

High Efficiency Solar Based Solutions

Solar Powers Offshore Oil Rigs in Southeast Asia

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Remco Vonk

General Manager Asia & Pacific,
Orga BV

Summary

With challenges accessing offshore unmanned wellhead platforms for maintenance, reliability is key for the assets' power generation systems. In 2019, Orga BV outfitted eight of PTTEP's wellhead platforms with solar using a Morningstar TriStar™ to meet space and uptime requirements.

Situation

Offshore unmanned wellhead platforms grace the waters of Southeast Asia. These unmanned automated oil and gas assets are designed for remote operation controlled by onshore teams. Deploying maintenance crews in harsh sea conditions is treacherous and expensive, so reliability is of the utmost importance when it comes to the power generation systems deployed on these assets.

Over the last 20 years, many offshore oil and gas operators have switched to solar-based power generation solutions to minimize maintenance and maximize power availability in the confined space available on these units.

As a company with many years of experience in providing highly reliable solar-powered aids to navigation systems, Orga BV has worked with many large oil and gas clients that wanted to make the switch.

"When we started, solar power generation was not widely used to power a complete platform," Remco Vonk, General Manager Asia & Pacific, Orga BV, said. "We focused on how we could make systems highly reliable, compact, and safe for installation in explosive atmosphere areas whilst providing the maintenance and overall cost savings our clients were looking for. Now, more of our clients choose solar-based power generation solutions."



Project

One example is PTTEP's wellhead projects in the Gulf of Thailand. Orga outfitted eight platforms with solar power and battery backup systems storing 15 kWh/day. As with most offshore assets, space on the wellhead platforms was limited. Orga's head office in Schiedam, The Netherlands, and regional sales office in Malaysia carried out a detailed evaluation of options and provided PTTEP with a solar power system design customized for the project— including a backup power generation option where needed. One of Orga's design tools uses NASA's statistical weather data to model solar performance throughout the years and match the continuous power requirements of the wellhead platforms.

Several brands of charge controllers require manual resetting. While not a problem in typical manned installations, manual restarts become expensive and dangerous on remote oil platforms because it requires sending out teams of certified personnel.

Orga recognized the need for solar charging system components capable of reliable, "hands off" operation when designing a reliable, compact, cost-effective solution to achieve high efficiency with minimum maintenance.



Solution

Morningstar's TriStar solar charge controllers were a perfect solution. Vonk said that Morningstar components fit well into Orga's installations because the charge controller manufacturer's MPPT technology minimizes expensive enclosure space requirements.

"Approximately 10 years ago, we standardized using Morningstar MPPT solar controllers in our Hazardous Area Zone-certified solar power systems for use in safety-critical power systems for offshore oil and gas assets," he said. "The high-efficiency nature of the Morningstar products is uniquely suited for our needs. They are compact and perform in the high-temperature conditions experienced when they are incorporated into our explosion-proof control systems installed in certified enclosures. Most importantly, they have proven to be 'fit and forget.' With Morningstar, we know we won't have to go back for expensive service calls in the field."

Orga's autonomous power systems with embedded Morningstar controllers have repeatedly proven their value in these harsh offshore locations, with their extended maintenance intervals. As a result, PTTEP has engaged Orga for subsequent phases of the project.

Orga has completed numerous similar projects using Morningstar TriStar, ProStar and SunSaver controllers for other offshore assets in the Asian region for customers including Petronas, Total, and Hess.