



Summary

Using the FARO LS880 laser scanner, an existing steel hull was scanned and



compared with the original design model to check for accuracy and fairness. This technology is equally

relevant to GRP hulls and moulds - using the LS880, we can provide accuracy maps for large hull moulds. The scan data could also be used to reverse engineer existing hulls or moulds, allowing accurate CAD models to be constructed and used as design envelopes for interiors, re-modelled superstructures and performance calculations.

Method

Scanning is carried out in conjunction with our 3D total station, allowing millimetre

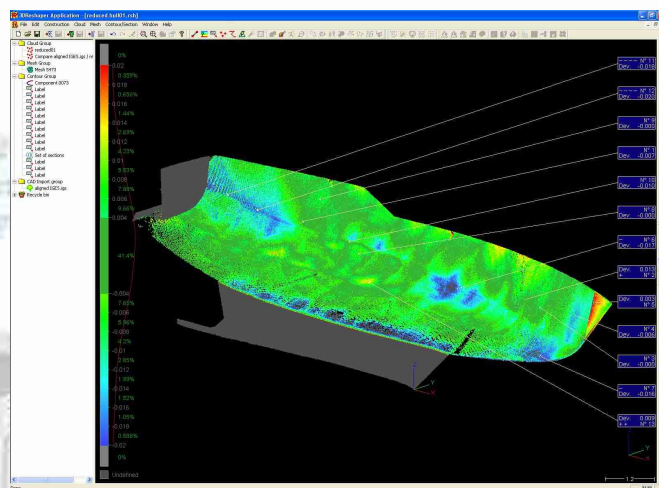


accuracy to be achieved for critical areas. The scans are combined and cleaned to create an accurate 3D point cloud of the hull or mould.

For tolerance mapping, the scans are imported and fitted to the existing CAD data using a least squares method. A

colour readout of the relative accuracy of the physical model is provided along with greater detail on the high and low points.

For reverse engineering, the point data is split up to the various component surfaces and imported individually to our CAD system. The individual point clouds are then used to create a watertight set of NURBS surfaces that can

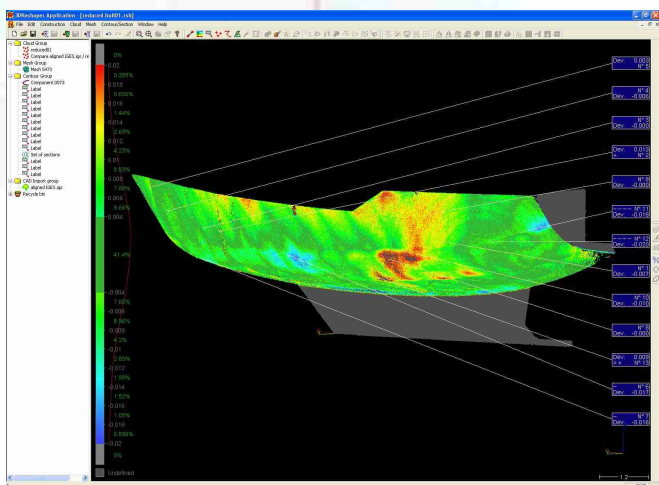


be transferred to most CAD packages, along with a comparison map showing the relative accuracy of the fair surfaces to the original scan data.

Results

The fairing map shows that some 70% of the hull lies within $\pm 8\text{mm}$ of the design surface and over 86% within $\pm 10\text{mm}$. It is clear on the map where the main areas of distortion lie - along the seam between the rolled chine plates and the side plates and the fit of the bow chine plate. The large red area at the upper bow is an anomaly in the original design surface, rather than a problem with the construction or scanning.

If you would like any further information on the use of the LS880 scanner for marine projects, please contact Deri Jones on 0870 762 0089 or via email at info@djaweb.co.uk



LS880 - Yacht fairing review