

# 2015 Maintenance Innovation Challenge

## Laser Thermal Forming

### PROBLEM STATEMENT

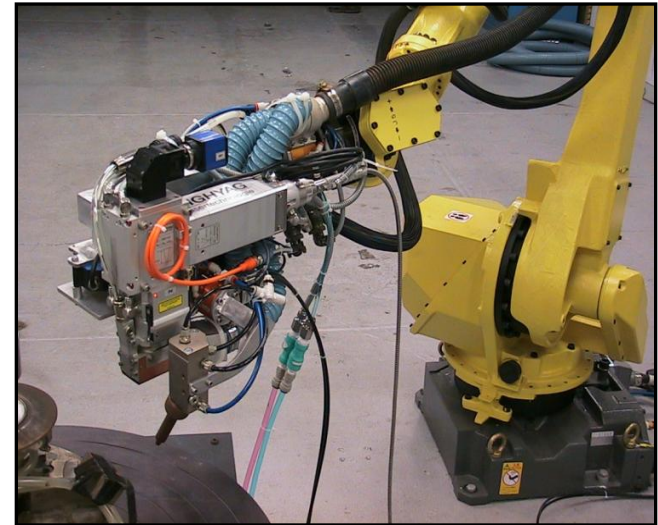
- One of the byproducts of using high temperature Additive Manufacturing (AM) processes (laser cladding, plasma spray, etc.) for refurbishment purposes is the weld distortions that can cause part features to warp out of tolerance
- There is a growing interest in using high temperature AM technologies to refurbish worn down assets and extend their shelf life, so developing ways to mitigate weld distortion is an important concern to consider

### BENEFITS

- This effort will help expand the ability to refurbish worn down assets and extend their shelf life
- Achieve considerable life cycle cost savings
- Support systems that have obsolescent assets or components and a limited number of supply

### TECHNOLOGY SOLUTION

- Naval Undersea Warfare Center Keyport has developed and utilized a means to mitigate weld distortions using existing equipment and setup
- Utilizing the 4kW Robotic Laser Cladding System stationed at NUWC Keyport, perform thermal forming operations by inducing surface yielding of an asset to bring its features back into tolerance via localized heating



4kW Robotic Laser Cladding System – Distribution Statement A: Approved for Public Release; Distribution is unlimited. NUWC Keyport #10-005