

PRODUCTS IN ACTION

DIAB Core Infusion Technology used at Numarine Performance Motoryachts



The use of infusion molding for the manufacture of boat hulls, decks and superstructures has grown rapidly in the last few years. Today, a significant number of production boat builders around the world are either using the process or are seriously investigating its value.

The arguments for infusion appear particularly strong when compared to more traditional laminating techniques such as hand or spray lay-up. Laminate quality will almost certainly be higher, cycle times can be significantly faster and, due to the closed mold nature of the process, health and safety is greatly improved.

Furthermore, the investment required to switch to infusion molding is relatively low and even the concern regarding increased consumable costs is being dealt with by infusion systems that use the core as the transfer medium rather than sacrificial nets or mats.

No Restrictions

Infusion is not just restricted to the larger and more established companies. Newly-formed organizations such as Numarine Performance Motoryachts who is based near Istanbul, Turkey has decided go the infusion route from day one.

At present, the Numarine facility in Gebze, Turkey comprises 6,000 sq. meters of new, climate-controlled production space, split approximately 50:50 between laminating and interior fit-out (including cabinet making). In 2005 the company is planning to bring on stream a new 4,500 square meter facility exclusively for laminating.

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DIAB's Involvement

Numarine has worked closely with DIAB and its Turkish agent to introduce the infusion process. DIAB Technical Services personnel have been involved in the engineering of the first boat, the initial training of Numarine personnel and assisting in the successful infusion of the first 52 ft. hull.

C.E.O. Ömer Malaz maintains that the main reason for choosing the infusion process was in order to achieve a high and consistent level of laminate quality. Using DIAB Core Infusion Technology has resulted in a very low void content and fiber fractions of 60-65 percent compared to around 35 percent with hand laminating. This results in higher performance laminates and a weight reduction of some 20 percent. As Mr. Malaz explains, "As we are making extensive use of carbon fiber (it is the final layer in the hull laminate), there seems little point in then using low tech manufacturing techniques".

Competing Worldwide

With the company aiming to compete on the world stage, production efficiency is also very important. Here the DIAB Core Infusion Technology offers a substantial reduction in cycle times with Numarine estimating a 30 percent saving compared to hand-lay up and without the need to carry out secondary bonding operations.

Time Savings

Although much of this time saving is due to the inherent nature of the infusion process, the core method does offer additional time economies due to the longer flow lengths, the speed of the lay-up and the reduction in consumable materials. Cycle times were also optimized as the core materials were supplied in ready-to-use kits. The cleanliness of the process was also a major attraction to the company in order that it could attract and retain the right type of personnel and meet European health and safety requirements. Despite being a 'start-up' enterprise the learning curve was surprisingly short. DIAB Technical Services personnel visited the company on two occasions.

Trial Infusion

On the first visit a trial infusion was carried out and on the second a complete 52 ft. hull was successfully infused. Although the original plan was for DIAB to assist in the infusion of the 52 ft. deck, yard manager, Karl Heinz Mula, was confident that his own team could handle this without assistance. His confidence was fully justified with the deck being infused without any problems in 55 minutes.

The company is also using the infusion process for all the large GRP components for the 52 including bulkheads and interior walls. With the successful infusion of both the hull and deck, Numarine will now be extending the process and is planning to infuse the next deck, together with the deck beams, in one shot.

