Automated Processes Improving Stiffener Component Construction at Ingalls

Status: Partially Implemented

PROBLEM / OBJECTIVE

Fabricating stiffener assemblies on Navy surface ships creates many quality challenges due to the numerous manual processes that are used throughout the manufacturing sequence. A Navy Metalworking Center (NMC) project characterized the causes of inaccuracies and inconsistent quality of the fabricated stiffener assemblies. The Integrated Project Team (IPT) members noted below developed process improvements and optimized tooling and prototype equipment to improve the stiffener manufacturing process, including improved forming processes to increase part accuracy and consistency. The project's solutions are expected to reduce labor and rework and increase accuracy and throughput, significantly lowering costs and improving the production schedule for this operation.

ACCOMPLISHMENTS / PAYOFF

Process Improvement:

The IPT assessed the stiffener assembly fabrication process by conducting accuracy studies in the various fabrication areas and other identified areas with potential improvement. The IPT focused on the fabrication of accurate spools to reduce the cost of fabrication and rework involved in the manufacturing of stiffener assemblies. Specifically, the IPT developed and pilot tested a spool forming station with automated processes to accurately form spools according to necessary tolerances. This resulted in more accurate spool fabrication as well as better downstream fit-up in beams, reducing process time and rework.

Implementation and Technology Transfer:

Project results have been implemented at Ingalls Shipbuilding in support of LHA, LPD, DDG 51, and NSC, starting in the second quarter of FY17. The spool forming station along with designed dies and processes have been installed in Ingalls' fabrication area, and operators have been trained on the use of the station.

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Automating the forming of stiffener components will improve efficiency and quality while reducing labor. NMC photo.

Expected Benefits and Warfighter Impact:

- Cost avoidance by improving fit-up and weld quality for attachments
- Reduced labor due to mechanized and automated fabrication processes
- Improved efficiency in the installation of high-volume repeatable parts
- The five-year savings estimate is $5.4 million (2.8 ROI)

TIME LINE / MILESTONE

Start Date:	July 2014
End Date:	December 2016

FUNDING

Navy ManTech Investment:	$1.3M

PARTICIPANTS

PMS 400D
Ingalls Shipbuilding
Naval Surface Warfare Center, Carderock Division
NMC
ONR Navy ManTech