

Blakemere Engineering Pty Ltd 189 Planet Street | Welshpool WA 6106 www.blakemere.com.au

CLIENT

Major Operator

LOCATION

North West Shelf, Western Australia

PROJECT BACKGROUND

A major oil and gas operator contacted Blakemere to assist with rectifying several low IR electrical faults in their subsea control system. The electrical faults appeared to be caused by the electrical terminations and connectors at the ends of the umbilical, within the Umbilical Termination Assemblies (UTAs). These terminations and connectors are common place in the subsea industry worldwide.

Historically the standard method of repair for such a fault is to reterminate the umbilical into a new UTA, or bypass the faulty UTAs with electrical jumpers. However, the client requested that Blakemere provide a solution that did not require a major retermination and could be retrofitted to the existing UTAs.

SOLUTION

Blakemere designed a standalone Electrical Distribution Unit (EDU) that could be installed either into, or on top of, the existing UTAs. The EDU housed all of the electrical components and connectors to replace the faulty system within the UTA.

The EDU was designed to be pressure compensated, allowing it to be filled with an electrically insulating gel in order to prevent the possibility of future water ingress and subsequent faults.

In order to install the EDUs, the UTAs must be brought up to the back deck of the vessel. Once on deck it is a simple process to mount the EDU, disconnect the existing electrical terminations and connectors, and terminate the electrical umbilical to the EDU. The EDUs are then tested on the back deck of the vessel











INNOVATION, BENEFITS, ADVANTAGES

The EDU box allows for a retrofit of the existing UTAs, which is a significant cost saving over building and reterminating new UTAs.

The installation of the EDU was completed within a single shift offshore. The main advantage of this fast install is that the fatigue on the umbilical is reduced to ALARP. Any time a UTA is lifted onto the back deck of a vessel the umbilical suffers stress cycles and fatigue due to vessel motion, as the umbilical moves at the touch down point on the seabed and the overboarding chute. A full UTA retermination takes significantly longer than the EDU install.

The use of a pressure compensated EDU box is a tried and tested design in the subsea industry, however the use of electrically insulating gel is a novel approach for filling the boxes. The gel used bonds to almost any material including the polyethylene umbilical cables and once set forms a seal to prevent seawater ingress. The gel has been proven to prevent electrical components from shorting in sea water, even when used with an unsealed box acting as a mold. Therefore, the gel is providing a 100% contingency to the EDU design.

The design allowed for a significant amount of the electrical wiring and testing to be completed prior to heading offshore, minimising the time spent offshore.

Installing an EDU only, rather than a full UTA retermination, means that the existing, still functional fibre optics and hydraulic connections can be left in place. It is only the faulty electrical components that are removed from the system and replaced.

DELIVERY

Delivery of the industry standard electrical components from a 3rd party are consistently the critical path for delivery of the EDUs, with a lead time of 3 to 4 months. Providing the connectors are available, a bespoke EDU box can be supplied within 4 weeks.

Once the UTA is landed on deck, complete offshore assembly and testing of the EDU can be completed within 6 hours. The installation of the EDU can be completed within 1 shift, meaning that the complete operation of UTA recovery to re-deployment and final testing of the UTAs can be completed within two shifts.



PHOTOS













CASE STUDY /// EDU REMEDIATION