become a member of Steel Development’s board. The facility will create 200 permanent jobs and 1,000 temporary construction jobs, the company says. Production is due to start in 2012. http://en.ansteelgroup.com/

dana introduces lightest weight driveshaft for commercial trucks

Dana Holding Corp., Hannover, Germany, developed a revolutionary technology for manufacturing lightweight, one-piece aluminum driveshafts for the commercial truck market. The Spicer Diamond Series driveshaft weighs 40% less than traditional two-piece steel driveshafts and features fewer parts in many applications, as well as reduced noise, vibration, harshness (NVH)—all with the industry-proven durability of Spicer Life Series and Spicer Compact Series universal-joint designs.

Dana is the first to combine steel end fittings with a single-piece, high-strength aluminum tube, replacing the traditional all-steel, two-section driveshaft. This proprietary manufacturing process delivers a more robust driveshaft with significantly lower weight (up to 32 kg, or 70 lb). The manufacturing process for the Spicer Diamond driveshafts was perfected by Dana at its technology center in Maumee, Ohio.

Designed for heavy-duty commercial trucks using 2.3 to 3.0 m (7.5 to 10 ft) two-piece steel driveshafts, the Spicer Diamond Series driveshaft improves vehicle efficiency while reducing installation costs through the elimination of the center bearing and reducing part count from three joint connections to two. www.dana.com.

new composite reinforcement solution for wind turbine manufacturers

Owens Corning, Toledo, Ohio, introduced Ultrablade fabric solutions to help enable the market transition to longer, lighter, and stiffer wind turbine-rotor blades. The new solutions, which will be commercially available in January 2011, can help designers remove nearly a metric ton of reinforcement and resin from 2.0 MW wind turbines compared with same-size blade sets made of traditional E-glass. Compared with standard fabrics, Ultrablade fabrics in epoxy resin can:

- Reduce spar weight by up to 18% while keeping length constant
- Increase blade length by up to 6%
- Improve blade stiffness by up to 20%
- Decrease blade thickness by up to 6% to increase aerodynamic efficiency and generate higher torque for driving turbines
- Reduce total blade weight by up to 5% to ease the load on the turbine and tower, and enabling turbines to operate effectively at lower wind speeds

“Ultrablade fabric solutions give designers much more freedom in developing longer blades for today’s large turbines,” said Dr. Chris Skinner, director of global technical marketing for OCV Technical Fabrics. Ultrablade fabric solutions will be produced in a number of the company’s facilities globally. www.owenscorning.com.