

DuFELX Kitset Construction Method:

The following construction photos follow the building process we used to build Spirit from a DuFLEX kitset, supplied by www.atlcomposites.com



Step 1: The design took 6 months to develop into a kitset. The files were then sent to ATL composites for the nesting and manufacturing of the kitset panels. The 3D renders of the model helped the owner visualize the size of the vessel and changes were made along the design path to suit his specific request.

Step 2: The temporary frames for the hulls were CNC cut and slotted together. The single temporary frames system will make two hulls. Each frame needed to interlock but still release easily when the hull was rolled over and the frames were removed.



Step 3: The builder decided to use DuraKore strip plank method for the hull planking. Once the strips of DuraKore were glued together the outer skins of glass were applied. This photo shows the lay-up method with Peal Ply covering the hulls. We had originally considered building the hulls with Cedar strip planking for ease of construction. But in the end we all agree that the DuraKore kitset went together very quickly with no mess. The DuraKore comes pre-machined with scarf joints. One of the other benefits of using the DuraKore was the plank size. Over the flat section of the hull the builder left the plank full width, but where the hull tightened up around the front the planks were split down in width to fit around the curves.



Step 4: The crash bows were 5 axis CNC machined from foam, which saved the builder time and money. The foam bulbs were then laminated to the DuraKore hulls after the hulls were rolled upright. The bulbs are sacrificial, and if the vessel ever hit anything and caused damage to the crash bows, the builder could use the same 3d file to create new bulbs.



Step 5: The rest of the kitset turned up in several shipping containers. The builder then pressed the panels together to create the bulkheads, hull, and deck components. Building a vessel this size can mean shop floor space is limited, so having all the panels made off site at ATL composites factory made the building task easier.



Step 6: The bulkheads were pressed, and then fitted to the hulls. This started to give the vessel some structure for the rest of the panels to be applied against. One thing you can notice is; there are only a few frames. The structure of DuFLEX allows us to work with minimal frames and still achieve incredible strength.



Step 7: The topside panels were bogged and sanded on the shop floor before placing against the bulkheads. This made fairing the topside panels easier for the painters. The panels are placed and locked against the frames. The builders coved and glassed the panel edges to the hulls, and inside to the bulkheads. This process is very simple and clean. It can be achieved in small steps with small batches of epoxy mixtures at any one time. This helps reduce human error in mixture ratios with epoxy resin, creating a higher quality boat.



Step 8: The window frames were cut from one long panel of joined DuFLEX. The upright window mullions were cut and folded, and had locating slots in the main deck for positioning.



Step 9: The engines, electrical cables, plumbing, and interior fitout commenced as soon as the main cabin deck was in place. This photo clearly shows the size of the engines, but also the internal accommodation size of the hulls.



Step 10: The lower portion of the vessel was moved out of Streamline Catamarans workshop. At this stage the vessel is watertight up to level 2. The kitset went together very quickly and allowed the builder to construct the vessel in two halves in the same shed, minimizing on leased shed space required for such a large project.



Step 11: Level 2 and 3 are under construction in the shed while the lower section is finished outside. Deck Level 2 is built much the same as the lower half, with all the window mullions being folded and located on a jig. The cabin side panels are then bent around the window mullions and glassed into place.



Step 12: The upper levels are lifted on to the lower hulls. The lightweight super structure made the lifting process very easy. As you can see the upper half was faired and painted in the shed before lifting into place. The builder did not need scaffolding around the vessel for painting and fairing, another small benefit of kitset and modular designs.



Step 13: The final result. The owner, builder, & designer have achieved an amazing project using a kitset boat design. The size of the project is scalable from 3m to 30m or more.



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