

## **KSS Catamaran Building at the International Maritime Conference**

By Derek Kelsall, 2008

As I expected, my paper on KSS at the IMC in Sydney was reaching a new audience.

A wide range of marine interests were represented in the papers and by those attending. Those with an interest in boat building were not familiar with KSS. The following quote is from an experienced owner builder. "I attended your presentation and was enthralled by the simplicity of what you described". A.B. He had wanted to build a catamaran for some time but had been deterred by the complication of the typical build method on offer by all other designers. Others I talked to after the presentation told of similar understanding of current build methods.

My impressions from the conference and the exhibition were

1. Amazement at the number and variety of projects in which companies are involved in the defence industry.
2. Impressed by the size and variety of larger catamarans and trimarans produced by Austral, Incat and others.
3. Awareness of a thousand applications for KSS, where it's efficiency, quality and low weight would be advantageous.

In contrast to the pleasure sector of the marine industry, metal dominates in the commercial field. This material choice, from my standpoint of forty plus years of specialising in composites and catamarans, seems to be based primarily on a number of firmly held views, which are contradicted by my own experience.

1. Skepticism on the ability of composites to stand up to the typical commercial use.
2. The belief that expensive tooling is involved and that repairs are difficult.
3. That composites are more vulnerable to fatigue failure.

KSS allows large catamarans to be built simply, with low tooling costs and in most circumstances, repairs are very simple to carry out. The facts are that composites are superior to metal in fatigue; and that extra strength and impact resistance can be added in vulnerable areas at little extra cost. These facts were not appreciated.

### **Build Time Efficiency Comparison**

Compare making the bridge deck in aluminium with making the same in composites. Produce shape, weld thin sheets, add closely spaced stiffeners, add insulation, add interior lining, apply a finish to the exterior. Six separate steps to complete the full structure. Compare with – apply gel coat to table and allow to cure, roll out the outside fiberglass skin, set out the foam core, roll out the inside skin, apply the resin distribution system and seal the nylon bag to the table. Resin infusion completes the structure in one operation. We estimate that the composite panel will take no longer than any one of the six individual steps. The total cost of composites handling in this way, is a lot less than aluminium.

### **Repairs**

A knowledge of the materials is needed but is quickly learnt. In most cases, the only problem comes if needing to repair in wet conditions. The materials for most minor damage repairs could be carried on board.

### **Impact Resistance**

Composites with the correct core for the area concerned is excellent in impact resistance. By adding extra material, which can include Kevlar, the local impact resistance can be substantially increased in the most vulnerable areas.

### **Fatigue**

Provided the design is well engineered and the composites are working within their ultimate strengths, the fatigue factor for composites is very low. Most composite craft will outlive the useful lifetime of metal boats.