

Deri Jones & Associates Ltd

3D Laser Scanning|Marine Structures|3D CAD|3D Visualisation



Parkol Engineering Ltd is one of the UK's leading suppliers of steel and aluminium fishing vessels. Based on the banks of the River Esk in Whitby, they have been involved in the boatbuilding industry since 1988 and have supplied vessels

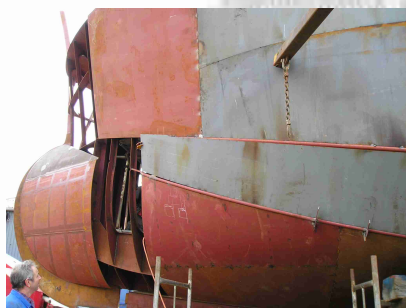


of all shapes and sizes, from a replica of Captain Cook's "Endeavour" to state of the art 20m trawlers. Always looking for ways to apply the latest technology to improve the quality and speed of vessel construction, Parkol have

been using vessel assembly systems for many years.

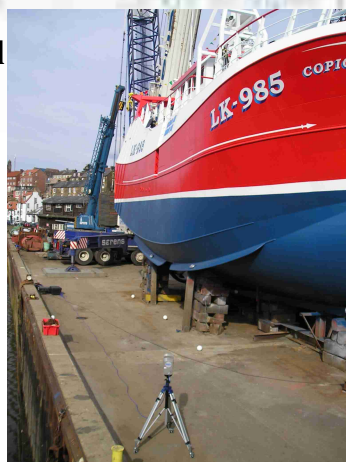
Application

A vessel assembly system is a 3D CAD modelled set of components



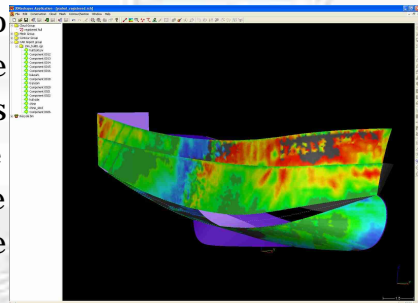
for the structure and plating of a boat, that arrive at the yard pre cut and formed to shape ready for assembly -

essentially Airfix for boats. Deri Jones & Associates Ltd (DJA) has designed the assembly systems for many of the boats constructed by Parkol and work with them to continually improve the system. With the introduction of the LS880 subcontract scanning service by Geospatial Survey Solutions Ltd (GSS) and DJA, an investigation was carried out to compare the accuracy of the constructed steel hull with the original design model. The LS880 was used to capture the hull surface of the Copious, a 19m trawler destined for Shetland. With the complex curved



nature of a boat, a laser scanner is the ideal tool to measure the shape accurately. It also allows a vast amount of additional detail to be captured, weld seams where plates are joined,

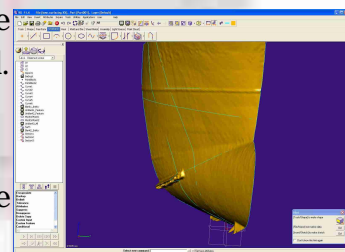
distortion due to welding and the captured data is a truly accurate "as built" image of the boat. The scan data was



transferred to DJA's CAD workstation and unwanted data such as false reflections from the steel dust in the air (a common hazard in heavy steel construction yards), the surface of the river and launch crane were removed in FARO Scene. The required area of the bow, where the majority of distortion was expected was exported to 3D Reshaper, a CAD package capable of handling large point cloud files and IGES CAD data. In Reshaper, the scanned hull data was aligned to the original 3D CAD model and a point to surface comparison calculated.

Summary

Comparison of the scanned data with the design data showed many interesting discrepancies. The maximum deviation of around 15mm occurred around the top of the hull plating. This is where loads from masts and the shelterdeck push the plating out. Throughout the rest of the forward hull plating an accuracy of ± 10 mm was recorded. Details such as the slight flattening of plate tangency at weld seams and weld distortion along the areas where the plating was welded to the heavy bars at the chines were clearly captured, as was the detail of the raised lettering on the hull sides.



For further information on the laser scanning services we can supply, please contact Deri Jones on +44 (0)870 762 0089 or via email at: info@djaweb.co.uk