

Case Study

Cheminées Poujoulat Yacht Uses ACG's Prepregs



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Bertrand Cardis, General Manager at Decision, said: “We value ACG’s VTM® resin system as it is a truly ‘variable’ product. It is flexible and enables us to adjust the percentage resin weight on the fabrics and the weight of the unidirectional materials.” Continuing, he said: “We have had a very good relationship with ACG’s market sector manager, and sales and applied technologies teams since early 2000. This relationship has enabled us to collaborate closely with ACG and exchange data when we develop new solutions or perform trials.”

Company:

Based in Ecublens – Switzerland Decision S.A. manufactures motor boats, sailing and competition yachts and large aircraft structures, including the record-breaking Solar Impulse solar-powered airplane.

Decision built the Juan Kouyoumdjian-designed, IMOCA Cheminées Poujoulat yacht, registration number 2012, using ACG’s VTM® series prepregs and compatible VTF surface film and VTA® adhesive film. Along with another 12 IMOCA yachts, Cheminées Poujoulat took part in the 2011 Jacques Vabre Transat Race.

Objectives:

To produce structures exhibiting:

- Excellent surface finish
- Lightweight, high strength and stiffness characteristics

Use prepregs that:

- Have extended out life
- Allow a flexible approach to resin content and fabric weight
- Eliminate reworking following demoulding
- Exhibit appropriate tack life, drape and handling at ambient temperature
- Are compatible with DuPont™ Nomex® honeycomb core

Production Process:

The hull and the roof were laminated in female carbon moulds and the deck was laminated in a female wooden mould, all using ACG’s VTM®264 fabric and unidirectional carbon prepregs. VTF261 surface film was used on some surfaces to give excellent visual quality, and ACG’s VTA®260 adhesive film was used for bonding. All structures were cured using oven/vacuum bag processing.

Prepreg, Surface Film & Adhesive Features:

VTM®260 Series resin systems are toughened, flexible cure temperature epoxy resin matrices specifically developed for vacuum bag processing and the manufacture of large structures.

These resin systems offer excellent handling and processing characteristics across a range of reinforcements in both standard prepreg and ZPREG® selective impregnation formats, and can be co-cured with their associated, compatible adhesives, surfacing films and syntactic plies.

Improvements Gained:

ACG’s prepregs and compatible surfacing film and film adhesive provided the requisite level of tack, handling and out life for laminating the hull in a 60 foot (18.28m) long mould, and provided an excellent surface finish straight from the mould.

No supplementary materials were added to the finished hull following demoulding, thus keeping the hull weight to an absolute minimum.



VTM®264 Prepreg:

- Intermediate viscosity and tack - suitable for full impregnation of light and medium weight unidirectional and fabric reinforcements
- Outstanding vacuum-only processing capability on a wide range of reinforcement formats
- Flexible curing capability in a single prepreg system; low temperature, i.e. 65 to 80°C and medium temperature, i.e. 80 to 120°C
- Up to 30 days out life at 21°C
- 12 months freezer storage life at -18°C
- Service temperature up to 100°C

VTF261 Surfacing Film:

- 65°C minimum initial cure
- Flexible cure between 65°C and 120°C
- Maximum dry service temperature of 100°C following suitable post-cure
- High quality surface finishes achieved after vacuum only cure
- Good tack and drape for easy lay-up of large structures, vertical surfaces and complex shapes

VTA®260 Adhesive Film:

- Flexible cure between 65 and 120°C
- Minimum cure temperature 65°C
- Good tack for easy layup of large structures, vertical surfaces and complex shapes
- Maximum dry service temperature of 120°C after full post-cure.



For further information about Decision, please visit:
www.decision.ch

Advanced Composites Group Ltd

Composites House, Sinclair Close,
Heanor, Derbyshire, DE75 7SP, UK
Tel: +44 (0)1773 766200
Fax: +44 (0)1773 530245
e-mail: sales@acg.co.uk

www.acg.co.uk



Advanced Composites Group Inc

5350 South, 129th East Avenue,
Tulsa, Oklahoma 74134, USA
Tel: +1 918 252 3922
Fax: +1 918 252 7371
e-mail: sales@acg-us.com

www.acg-us.com