

Ingalls Shipbuilding Begins Implementing Work Cell Technologies to Reduce Manufacturing Costs

Status: Implemented

PROBLEM / OBJECTIVE

The Navy Metalworking Center (NMC) conducted a ManTech project to improve efficiencies at the Ingalls Shipbuilding (Ingalls) Industrial Products Division (IPD) shop, which fabricates hundreds of relatively small, high-volume parts per ship, mostly using manual labor at individual stations throughout the facility. The project team developed and implemented automated or mechanized technologies supporting a work cell approach that is expected to result in improved efficiencies and reduced shipbuilding costs.

ACCOMPLISHMENTS / PAYOFF

Process Improvement:

The Integrated Project Team (IPT) assessed the fabrication processes and down-selected part families and target areas for mechanization and/or automation of processes in the Ingalls IPD shop. Using that information, NMC and Ingalls developed several concepts to support development and implementation of a work cell approach for the selected target areas. Specifically, the IPT developed work cells for robotic welding of padeyes, stair tread, and ladder assemblies. Additionally, the team mechanized manhole fabrication processes by developing a stud welding station featuring a mechanical arm and a hole punching die that places 26 holes at once to increase efficiency and reduce rework. Each of the technologies were functionality tested at NMC and pilot tested at Ingalls.

Implementation and Technology Transfer:

Due to the successful functionality testing and technology validation, Ingalls is pursuing implementation of the following technologies:

- Manhole stud welding station – implemented (FEB 2017)
- Robotic welding cell for padeyes & stair treads – implemented (MAR 2017)
- Robotic welding of vertical ladders – pending
- Manhole cover punching – pending



A manufacturing work cell approach that mechanizes various processes will reduce costs, improve quality, and increase throughput on multiple naval platforms.
(CTC photo)

Expected Benefits and Warfighter Impact:

- Projected 5-year savings for Navy hulls constructed at Ingalls is \$6.9M
- Reduced material handling using a more efficient work flow while increasing throughput
- Reduced touch labor and improved ergonomics
- Improved part quality and reduced rework
- Benefits to construction of NSC hulls

TIME LINE / MILESTONE

Start Date:	January 2015
End Date:	March 2017

FUNDING

Navy ManTech Investment:	\$1.4M
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PARTICIPANTS

DDG 51 Class Program Office (PMS 400D)
Naval Surface Warfare Center, Carderock Division
Huntington-Ingalls Shipbuilding
NMC
ONR Navy ManTech

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