

Safety Underwater – Bender Protects Subsea Systems and Remotely Operated Vehicles

The safety and reliability of subsea electrical systems and remotely operated vehicles (ROVs) is of paramount importance to oil and gas operations. Any system failings potentially have great consequences, due to the extreme conditions which make repair and recovery difficult and dangerous. Operators must have total confidence in the integrity of subsea operating systems, and effective monitoring plays a vital role by giving early warning of developing issues with systems and components facing the extreme pressures and hazards of the deep ocean.

Subsea Cable Monitoring
Effective monitoring of parallel subsea cables identifies trends in insulation resistance values informing operations and maintenance teams of cable degradation and developing electrical failure.

At SPE Offshore Europe 2019 Bender UK is showcasing its advanced ISOMETER® isoHR685 LIM (Line Insulation Monitor) developed specifically to monitor subsea umbilical cables. The device detects up to 10GΩ and monitors IT systems up to 1,760V DC and 12 kV AC to provide the early warning of cable degradation that improves operational efficiency.

Bender's subsea LIM is compliant to IEC 61557-8 and is universally applicable in AC, AC/DC and DC systems. It monitors AC systems with galvanically connected rectifiers or inverters, DC systems and AC systems that may include extensive DC-supplied loads (e.g. rectifiers, inverters and variable speed drives).

Interference from neighbouring monitoring devices in IT systems is suppressed and filtered by Bender's innovative 'ISOSync' feature enabling multiple LIMs to be fitted across the umbilical power cores. Up to 100 units can be synchronised without cross disturbance, continuously monitoring umbilical cables up to 10 GΩ which allows the trend of the insulation level to be recognised at an early stage.

The isoHR685 uses the extended Adapted Measuring Principle [AMP] to overcome limitations of DC measuring signals by superimposing a clocked, pulsed measuring voltage onto the system. The microprocessor-controlled signal automatically adapts to system conditions such as high leakage capacitances.

Remotely Operated Vehicles
Bender supplies a range of original equipment manufacturers both subsea and offshore with equipment to protect systems, production and personnel.

Bender ISOMETER® insulation monitoring devices are used in a range of ROVs to continuously monitor and provide early warning of insulation degradation in unearthed (IT) systems.

Bender offline monitoring solutions assess systems while offline and before deployment, in addition to identifying any electrical failure, water ingress, or component malfunctions. Advanced warning enables operators to recover the ROV before the problem becomes



Photo Courtesy: SAAB



critical and significantly reduces the risk of high value ROV assets failing or becoming inoperative, and the inevitable costly disruption to production schedules.

Bender UK Oil and Gas Business Manager, Phil Robinson, explains: "Collaborations of this sort play to our strengths, and we supply more than 90% of the ROV specialists active in the UK market. Bender's intelligent monitoring and measurement systems are designed to monitor and protect assets which work in some of the harshest operating conditions. We frequently partner with market leading ROV and robotic underwater vehicle manufacturers."

At SPE Offshore Europe 2019 Bender is demonstrating its total capability in electrical safety and asset integrity monitoring for oil, gas and subsea. For more information visit Stand 3J05.

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Subsea Remotely Operated Vehicles Protection Against Earth Faults

Safety in depth with Bender Earth Fault Monitoring Solutions

- ▶ Designed for use on AC, DC or AC/DC main circuits
- ▶ Monitors energised and de-energised systems
- ▶ Provides advanced warning of developing insulation failure
- ▶ Protects subsea assets and operators
- ▶ Integrates with existing OEM equipment
- ▶ Increases safety of operations



ONSHORE OFFSHORE SUBSEA