



An artist's view of Remedial Offshore's Elevating Support Vessel (ESV) design. The ESV is the world's first DP-1 self-propelled, 100 m nominal water depth-rated jack-up well intervention vessel/platform.

GE V228 Diesels for Unique, Self-propelled Well Remediation Vessel

Remedial Offshore recently announced the purchase of V228 medium-speed diesel engines from GE Marine, Erie, Pennsylvania, U.S.A. The engines will be used to power a new breed of offshore well servicing equipment, which is Remedial Offshore's Elevating Support Vessel (ESV) design.

As the world's first DP-1 self-propelled, 100 m nominal water depth-rated jack-up well intervention vessel/platform, Remedial Offshore's ESV design provides a hybrid between a jack-up drilling rig and a marine vessel, according to Greg Salerno, vice president – corporate media for the Limassol, Cyprus-based company. The new ESV concept offers tremendous versatility and operational functionality, ranging from an incorporated high-capacity crane and electric well workover package to a large open deck for offshore support functions. Each vessel is uniquely outfitted to provide a stable work environment for deploying today's most advanced well intervention or production enhancement technologies.

ESV abilities include well workovers, sidetracking, well abandonment, facility upgrades, brownfield rejuvenation projects and small field developments, as well as providing complete services for well intervention.

"Our ESV concept is unique," Salerno noted. "To date, comparable services have been performed from floating vessels or barges, or from jack-up rigs that are not self-propelled. Being self-propelled eliminates the need for tugs and anchor handlers. This simplifies logistics and scheduling, particularly when work at one well platform has concluded and we are ready to move to another site. Being elevated allows us to continue operations during weather conditions when other vessels might have to suspend work."

Each ESV will employ four GE diesels — one eight-cylinder V228 and three 16-cylinder engines. Two Remedial Offshore ESVs are under construction in China, one at the Yantai Raffles Shipyard Ltd. in Shandong, and the second at the COSCO Shipyard Group's

facility in Nantong. GE has already delivered to the shipyards two 8V228 and six 16V228 engines, manufactured at the company's Grove City, Pennsylvania, facility.

"The generator set configuration is conventional for this sort of marine application, but the amount of power generating capacity we have available is higher than typical, so that gives us greater redundancy and operational flexibility," Salerno explained. "For example, virtually every well platform has multiple wells, and we'll have ample onboard power to conduct simultaneous operations on more than one well at a time, or to allow specialized contractors to conduct other electrically driven work aboard the platform while we're making crane lifts or performing remedial work with our electric workover rig package."

The GE engines meet Remedial Offshore's design and operational criteria, such as the ability to have sufficient power available with a minimal number of engines in the existing space,



Power for the diesel-electric propulsion, as well as the working and hotel loads, is provided by four GE Transportation diesels — one eight-cylinder V228 and three 16-cylinder engines.

while ensuring adequate redundancy. GE's engines also offered specific maintenance advantages for ESV operations, where an engine might run for extended periods of time under little or no load. In addition, Remedial Offshore will have access to GE's worldwide parts and service supply network. Each ESV will also benefit from the engines' fuel-efficiency and performance that carries U.S. Environmental Protection Agency Tier II emissions compliance certification.

"Although it is likely we'll be operating outside EPA jurisdiction — the ESV concept can be deployed anywhere in the world where there is a sufficient number of wells in coastal waters — the Tier II standard is well aligned with regional regulations elsewhere and provides a good performance benchmark. It also differentiates our solution from older technologies."

Remedial Offshore's ESV technology provides stable offshore work platforms specifically designed and purpose-built to support remedial oil and gas activities and applications. The ESV concept is fully compatible with advanced well intervention technologies and facilitates mature field rejuvenation.

The ESVs allow global deployment in

a vast number of mature basins. Among several key features, each ESV is self-propelled (7 knots); can carry more than 2722 metric tons of variable load; has a high-capacity, 280 metric ton pedestal crane on a traversing substructure that does not obstruct equipment on the large, open deck (1300 m²); and is self-elevating, which enhances safety and extends the "weather window" in which it can operate.

"We are delighted to work with Remedial Offshore to provide engines for this novel application," said John Manison, manager of GE Marine. "We are confident that, coupled with our outstanding service and support network, our engines will reliably meet the operating requirements for this new-generation vessel."

Remedial Offshore Chief Executive Officer Rich Altman, added, "We knew this would not be an easy task to fulfill and stay within a reasonable budget. We are extremely satisfied with having made this decision and we look forward to future opportunities and joint cooperation with GE. We will definitely draw on our relationship to refine performance and address any future operating environmental regulations that come our way."

The most significant pieces of equipment aboard the vessel are the high-capacity crane and the electric workover package, Salerno said.

"We provide a stable work platform for other services, such as large fracturing operations and other pressure-pumping applications, wireline operations, coiled tubing drilling, etc., but those services are likely to be performed by specialized third parties under contract to our clients," Salerno said. "Our vessel and well operations crews will occupy only about one-third of our onboard accommodations, so we're well prepared to host client personnel and third-party contractors."

"Our high-capacity crane allows us to support a number of facility-oriented applications, such as compressor upgrades, water-handling expansions and commissioning, as well as a broad range of well-oriented operations," Salerno continued.

"These vessels — two of which are already under construction — are capable of working anywhere in the world in water depths to 100 meters. That describes large portions of the Gulf of Mexico, coastal waters in South America, vast areas in Indonesia and throughout Southeast Asia, offshore India, etc." 🐦