

Lasers Light the Future of Lines Lifting for Smaller Hulls

Early last month *Marine Design International* (MDI) and *Deri Jones & Associates / GeoSpatial Survey Solutions* (DJA/GSS) undertook a lines lifting and modelling job at *Stormcats* on Islay off the West coast of Scotland.

Lifting lines when drawings have been lost or never existed is a laborious process when using traditional methods of plum bobs and planks. MDI has always tried to utilise the latest technology and techniques for design and build systems but the crude software available for data manipulation has generally put laser scanning out of budget for most small operators, until now.

DJA and MDI first used an electronic theodolite for lines lifting in 2000 for a tall ship conversion and ever since have been developing and improving techniques. A collaboration with GSS and developments in laser scanning hardware and software, has now made full 3D laser scanning of smaller hulls a viable option.

Advantages of laser scanning include:

- Reliable recording of the entire hull surface rather than individual measured sections.
- A great reduction in on-site time, keeping slipping costs low or enabling lines lifting between tides.
- Increased accuracy, typically 5-10mm over a 15m hull
- A usable 3D computer model ready for further work such as stability analysis or structural alterations.
- Confidence in the accuracy of CAD models by direct comparison to the original scan data.

At Stormcats, three monohulls and a catamaran were scanned using a FARO LS880 scanner in a seven hour period on site, collecting some 18 million points per vessel at an accuracy of up to +/-3mm. The dense point cloud was then cleaned and aligned to the required vessel axis, before being used to create a clean IGES surface model of the hull suitable for CAD use.

Continual checking of

accuracy against the original scan data allows a clean model with detailed information on the reliability of the data to be created. The computer models will now be used to provide stability information for the model range and also for alternative superstructure moulds.

MDI are keen to develop this technology further and the prospects it opens up to operators, builders and owners of all sizes of vessels.



Stormcat 9-5 scan data with 18 million points collected.



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