

Bavaria Yachts & BÜFA steer a successful course

For years Bavaria Yachts has been synonymous with sailing and motor yachts that have an outstanding price/performance ratio.

A long-term, intensive partnership has built up between the company and BÜFA Reaktionsharze GmbH & Co. KG for system solutions in GRP-products and application support. In production, after the ISO/NPG gelcoat is applied, it is backed up with isophthalic resin and powder bound CSM. This

ensures effective protection against osmosis. Laminate strength in the keel area is increased by overlapping all mats and rovings. Above the waterline and in the deck, a sandwich laminate of PVC-foam core bonded by a special light weight bonding paste is used. The suitability of this construction is confirmed by independent certification agencies. Besides conventional glass mats, multiaxial roving fabric is also used in the laminate and aramid fabrics are used in localised areas to increase impact strength. (Continued on P2).



Bavaria Yachts

Marine Days bring positive feedback

After the September Marine Days presented to French customers, we asked a selection for their opinions. The feedback was extremely positive:

"We have always considered DSM as a partner and it's good to see on-going developments, like print-through reduction and infusion, that really meet our needs."

Mr Berret: Zodiac

"I liked the 'hands-on' session on Neomould. Technical presentations don't normally include the opportunity to practice."

Ms Richardson: Dufour-Yachts

"It was very fruitful trip - to fully appreciate the technical facilities and to exchange experiences on key issues with other shipyards."

Mr Le Provost: Structures Chantier Naval

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Supporting our marine customers

For many years, DSM Composite Resins has been the preferred resins and gelcoats supplier for discerning boat yards throughout Europe. Customers appreciate the fact that we continually introduce new products such as Neomould rapid tooling systems to help them build boats quicker, and print blocking solutions for improved surface quality.

Education and training are also vital, and our series of Marine Days in 2006 have proved popular with our customers. We look forward to continuing this initiative in 2007.

I'd like to extend my best wishes to all our customers for a happy and prosperous year ahead.

Ronny Ledent
Marine Business Manager

Bavaria Yachts (continued)

The laminated decks and hulls are post-cured in a tempering hall. Decks are milled and drilled using CNC machines before all fittings and hatches are installed.

Conveyor assembly-production instead of workshop

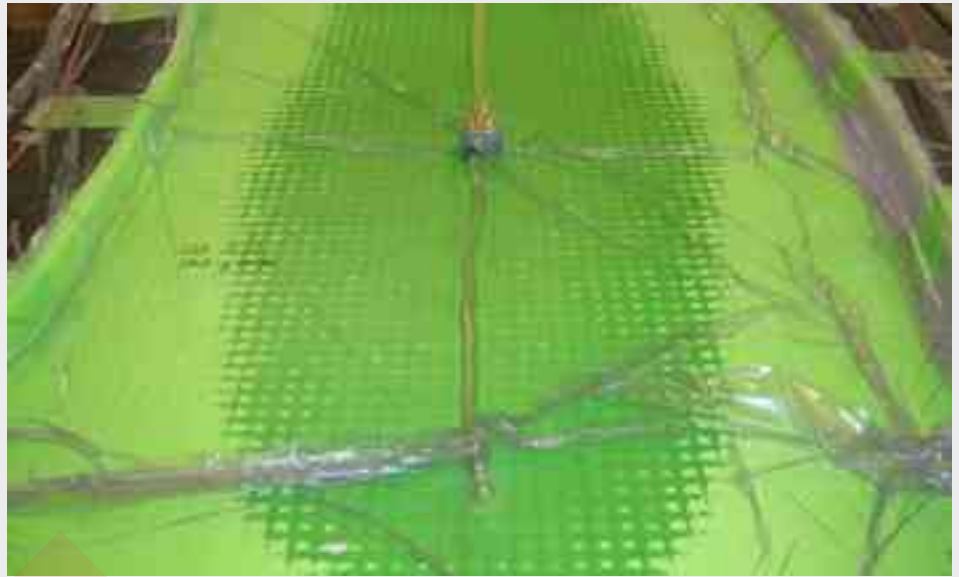
Bavaria produces yachts on assembly lines similar to an automotive production. Hulls and decks are transferred by a rail transport system from one assembly station to the next. Conveyor production starts with the installation of the deck fittings, which are mounted in preparation for the joining of hull and deck. Corresponding hulls are fitted on the assembly line: a procedure scheduled down to the smallest detail and fully monitored. All Bavaria Yachts leave the yard only after a detailed final quality control. This is in addition to the quality assurance inherent in the production chain.

Sale, service and guaranteed performance

One of the top-ranking and biggest yacht builders in Europe, Bavaria Yachtbau GmbH has developed a line of yachts that stand out for their solid construction and lasting value. This is the result of many years of intensive cooperation between Bavaria and the most renowned yacht-design firms in Europe.

Innovation, modern manufacturing methods and computer-aided manufacturing processes reduce construction costs - savings that Bavaria passes on to its customers.

Every year more than 3.500 yachts leave the yard, built by approximately 600 employees in one of the most modern series production facilities for sailing yachts and motor-boats in the world. A worldwide network of competent sales partners guarantees professional delivery and high quality service.



Hatch during infusion

Team approach to infusion trials at Aquafibre UK Ltd.

Aquafibre UK Ltd is a long established and well respected moulder in the marine industry, supplying deck and hull mouldings to sister company Broom Boats Ltd of Brundall UK, as well as other European clients. Aquafibre had heard much about infusion, and wanted to run their own trials.

LOWER EMISSIONS AND BETTER QUALITY

To speed progress and avoid the pitfalls, a support team of DSM Composite Resins / Euroresins UK, Diab, Saertex (and UK agent

Cristex) and Aerovac all provided materials and on site support. The chosen mouldings were a pair of hatches normally constructed from CSM either side of a balsa core needing good cosmetics and high rigidity. Diab provided the structural calculations for the HLU to infusion change and specified a single layer of quadraxial fabric either side of a PVC foam core. Synolite 1967-N-1 DCPD infusion resin was specified for its fast flow and controllable gel time. Several interesting approaches to cosmetic enhancements were tried across the two mouldings – to good success. The finished hatches, judged to be at least as strong as their traditional counterparts – but incredibly 35% lighter are now undergoing life cycle testing. Aquafibre general manager Robin Woods commented “At Aquafibre we wanted to explore the possibilities of infusion as it seems to offer the prospect of reduced factory emissions and internal styrene levels and enhance the quality and consistency of mouldings. Working together with the team allowed us to take our first steps with infusion, supported by the experts. The trials resulted in two moulded components which were just as strong as the hand laid versions but significantly lighter, more uniform and free from air bubbles. An encouraging start... and will be taking our next steps in the near future on a larger moulding !”



Infusion team at Aquafibre

DSM Marine Days help you achieve a better finish

How do you improve the cosmetics of your boat hulls and decks ? Many European boat builders have now found the best way to answer this question is to attend the DSM Marine Open Days.

To help boat builders find the best solutions for cosmetics, DSM Composite Resins organized a series of intensive Marine Open Days during 2006. Two events were held earlier in the year,

followed by two sessions in November to coincide with the Amsterdam METS. All were clearly focused on application and products selection. Plans are well advanced for the year ahead.

"Many boat builders use the last few months in the year to concentrate on future developments", says Marine Business Manager Ronny Ledent - "hence the success of both IBEX and METS. As

a main supplier to the marine industry we also chose this period to present some of our major developments. The format we use is a two day Marine session in the dedicated Technical Centre in Zwolle, Netherlands that combines technical presentations with practical demonstrations and hands-on workshops. By coinciding these days with the major shows like METS, we optimize both time and travel costs for the participants."

Boat builders investing time in attending such events, expect a return on that investment, which is why the DSM Marine Days are designed to deliver the maximum amount of valuable content by combining theory and practical work. Best practices to achieve optimal moulds and moulded parts are explained over the two days.



Discussing the vacuum infusion process

NEOMOULD SYSTEM

The starting point of the program to improve cosmetics is mould making. A mould that has a poor surface quality will not produce parts with a good cosmetic finish. Through presentations and practical workshops, participants are shown how to make high quality moulds with the Neomould system, including application of the tooling gelcoat Neogel VE 8394 and the shrink-free resin Neomould 1982-W-1.

Key elements of the DSM Composite Resins Marine Days

The main objective of the Marine Days is to review the factors affecting surface quality and offer the best solutions in terms of products and processes:

- The importance of correct gelcoat application. Participants assist in the live spray-up of the low styrene content Neogel Eco.
- The new DSM barrier coat is demonstrated live as a key solution to significantly improve the cosmetics of infusion moulded parts.
- Special attention is given during the DSM Marine Days to the vacuum infusion process.

The theory is turned into practice when a DSM resin is infused live. The many questions and remarks raised on these occasions confirm the increasing interest the marine industry has in this process.

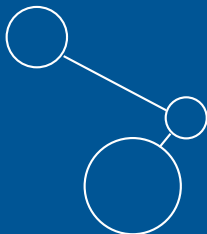
"It is important for us that the participants at our Marine Days can experience not only the application of our products but also see the results after cure and demoulding," says Expertise Manager Marine Fabienne Grandchamp. " This is why we have the two day format in order to reproduce real time workshop production environments."

A busy program but participants expressed very positive feedback (see page 1). To attend a



Practical work with Neomould

workshop in 2007 contact your local DSM / Euroresins sales contact.



New low shrink structural bonding paste minimises distortions

As boat builders explore all routes to minimise distortions and improve cosmetics, DSM Composite Resins has introduced a new low shrinkage structural bonding paste. Neobond 6427-W-1 provides structural bond performance from a fibre reinforced Isophthalic base, with reduced exotherm, easy mixing and application. Potential applications include interior modules and bulkheads, where there is risk of print-through. Ask your local contact for details.

Measuring cosmetic improvement

Over the last few years, cosmetic finish has become a major focus of attention for GRP boat manufacturers. As well as looking for solutions to improve cosmetics, we need to be able to quantify these improvements. Visual observation is a quick and cheap method to identify good parts from bad parts, but this is limited due to its subjectivity and the fact that it is not possible to quantify the cosmetics with tangible figures.

The automotive industry first took an interest in the question and, as a result, different scanning techniques and standards were developed to determine the effect that moulded parts, top coating, or paint finishes had on the final surface finish of car body panels. The principle is as follows: a light source illuminates the surface at a defined angle and the intensity of the reflected light is measured by a detector. After converting the signal into mathematical data, the surface profile is translated into several wave pattern ranges.

By using this technique, the contribution of the gelcoat, the print-protection layers and the reinforcement structure of the laminate on the final surface quality, can be easily interpreted. The defects induced by a poor application of the gelcoat are measured by the shortest wave profiles, whereas the typical print patterns from chopped strand mat, woven rovings, fabrics are measured by the medium and longer wave profiles. When print-blocking systems are applied, the intensity of the long wave ranges is considerably reduced. With the Atlac vinyl ester barrier coat, for instance, over 70% reduction in print-through can be quantified.

Achieving the best finish

Providing solutions to improve cosmetics is one of the many services that DSM offers its customers. As well as the Diffracto D facility (mentioned in a previous issue), DSM is also equipped with a Wave-Scan DOI from Byk Gardner which enables on-the-spot surface evaluations. Contact your area representative for more information.

EVENTS CALENDAR

SEATEC	Carrara, Italy, February 1-3, 2007	
GOTEBORG BOAT SHOW	Goteborg, Sweden: February 2-11	www.batmassen.se
HISWA	Amsterdam, Netherlands: March 6-11	www.hiswa.nl
MADRID BOAT SHOW	Madrid, Spain: March 14-18	www.salonnauticodemadrid.es
NORWEGIAN INTERNATIONAL BOAT SHOW	Oslo, Norway: March 16-25	www.norboat.no
JEC 2006	Paris, France: April 3-5	www.jeccomposites.com

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