

The Hibbard Inshore Saab Hybrid ROV/AUV is used for tunnel inspection and deepwater surveys



Underwater inspectors

Hibbard Inshore’s ROV technology is enabling robots to carry out underwater assessments for hydropower and offshore renewable energy plants. The company’s Dave Malak reports

Utilising robots to perform inspection of renewable energy plants’ critical underwater assets might

sound complex. But advances in Remotely Operated Vehicle (ROV) technology have allowed Hibbard Inshore to inspect

underwater hydropower structures with less risk, while often reducing overall project costs.

Power generation plants take different forms and, increasingly, many of these power sources require a portion of their critical assets to be located underwater. This adds unique challenges to their operation and maintenance. Underwater assets at hydroelectric power plants can include the reservoir, dam structure, pressure piping, tunnels, gates, and/or valves that are necessary to transport and control the water required for generation. Offshore wind farms and tidal generation turbines, on the other hand, can have long transmission cables and be located in deep waters or high current areas. Today, it is widely accepted that the underwater inspection of critical assets should be a major component of a good preventive maintenance plan.

Until the mid-1980s, the options for inspection were to dewater the portion of the asset to be inspected, use commercial divers where safe and possible, or perform the inspection or survey with sensors towed from a boat. Dewatering presents a number of challenges including long downtimes, detrimental impacts on fisheries, and stressing of the structure. Draining the water removes the added structural support normally provided by the water pressure and allows materials to dry and contract. This can expedite cracking and degradation. With the advances in ROV technology, fewer inspections have required dewatering.

These advances in ROV technology have allowed previously difficult inspection and maintenance work, due to low visibility, deep water, high currents, long distance confined entry, or potential underwater hazards, now to be completed in a fully flooded state with little risk to human life and minimal generating outage times. The shortened, reduced-flow time periods or outages required due to today’s technology minimise the environmental impact on valuable fisheries, and undue

REASONS FOR INSPECTION

Underwater inspections and surveys are necessary for the following reasons

- To identify potential issues with an underwater asset proactively in order to increase its lifespan
- As proof that the asset was constructed properly and is insurable after commissioning
- To identify hazards or materials that may reduce productivity levels and to devise plans for their removal
- To determine the proper location for an offshore asset and to determine the route for cables
- To reduce risks to the structures caused by dewatering
- To reduce the overall cost or downtime related to inspection

stress is not placed on the structure by removing the water. In addition to safely accessing confined areas and the advantage of unlimited bottom time, ROVs can improve survey accuracy over that of instruments towed from a boat, as the ROV is able to swim in closer proximity to the area being surveyed.

As a forward-looking company, Hibbard Inshore recognises that inspecting and maintaining the underwater portions of power production assets is a unique challenge and aims to offer cost effective solutions for these issues using ROVs. The

company has operated a fleet of ROVs for underwater inspection and construction since 1984 and has performed these projects worldwide.

The systems are shippable by air, can be scaled to fit project needs, and can utilise smaller vessels of opportunity in offshore situations. These ROVs can travel to distances greater than 20km from a single access point and to 2,000m of depth. They can be equipped with sensors, including multiple types of 2D and 3D sonar, as well as video cameras, lighting, ultrasonic thickness gauges, navigation and tracking systems for survey. They can also be equipped with tooling to perform cutting, lifting, retrieval, dredging, debris removal, the permanent plugging of holes or temporary plugging of pressure pipes for valve replacement projects. ■



Hibbard Inshore's Sub-Atlantic Navajo ROV ready for deployment from a work vessel to perform hydroelectric dam inspection