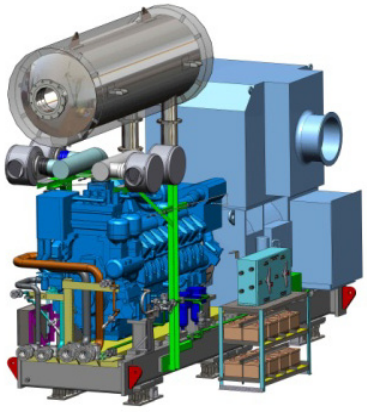
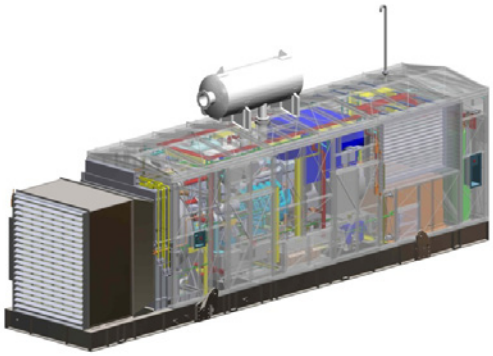
Introduction



Through progressively enhancing our capabilities in relation to the Oil & Gas industry, MPower has supplied two power packages for the Woodside North Rankin 2 Project; one of which was a Black Start Generator (BSG) and the other, an Essential Diesel Generator (EDG). Both generators were designed to meet strict specifications by Woodside as well as Australian and industry standards.

Project Details



With the BSG to be used on an offshore gas platform, it was imperative for it to withstand harsh environmental conditions including CAT 5 cyclones. The offshore environment is renowned for high corrosion and therefore higher grade stainless steels such as 316 grade and duplex grade were specified in addition to specialised coating methods such as TSA (thermal spray aluminium). The packages were also designed with space and weight restraints in mind with space often coming at a premium on offshore gas platforms.

In addition to strict design specifications, there were also strict safety factors to consider when performing structural analysis. With many of these safety factors being above and beyond Australian standards including dynamic amplification factors for lifting; the standards were often double that of normal design loads.

The Electrical Installation



Each alternator was supplied with an air to air heat exchanger to help minimise the salt water content ingress to the alternator windings. The cable installed on the packages needed to meet the Woodside specifications for offshore cabling which comprised of Australian Standards and multiple IEC standards all of which required the cables to be:

- flame retardant,
- chemical resistant,
- low smoke,
- halogen free and tear resistant

This meant that there was minimal damage to the cables during installation. The Unit Control Panel (UCP) and junction boxes that are outside of the air conditioned rooms achieved an ingress rating of IP56 or better to increase protection of the internal components from risk of corrosion and water damage during inclement weather conditions

Each package was designed so that if external protection systems for the generator were to fail, it would shut down. However, if supply is required after the systems are shutdown, the external protection systems could be bypassed to allow the generators to start in a “black start” scenario.



In the case of a loss of the AC essential supply, the control system is battery backed and would be operational for a period of no less than 12 hours. Upon reinstatement of the AC essential supply, the control batteries would be fully recharged within 12 hours. There is also a fully redundant DC supply used on each starter motor, in case one set of starter batteries require replacement.

System Features

Design, manufacture, test and commission Blackstart Generator (BSG) with a power rating of 2.2MW plus Essential Diesel Generator (EDG) with a power rating of 1.7MW

- 25 year Design Life.
- CAT 5 Cyclone rating.
- BSG enclosure made of 316L Stainless steel.
- EDG mounted in a switch room.
- Designed and built to stringent Woodside oil and gas specifications.
- Project modelled using Solid works ® 3D modelling.
- IS instrumentation.
- Water mist fire protection.
- NDE testing
- Key Components: MTU oil and gas engines, AVK TEFC alternators, Allen Bradley PLC’s, Woodward controllers.