REVUE DE PRESSE

JEC COMPOSITES MAGAZINE

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INNOVATIONS

JEC Innovation Programme 2007: short-list

Since its creation, this programme has involved more than 800 companies and awarded 70 of them. Each year, the wide-ranging profiles of short-listed companies reflect the diversity contained in the composites industry and in this programme. A composite innovation is defined as a new composites product or process or a new application in the composites sector – that creates value and meets the following criteria: technical excellence, chain of partners, market openings, financial impact, benefits for end-users, originality. Based on this criteria, the jury will award the best innovations from 8 categories this year, from which 3 entries will be short-listed.

Aeronautics

• Marquez

Name of Product or Process: Composite air ducting for airplanes.

Description: Air ducting for airplanes made of continuous-fibre thermoplastic composite. The part is very light and 100% flame resistant. The duct is manufactured by thermoforming a sheet of polyetherimide/glass-fibre composite, which is then cooled by contact with the mould within a very short cycle time.

• Hexcel Corporation

Name of Product or Process: Acoustic insulation nacelle for aircraft engines.

Description: This acoustic insulation nacelle consists of a permeable composite cap material bonded to the honeycomb-core cell wall with adhesive.

• Starfire Systems

Name of Product or Process: STARBlade brake rotors made of silicon carbide ceramic.

Description: These carbon-ceramic brake rotors offer enhanced braking performance through their improved friction characteristics, and can replace traditional steel rotors. They are made of a new ceramic matrix composite (CMC).

Automotive

ATR Group

Name of Product or Process: Lamborghini Murciélago roadster engine frame.

Description: This is a hollow one-piece structural part with high service-temperature resistance and an aesthetic feature. There are no bonded nodes, which means a very high mechanical behaviour for a composite reticular structure. Autoclave moulding technology was used with prepreg hand lay-up process, using two different epoxy matrices from Hexcel Composites to better match the overall requirements (stiffness, heat resistance, aesthetic appeal, etc.). New lamination technology was improved to increase production rates and industrialise the manufacturing process as much as possible. A final painting step gave the right surface finish.

• Institut für Verbundwerkstoffe GmbH

Name of Product or Process: Ring-winding technology for highly efficient pressure-vessel manufacturing.

Description: Developing a technique for manufacturing axially symmetrical components became possible when a ring winding head with modular siphon impregnation units was perfected and progress was made with path generation for the wet winding technique. This new sustainable concept offers the possibility to mass-produce fibre-reinforced high-pressure vessels for hydrogen storage tanks for future cars, more efficiently and thus more economically.

• Polynt SPA

Name of Product or Process: Structure and internal parts for a racing motorhome.

Description: This is a modern concept for a two-part motorhome structure. The two halves are infused in two special moulds, then assembled and locked together. The resulting structure is about 14 meters long, 4 meters high and 3 meters wide. The materials used are epoxy vinylester, ISO-NPG gelcoat, multiaxial fibre-glass, and a PVC core for the sandwich structure of the walls and floor parts. Resin infusion technology was used to wet out all the fibreglass parts. The process is perfectly suited to the unconventional shape of this composite motor-home, to be used during the challenge season to haul the racing cars and motorbikes around.

Land Transport

• ApATeCH

Name of Product or Process: Composite drainage channel for railway tracks.

Description: This innovative drainage channel is used to dispose of rainwater and flood from railway tracks and highways. The channel is made of glass-fibre-reinforced polyester resin, using hand lay-up and press-moulding technologies.

• Spitzer Eurovrac

Name of Product or Process: SK tank for bulk powder products.

Description: The tank is 12 m long and 3.5 m in diameter, holds 65 m³, and weighs

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1,200 kg empty. It is made using filament winding and RTM techniques in vinylester and polyester resin, with HS-carbon and glass woven or mat reinforcements. The cylinder can replace metal versions. The trailer meets the requirements of European transport legislation.

• Icepalet

Name of Product or Process: Composite pallets.
Description: These light-weight, high-strength pallets are produced by compression moulding of an expandable epoxy system in a one-shot process. Mineral (glass) and/or natural fibres (hemp) are used as reinforcement.

Marine

• DJP

Name of Product or Process: "Vaneo" programme – Hydraulic control assembly
Description: Hydraulic control assembly consisting of a valve body and a bifurcated duct for large marine motors.

• Société Technique Archimède Ecole Polytechnique de Montréal

Name of Product or Process: Archimède 4, a human-powered submarine.
Description: New human-powered submarine with a composite hull made of glass-fibre/vinylester-resin sandwich structure using hand lay-up.

• Chomarat

Name of Product or Process: Composite boat-deck table leg.
Description: The design features a flexible Rovicore-based preform used with the RTM-Light process. This mass-produced boat-deck table leg is a quite complex semi-structural part.

Energy / Industry & Construction

• Owens Corning

Name of Product or Process: New extra-long wind-turbine blade using WindStrand™ reinforcement.
Description: WindStrand™, a high-performance glass-fibre reinforcement that was recently developed, is applied here to the construction of lighter, more powerful wind-turbine blades.

• Komposit Praha

Name of Product or Process: Calipso storage cylinder for liquefied petroleum gas.
Description: Filament-wound storage cylinder for liquefied petroleum gas, produced using an ultra-fast process (2.5 metres per second).

• Scobalit

Name of Product or Process: A system for multifunctional roof construction (MRC-System).
Description: Scobalit has used a sandwich structure of polyurethane foam reinforced with composite fabric to develop large roof structures with complex shapes that combine architectural, structural and physical features in a single product.

Sports and Leisure

• Nanoledge

Name of Product or Process: Carbon ski pole.
Description: Composite ski poles made from epoxy resin reinforced with carbon nanotubes.

• Rocat Ltd

Name of Product or Process: Composite hull for a rowing catamaran.
Description: The two composite hulls supporting the rowing catamaran are produced in one piece inside a closed mould. A tubular bag is inflated inside the closed mould lined with layers of glass fabrics. The resulting laminate is then infused with resin.

• Salomon SA (Mavic Division)

Name of Product or Process: A2000, a mass-produced bicycle wheel that is 100% carbon.
Description: This all-carbon bicycle wheel is produced in industrial conditions with a short manufacturing cycle, allowing short delivery times and reduced production costs. The manufacturing process is one shot.

Process

• EMS-Griltech

Name of Product or Process: Grilon MS fusible bonding yarn for stabilising carbon fabric.
Description: A continuous yarn spun from phenoxy resin for use as an auxiliary yarn and as a thermal binder that dissolves in the resin during cure.

• Fibroline

Name of Product or Process: Fibro-comp dry impregnation process.
Description: Fibro-comp dry impregnation process for manufacturing prepreg mats. This mixing process uses alternating electrical fields to impregnate any porous sub-strate evenly with powder materials.

• Aimplas

Name of Product or Process: e-comp, an online software tool for composites for choosing materials/processes and calculating costs.
Description: This e-comp software facilitates the use of composites in industry as a stimulus for the composite market. It is an interactive decision-making tool for designers and engineers who wish to obtain cost estimates for composite components. The tool aims primarily to improve the competitiveness of small to medium-sized enterprises (SMEs).

Medical Applications

• Icotec

Name of Product or Process: Composite cervical plate.
Description: This cervical plate implant replaces metal parts that may involve fatigue problems and interfere with magnetic resonance imaging (MRI) type testing procedures. The plate is compression-moulded in PEEK reinforced with continuous carbon fibres.

• Poloquil Araraquara Polimeros Quimocos Ltda

Name of Product or Process: Polyurethane-based bio-polymer.
Description: Polyurethane-based bio-polymer produced from vegetal oil (ricinus oil) for use in bone reconstruction.

• Trekinetic All Terrain

Name of Product or Process: Carbon wheelchair.
Description: Three-wheeled wheelchair with carbon seat. ■

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