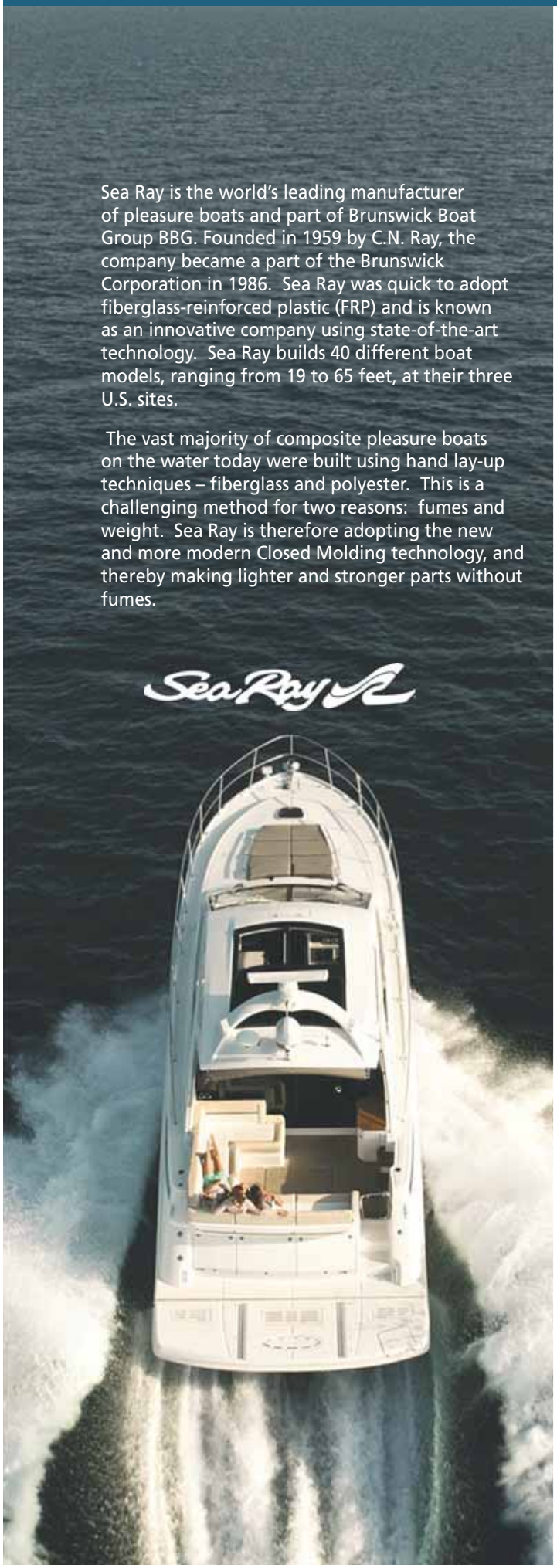
Case story:
Sea Ray infuses 510 Fly using Compoflex® RF 3 three-in-one flow media

Using Compoflex® RF 3 for infusion on the Sea Ray 510 Fly offers the following advantages:

- **Easier and faster lay-ups: In some cases on the 510 Fly processing times were reduced by 65%**
- **Controlled resin flow fronts, thus avoiding issues with laminate quality**
- **Faster resin fill rates**
- **Easier removal of disposable materials (bagging films etc.)**
- **Less labour required for back-grinding and post-finishing of laminates**

Compoflex.dk

Fibertex NONWOVENS



Sea Ray is the world's leading manufacturer of pleasure boats and part of Brunswick Boat Group BBG. Founded in 1959 by C.N. Ray, the company became a part of the Brunswick Corporation in 1986. Sea Ray was quick to adopt fiberglass-reinforced plastic (FRP) and is known as an innovative company using state-of-the-art technology. Sea Ray builds 40 different boat models, ranging from 19 to 65 feet, at their three U.S. sites.

The vast majority of composite pleasure boats on the water today were built using hand lay-up techniques – fiberglass and polyester. This is a challenging method for two reasons: fumes and weight. Sea Ray is therefore adopting the new and more modern Closed Molding technology, and thereby making lighter and stronger parts without fumes.

Infusing Sea Ray 510 Fly

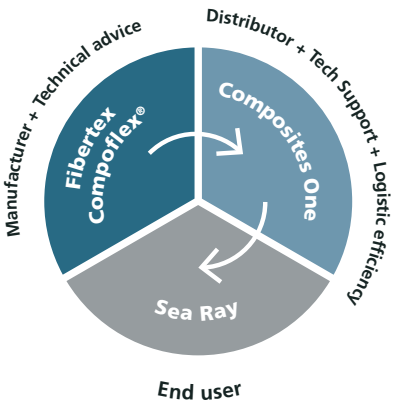
The 510 Fly is the first hull made at Sea Ray using Closed Molding technology – Infusion, and the process is reducing the weight of the hull by 2,500 pounds alone, while at the same time improving the working environment significantly.

When Sea Ray decided to introduce the Closed Molding technology at their facility in Palm Coast, Florida, they looked for the most cost-effective and state-of-the-art infusion solution. In cooperation with Composites One (Arlington Heights, IL, USA), a leading supplier of raw materials and consumables for composites part production, as well as renowned closed mold process experts and founders of the Closed Mold Alliance, they drew up the infusion plan for the Sea Ray 510 Fly using the innovative infusion three-in-one flow media Compoflex® RF 3.

Compoflex® RF 3

"The purpose of using the Compoflex® RF 3 material on the Sea Ray 510 Fly was to eliminate the need for using a separate flow media and peel ply for the infusion processes, as well as decreasing the amount of time required to infuse the parts. The use of Compoflex® RF 3 decreases the cost of consumables for the vacuum infusion process, as well as enabling faster resin fill times for the parts," Says Mark Whaley, Infusion Integration Engineer at Sea Ray's Palm Coast facility. He continues: "Working with the Composites One sales and technical teams, we tested various traditional types of peel ply and flow media, and for some parts for the 510 Fly the infusion process took 45-50 minutes. Then Composites One and Fibertex recommended the Compoflex® RF 3, and now the same parts are done in 15 minutes!"

All of the infused parts for the 510 Fly are molded with 100% vinyl-ester resins, which not only provides for lighter and stronger parts, but also achieves the Class A in-mold surface quality that Sea Ray expects for its parts.



Preparation and lay-up

510 Fly hull

Compoflex® RF 3 is applied against the backside of the dry reinforcements that are loaded in the molding tools, before applying the resin feed lines and vacuum bag materials to surfaces. Compoflex® RF 3 is used in all the solid glass areas of the hull to help with resin flow to these areas.

1. Lay-up glass and core.

2. Compoflex® RF 3 is easy to work with on vertical sides.

3. Compoflex® RF 3 is easy to cut using normal scissors.

4. For easy removal and quick infusion, feed lines are mounted directly on Compoflex® RF 3. There are 17 feed points, 8 on the hull bottom, 8 on the topsides and one on CL.

5. Compoflex® RF 3 is a genuine three-in-one product, and it is very durable when you need to climb on it during installation of flow channels and vacuum lines.

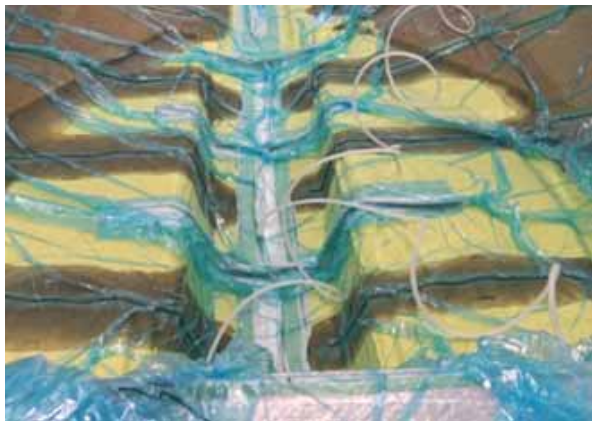
Overlapping is no ploblem with Compoflex® RF 3 due to the microporous surface.

6. Bagging the 510 Fly hull.

Preparation and lay-up

510 Fly hull... continued

7. Infusing 510 Fly hull platform.



8. Even Flow with Compoflex® RF 3 helps avoid dry spots.

9. Infusion of the Sea Ray 510 Fly takes less than 45 minutes with the use of Compoflex® RF 3.

10. Peeling Compoflex® RF 3 is very easy and time-saving.

11. Minimum resin dust when removing Compoflex® RF 3.

12. Minimum resin dust generated when peeling Compoflex® RF 3.

510 Fly swim platform

The hydraulic swim platform on the 510 Fly is also vacuum-infused, which not only provides a lighter structure for the swim platform, but also allows for greater payload capacity for yacht tenders and gear.

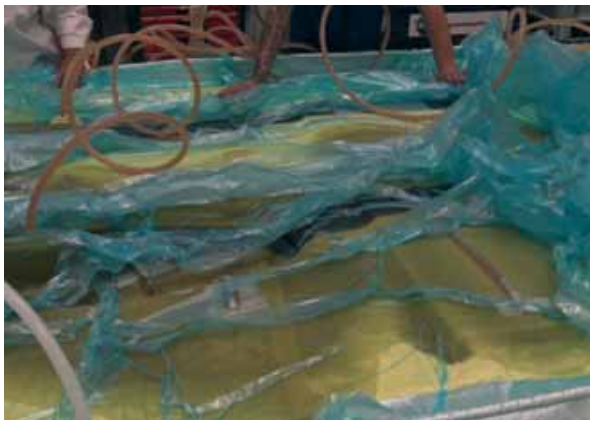
1. Lay-up of the swim platform.

2. Glass fitted and packed.

3. 510 Fly swim platform ready for bagging after Compoflex® RF 3 has been installed.

4. Bagging the swim platform.

5. Infusing 510 Fly swim platform.



6. Infusing the whole 510 Fly swim platform takes only a few minutes.

Preparation and lay-up

510 Fly swim platform... continued

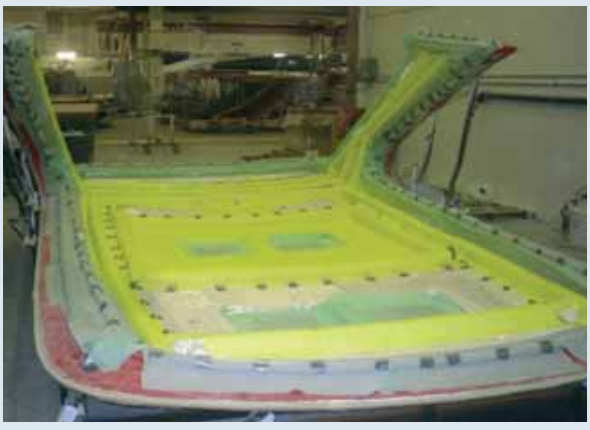
7. Un-bagging the swim platform.

8. Easy removal of Compoflex® RF 3.

9. Minimum resin dust generated when peeling Compoflex® RF 3.

510 Fly hardtop

The hardtop for the 510 Fly is also vacuum-infused, which helps reduce the weight of the superstructure.

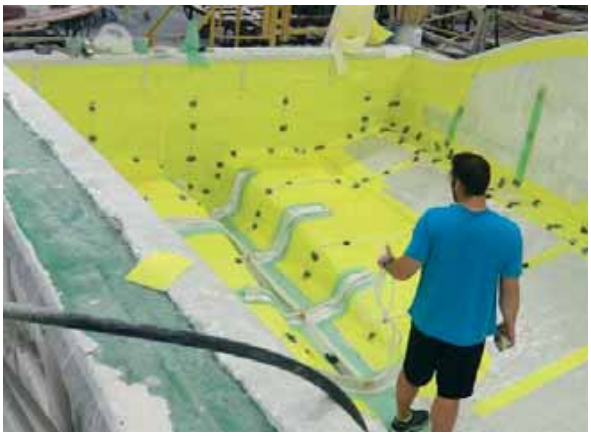


1. 510 Fly hardtop with Compoflex® RF 3 ready to infuse.

2. 510 FLY with hardtop mounted.

Infusion set-up

- Vacuum pressure – 0.9 bar
- 100% vinylester resin – both skin coat and bulk laminates
- Glass – various proprietary reinforcements designed for infusion
- Inlet tube in general – 5/8" OD
- Compoflex® RF 3 is used for all the solid glass areas of the parts



Compoflex® RF 3

Compoflex® RF 3 is a genuine three-in-one infusion product. It substitutes peel ply, release film and flow mesh to control flow rate, distribute resin and release consumables from a composite laminate.
Compoflex® RF 3 generates a very smooth surface ideal for painting of the composite laminate. For secondary bonding, we recommend Compoflex® SB RF 3. Release film perforation style: medium-based characteristics.
Compoflex® RF 3 is designed to efficiently distribute resin with limited waste due to the low profile and tight construction. Works well with most types of resin including polyester, vinylester and epoxy.

Product data

Recommended working temperature	145°C (293°F)
Fibre type	Polypropylene (nonwoven) / High-density polyethylene (grid)
Fabric construction	Nonwoven
Weight	315 g/m^2
Thickness	1.4 mm
Tear resistance MD/CD *	280 N/188 N
Pore size	< 10 µ

* Tear resistance MD/CD is measured without infusion net.

Compoflex® RF 3

US distribution:

COMPOSITES ONE ®

Fibertex Nonwovens A/S
Svendborgvej 16
9220 Aalborg
Denmark
Tel. +45 96 35 35 35
Fax +45 98 15 85 55
fibertex@fibertex.com
www.fibertex.com

Compoflex.dk

Fibertex NONWOVENS

B10 031.EN_Rev. 01_08/2016