



## Commercial Underwater Ship Husbandry

Phoenix International's Commercial Underwater Ship Husbandry Division (CUSH) offers a full range of experience, capabilities and equipment to provide quality repairs to commercial ships, oil and gas platforms, and the marine infrastructure construction and service industry. Whether it is a planned inspection or repair – or an unexpected emergency, our teams of highly qualified and experienced personnel are able to provide services 24/7 to aid our clients in avoiding critical downtime. Phoenix is approved by all appropriate classing agencies and is well versed in coordinating the planning, manpower and logistics to complete and waterborne repair. Each repair is followed by a professional, timely and concise report. We proudly offer:

### Underwater Inspections, Cleaning and NDT

- Class approved in-water surveys
- Full hull cleaning and propeller polishing
- Wet and dry NDT – all methods including thickness-gauging
- Video inspections for damage documentation, pre-purchase and pre-dry dock

### Waterborne Repairs

- Topside, Dry Hyperbaric and Wet Welding
- Class approved hull, propeller and rudder repair
- Stern tube and azipod seal replacement and repair
- Tunnel and dropdown thruster repair and modification
- Aperture blanking for valve repairs
- Collision/grounding damage assessment
- Impressed Current Cathodic Protection (ICCP) system repair and component replacement

### Contact us to learn more

[www.phnx-international.com](http://www.phnx-international.com)

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Bayou Vista, LA | Ft. Lauderdale, FL | Houston, TX | Largo, MD  
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**Phoenix International Holdings, Inc.**  
An employee owned company



Our repair methodology is rooted in a matchless combination of engineers who understand the dynamics of the underwater environment and an experienced team of underwater diver / technicians who use class approved procedures for inspection, rigging and repairs.

## Topside, Dry Hyperbaric and Wet Welding

AWS D3.6, AWS D1.1, AWS D1.6, NAVSEA and class approved procedures

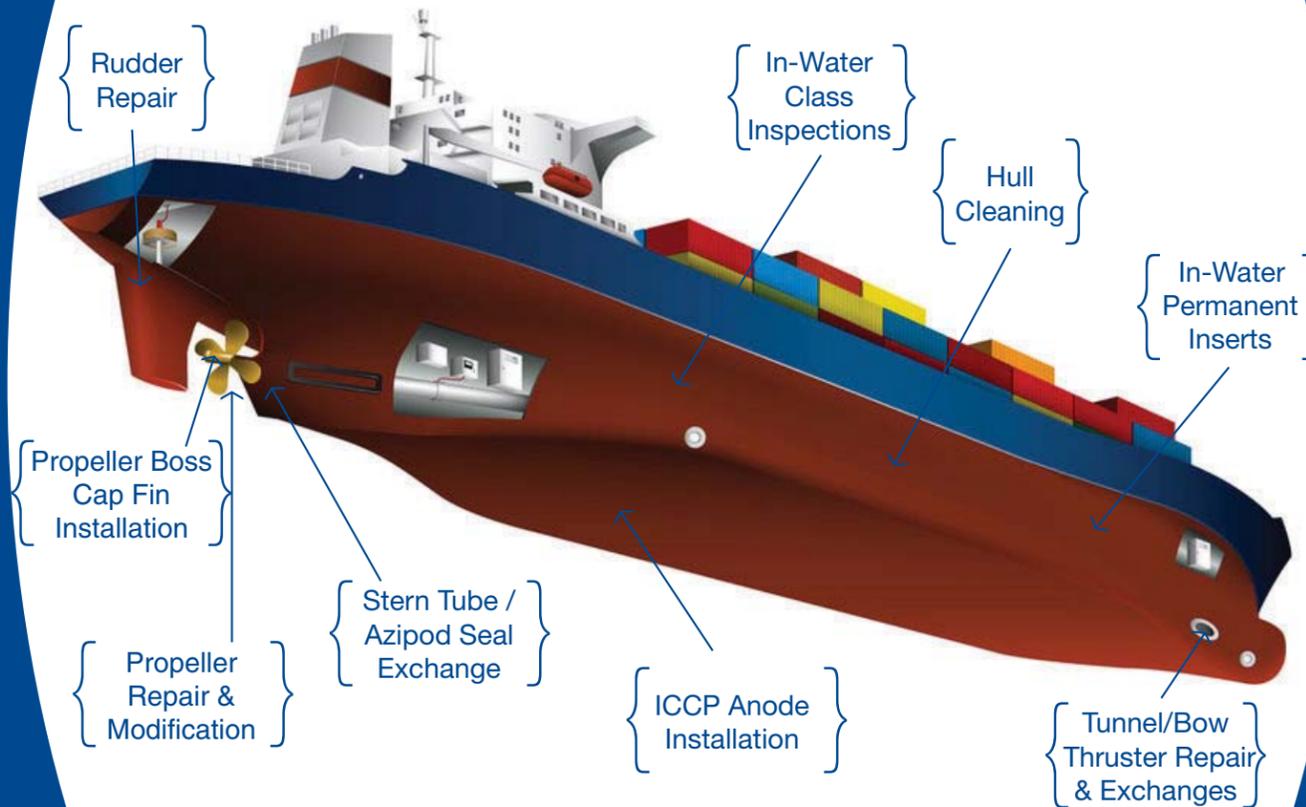
- Wet weld permanent and temporary repairs
- Anode installation
- Rope guard, fairwater access and cover removal and/or installation
- Bilge keel repair and/or reinforcement
- Hull inserts
- Welding of regular, high strength and alloy steels
- Surface and hyperbaric welding of structural aluminum alloys 5083, 6061 and 6082

## Hull, Propeller and Rudder Repair

- Hull cleaning (site permitting), repair and coating
- Sophisticated, shop quality propeller repairs and modifications (no schedule deviation)
- Propeller polishing
- Cofferdam fabrication and installation
- Expert damage inspection and measurement
- Straightening large bends (cold bending)
- Fully engineered design modifications
- Static and hydrodynamic balancing
- Replacement of CPP blades
- Rudder repairs and component replacement
- Fin stabilizer repair
- Shaft wraps



Phoenix CUSH Services



## Stern Tube / Azipod Seal Replacement and Repair

- OEM certified replacements and repairs of major seals with no need for dry docking
- Lip seals replaced and bonded underwater in dry conditions using portable habitat
- Complete system replacement
- Face seals
- Bow and stern thruster seals
- Controlled pitch propeller seals
- Stabilizer component seals

## Tunnel & Dropdown Thruster Repair and Modification

- In-water thruster removal and servicing
- Extraction of thrusters for on-shore repair
- OEM approved installation

## Extensive Network

Leveraging partnerships cultivated through years of professional cooperation, Phoenix is able to provide clients with a full complement of underwater repair services in multiple locations worldwide. These agreements allow for on-site teams of highly qualified welder/divers, supervisors and project managers to be mobilized quickly for maximum efficiency and minimum downtime – all backed by a group of experienced, multi-disciplined engineers for total project support.

## Classifications



RINA  
Certified Service Supplier

ClassNK

