Compact Work Class ROVs; a Solution for Offshore Wind Support

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The offshore wind market has seen tremendous growth and expansion over the past seven years. Since 1991, when the first wind farm was installed by Denmark in the Baltic Sea, growth has had an upward trajectory. In the first six months of 2013, worldwide capacity expanded by 20 percent. Existing fields are adding turbines while new sites are actively being developed.

There are two basic categories of offshore turbines – those with a solid foundation on the seabed and those that are floating, but anchored. While the vast majority of maintenance and repair occurs in the surface equipment, there is still a need to inspect and work subsea. Subsea tasks include: initial site survey and evaluation of the seabed, environmental impact assessment on the seabed, composition and density of sediments, monitoring of anchors/foundations, post storm inspections for scour or other damage, post earthquake inspections. There is also the potential of strikes from vessels or entanglements with marine debris that may damage anchors or foundations.

Today, shallow water, light rig inspection work is often done with small electric ROVs. Work tasks and deep water inspection is frequently done on a "drive by" basis by large work class systems as they transit between deployment sites. While this method works for the most part, it means that maintenance might be deferred awaiting a drive by inspection or that costs may run higher than anticipated when a large ship with dual work class ROV systems must be brought in for routine rig tasks. The compact hydraulic ROV systems built by DOER can be used to support a variety of rig support tasks while working from smaller dive support/supply vessels. Designed and made in the USA, these systems are robust and straightforward to maintain and operate.

DOER offers two basic sizes of these H series ROVs. The smaller size utilizes six each, two horsepower hydraulic thrusters with a twenty horsepower motor. A DOER Sea Mantis five-function manipulator comes included as standard equipment with an option for a second manipulator. It may be operated with or without a tether management system. With overall dimensions of just 60"L x 39"Wx38"H, it is smaller than many of the large electric systems. DOER originally designed this system to support science, film, and diving operations. However, its small size makes it ideal for diving, ADS and rig support- the kinds of tasks often done with electric systems, but with the benefits of being easier to maintain while capable of light work tasks.

The larger size H series is highly configurable and can be tailored to client needs with motors ranging from 25 to 75 horsepower. Typical dimensions are 80”Lx55”Wx58”H. Weight in air for a typical 25hp vehicle is 2700 pounds – extremely light for a hydraulic system with this much power. These systems are equipped with seven, four and five HP thrusters, all with proportional control. These systems come standard with DOER’s five function Sea Mantis manipulator but are capable of interfacing with Schilling and Kraft manipulator systems as well. While large electric ROVs can also support dual manipulators, users must integrate separate hydraulic systems in order to do so. When starting with a hydraulic system, such integrations are straightforward and more useable payload is retained.

A top hat TMS is typically used with these systems. DOER’s TMS utilizes our exclusive capstan drive system ensuring smooth pay in and pay out of tether. The TMS can support two optional thrusters along with cameras and lighting packages. The thrusters allow the TMS to be positioned independent of the ROV, a feature that is especially useful when working from vessels of opportunity.

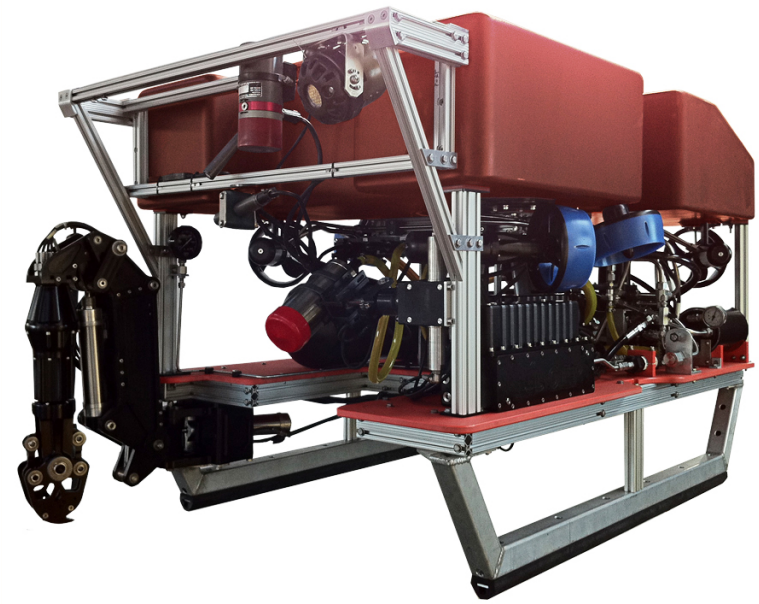
All of DOER’s ROV systems are designed for containerization and rapid deployment. The ultra compact systems can be configured to fit into one twenty-foot van. The larger H series systems are configured for two-van packing. Winches for longer armored umbilical can be containerized or shipped via flat rack. This helps owners to control shipping costs and ease logistics planning when shipping by truck, train, or commercial container ship.

Although electric ROVs have come a very long way in the past twenty years, the vast majority of offshore technical support personnel are still most comfortable with operating and maintaining hydraulic systems. Thrusters, manifolds, compensators and manipulators are all very straightforward to service by any marine technician. The electrical systems on DOER ROVs are robust and nearly all enclosures are oil filled. Connector ports allow a variety of ancillary devices to be integrated to the ROVs without opening enclosures for re-wiring. Software systems can be securely accessed via the Internet allowing DOER engineers to assist with troubleshooting or providing systems upgrades remotely. DOER systems are designed to grow with technology providing superior value over the life of the ROV system.

A typical DOER ROV requires only two or three personnel to operate and support the system; pilot, co-pilot/manipulator operator and technician/data manager. This puts these systems on par with medium to large electric inspection class systems and is more economical to staff than large work class support teams.

The remarkable advances in materials and technology over the past ten years have allowed hydraulic ROVs to come down in size without compromising on capabilities. DOER works hard to ensure that raw materials and ancillary devices come from other US based B2B suppliers whenever possible. As a result, the H series ROV systems provide a solid, value added choice for commercial diving and offshore

support firms wanting to better support their clients while also supporting manufacturing in the USA.



DOER H series 2000m system with one five function manipulator

DOER H Series 2000m ROV deployment

DOER H Series 25HP 6000m ROV with top hat TMS deployment

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