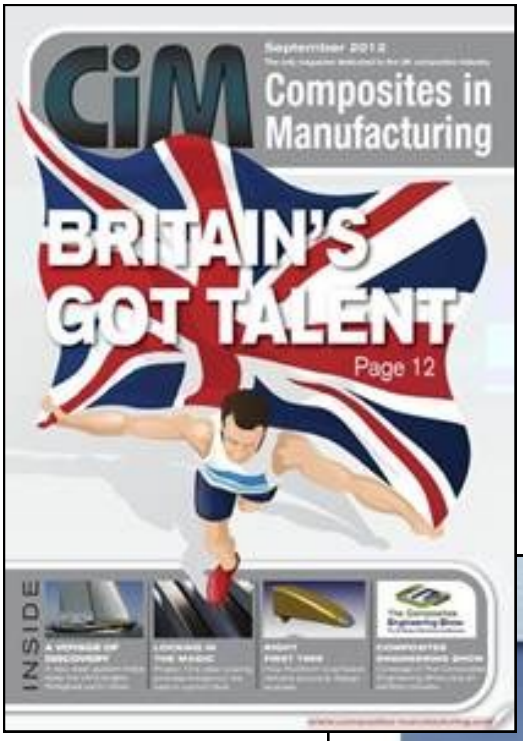
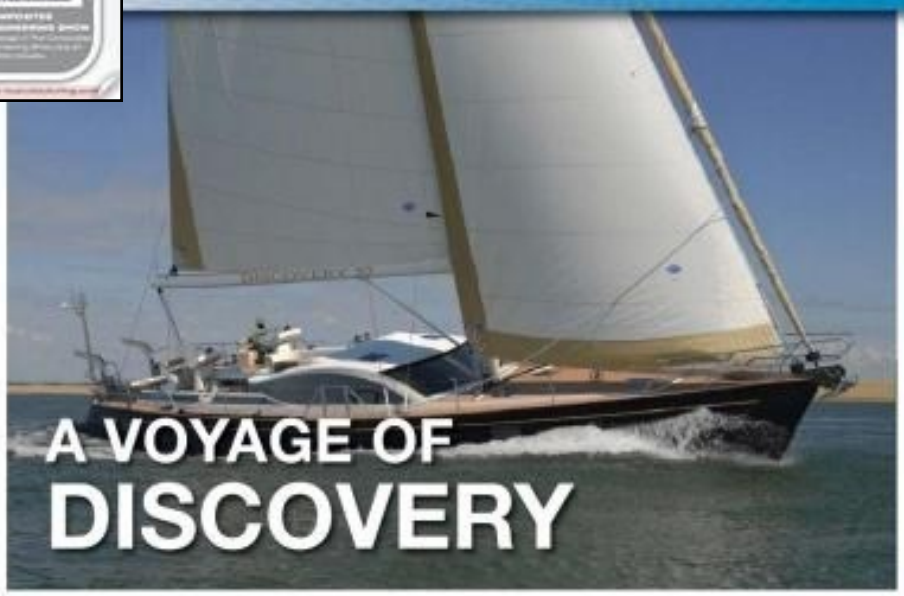


CiM September 2012 issue - A two page feature article on Discovery Yachts using Scott Bader products, with the article promoted on the front cover of the magazine.



A VOYAGE OF DISCOVERY

The largest UK manufactured vacuum infused sailing yacht hull uses Scott Bader's new high performance Gelcoat Crystic Permabright with matched resin system.

The largest fibreglass sailing yacht produced by resin infusion in the UK to date is currently being built by Discovery Yachts, at Marchwood, near Southampton.

The transition by Discovery Yachts from traditional wet layup to infusion production for their new Discovery 57 has been driven by the company's desire to improve the quality and performance of their yachts, to reduce styrene emissions and improve shop floor working conditions. The new Discovery 57 composite hull is fabricated from Scott Bader's vinyl ester (VE) infusion resin Crystic VE 679-03 in combination with a 'matched' marine system using Crystic VE 679PA skincoat and Scott Bader's new Crystic Permabright D-Iso/NPG high UV performance, marine approved gelcoat.

The hull, which is 17.48m long, with a beam of 5.1m and a 2.35m draft, was infused using vacuum bagging in one complete, seamless section to precise dimensions and a 'pre calculated' 500kg lower composite hull weight. The infusion process has produced a better consolidated laminate, making a stronger yet significantly lighter hull for improved speed; the 500kg saving is a 20% weight reduction. The new Discovery 57 will have its world debut at the Southampton Boat Show in September 2012.

Best in class

With improving product quality in mind, to provide the highest level of long term gelcoat colour stability, as the first Discovery 57 was ordered in a cream colour, Crystic Permabright D-Iso/NPG polyester gelcoat was selected. The Discovery Yachts composites team were convinced by the comparative technical data provided. The test data clearly showed that the advanced D-Iso/NPG polymer chemistry developed by Scott Bader, which uses a deconjugated Iso/NPG polyester backbone in the gelcoat base, has produced a step change technology gelcoat which significantly outperforms established Iso/NPG and Iso gelcoat technologies. Independent 12 month Florida UV weathering test results obtained by Scott Bader conclusively demonstrated that a white or cream Crystic Permabright D-Iso/NPG polyester gelcoat is able to provide two times better colour stability than the next best in class Iso/NPG gelcoat and four times better than a standard isophthalic gelcoat.

The production process to mould the hull started with the application by hand of the Crystic Permabright gel coat and then Crystic VE 679PA skin coat applied behind the gel coat prior to infusion; the addition of a skincoat provides a gelcoated laminate with optimum osmotic blistering resistance and improved gelcoat aesthetics. However, to achieve the very best gloss finish and eliminate fibre pattern and orange peel in a gelcoat, Scott Bader's ultimate 'matched marine system' includes additionally using Crystic Crestacoat 5000PA barriercoat applied immediately behind the gelcoat first and then adding the Crystic VE 679PA skincoat; due to its unique urethane acrylate chemistry, Crestacoat 5000PA not only provides a superior gelcoat finish, but also improves laminate flexibility, so helps prevent gelcoat cracking over time when a vessel is in use, maintaining it show room condition for longer. Discovery Yachts is currently evaluating Crestacoat 5000PA and is seriously considering using it for future decks and hulls as part of their ongoing quality improvement programme.

The next stage was the dry

▲ The Discovery 57 hull under construction

placement of the reinforcement fabrics and Corecell M-Foam core materials in the mould, followed by the peel ply and a flow mesh. Finally the resin lines were laid on the flow mesh and the vacuum bag was placed over the top, which was then sealed to the mould; the size of the moulding required the use of several manifolds for the numerous vacuum lines and resin lines needed to mould the hull in one shot.

Transition to vacuum infusion

The introduction of the infusion process into Discovery Yacht's production was led by its production director, Ben Collett, who over the last nine years has introduced a number of key quality improvement and initiatives in production, such as CNC machining and 3D modelling. This latest quality initiative to move to vacuum infusion built upon their existing in-house expertise in using vacuum bagging for gluing teak decking and bonding in balsa cores. However, to fully develop their knowledge and production skills to confidently infuse sandwich laminate parts as big as a hull, several months of planning and trials by the Discovery Yachts Composites team were still needed. They worked in close collaboration with key suppliers Scott Bader for the resins and gelcoat, Gurit SP UK for the core material and Composite Integration for the vacuum infusion pumps, mixing and dispensing equipment.

As Scott Bader has been an approved supplier for some time, Discovery Yachts already had experience of their product quality, customer service and technical support.

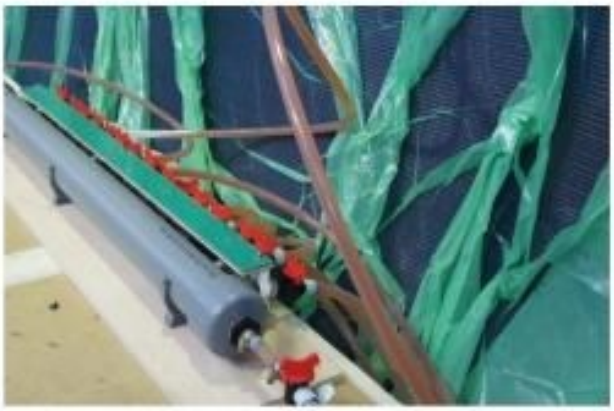
"When we started looking at infusion, we wanted to find a suitable supplier with matched products for the entire system: gelcoat, skin coat and vinyl ester infusion resin," Collett comments. "We looked at a number of options, but Scott Bader was an easy choice even though they had not supplied vinyl ester resins to us before. The superior colour retention in the Permabright gel coat is a great quality improvement benefit, but Scott Bader not only has excellent quality products, they also provide us with their technical support and experience. More importantly, even though we are not a large account, we have always felt valued and very well supported, so Scott Bader is a valuable partner to us."

As well as the Discovery 57 hull, they also now vacuum infuse various internal structural components and floor trays. Overall, the switch over from wet-layup to infusion for the Discovery 57 hull has been so successful that there are already plans to start infusing complete decks as well later this year.

Structural adhesive applications

For some years now, to reduce weight and improve build quality, Discovery Yachts has used Crystic Crestomer structural adhesive across their yacht range for a variety of applications. Crystic Crestomer 1152PA is used to bond structural components to both the decks and the hulls, with Crestomer 1186 used for bonding hulls to decks. For hulls and decks manufactured by wet layup, Crestomer 1196 has been used to bond in balsa and core foams, using vacuum bagging to guarantee the very best adhesion possible. According to Collett, the range of adhesives from Scott Bader have proved to be highly dependable, easy to work with and well suited to their production processes.

www.scottbader.com



▲ To mould the hull in one shot, several manifolds for the numerous colour coded vacuum lines and resin lines were needed with taps on each resin line