



Case Study

Petticrows LTD was established in 1896, in Burnham-on-Crouch, UK and for over 35 years has been developing and building the International Dragon class keelboat as well as Finns and, more recently Ocean rowing boats. The International Dragon is a design classic and sailed by discerning owners worldwide. As such, Petticrows are continually looking for design excellence incorporating good engineering principles with style. Petticrows built boats have a worldwide reputation for quality and craftsmanship. The most recent design, The Petticrows V6 Dragon, has dominated the major class championships and is the current holder of the World Championship, European Championship and the prestigious Gold Cup.

Why was the project necessary?

Petticrows manufacture much of their own major parts in-house, but more recently the company has been looking to outsource some custom parts to manage production time. Quality control is of paramount importance, but the demands of modern manufacturing make outsourcing partnerships necessary. Petticrows approached Allen Brothers with plans for many intricate designs which would be hard to mass produce. The designers at Allen Brothers worked alongside the experienced Petticrows boat building team to come up with

solutions to not only improve the performance of the finished products but also deliver more efficient production.

“We have a tried and tested process of consultation, design, pre-production and production philosophy which allows us to work closely and on time with the client’s requests. Our experience of using modern materials allied to precision machining facilities, ensures we provide a high degree of accuracy and repeatability not just from unit to unit but from batch to batch.”

Steve Hall, Allen Brothers

When was the timescale for project?

Allen Brothers has been working with Petticrows for many years and the decision for the two companies to work together on custom parts was initiated in 2017. To this day Allen Brothers has worked on around 150 custom projects with Petticrows.

Project Examples

Rudder Stock and Bearings - The International Dragon Class has a set of very strict class rules

covering certain elements of the rudder stock assembly. Within these restrictions Allen Brothers produced a product lighter than the previous design by utilising modern materials and manufacturing methods. The new product proved to have less friction resulting in a better feel and responsiveness through the tiller for the helm. It may seem irrelevant that the rudder assembly is slightly lighter than previously used on a boat that weights nearly 2 tonnes, but the International Dragon class use a swing test to determine the weight distribution in each boat, both horizontally and vertically, and so the weight saving can actually be measured through this test.

Mast gate - The International Dragon Class has a keel stepped mast and the rig uses runners to control forestay tension in excess of 1.2 tonnes. The mast moves through approximately 8° from its upwind to downwind setting. The movement at the deck is restricted but it is essential the mast passes though the deck centrally throughout this range of movement. Part of this is managed by accuracy of the assembly of the boats mouldings but the final detail relationship between the deck collar and mast collar are equally important to ensure the owner can set the rig up correctly. Allen Brothers investment in the latest milling technology allied to the Creo CAD/CAM design package as well as experience of our design team not only produced extremely accurate and repeatable matching components but Allen were also able to provide Petticrows with a tooling insert that was set into the deck mould to ensure precision of location during construction.

Who was involved?

Allen Brothers' Technical Manager Steve Hall worked with Petticrows MD Tim Tavinor to agree a brief and priority time scale for each project.

“Working with Allen Brothers has been fantastic. They have a considerable knowledge base, which can turn ideas into professionally finished prototypes within weeks. This rapid turnaround of design and ideas allows us to be at the forefront of boat building developments and bring consumers the best product available.”

Kay Tavinor, Petticrows

Allen Brothers' Design Manager, Darren Elwell, then worked with his team of tool makers and designers to ensure the design and manufacturing process fulfilled the brief.

How did we address it?

Using state of the art software, PTC Creo 6 which is ideal for designing, tooling and CAM work, Allen Brothers designers drew up technical drawings for Petticrows to review. Working with their feedback, Allen Brothers then developed the drawings into a design that both parties agreed was the best solution. Allen Brothers then used their range of in-house resources to professionally manufacture prototype samples for Petticrows to look at and test to ensure the product performed as expected and wherever possible exceed expectations.

What was the result?

Allen Brothers is now supplying Petticrows with most of their bespoke items as well as providing standard catalogue items. Since working with Allen Brothers, Petticrows has seen an improvement on overall finish and production time due to the quality and efficiency of the Allen Brothers manufacturing process.