

### Hull Fairness and Accuracy Control Superior Stealth through Unsurpassed Accuracy

CNST's Hull Fairness and Accuracy Control Project is currently in its second phase at Northrop Grumman Shipbuilding – Gulf Coast (NGSB-GC), and results from initial field tests are showing production engineers some promising results.

Hull fairness/flatness and accuracy control requirements for DDG 1000 create a unique production challenge for NGSB-GC. Currently there is no technology solution that would meet these restrictive fairness fabrication requirements as they are more stringent for this platform than for previous Navy vessels. With the design concept's stealth demands, Northrop Grumman engineers must explore the latest measurement technologies and that will provide more accurate results while decreasing the amount of labor required by the existing systems.

This two-phased project is investigating the expanded use of metrology instrumentation during the shipbuilding process at NGSB-GC. During Phase I, the team identified the key capabilities of the desired equipment based on the accuracy requirements, and explored existing systems on the open market for those that could potentially meet these exacting standards. Eventually, a handful of candidates were selected for serious consideration.



A Laser Tracker judges flatness on the panel line.

The project team is now in Phase II, having completed the down selection of those technologies deemed best suited for the stringent accuracy requirements of DDG 1000. The final candidates represent the state of the art in laser tracking, scanning, and photogrammetry and will be subjected to extensive field testing throughout the duration of the second phase. Other attributes of these technologies will be examined during this phase, including cost of the equipment, ease of implementation, and ability to train production personnel with minimum impact to production.

Upon successful completion of this project, the improvements will facilitate the shipyard's ability to meet Navy's radar cross section requirements, improve all facets of accuracy control, and improve combat system alignment procedures while driving down cost. The comparing of old and new methods to be conducted will allow for tradesman/craft personnel buy-in and confidence in a new technology that reduces the overall construction demands. Additionally, NGSB-GC recognizes the utility in other applications, such as engine mount placement and shaft alignment.

#### About CNST

CNST is a Navy ManTech Center of Excellence, chartered by the Office of Naval Research (ONR) to identify, develop and deploy, in U.S. shipyards, advanced manufacturing technologies that will reduce the cost and time to build and repair Navy ships. For additional information on this and other CNST projects, please visit [www.cnst.us](http://www.cnst.us).

