Application Story

July 18, 2017

Exploring hidden depths under the seabed.

Norwegian company Petro-Marker, developed a device that is able to collect data up to 5,000 meters underneath the seabed. The technology scans the bottom of the ocean in great detail providing information as to the location and size of oil reservoirs.

1,000 metres below the sea the environment is harsh, ice cold and very dark with no natural light. An ROV has strong floodlights that identify tri-pod objects anchored to the bottom of the seabed. These are receiver stations for electromagnetic waves transmitted into the seafloor, giving feedback on the seabed itself and finding resource deposits.

When oil companies want to find out whether drilling at depth is worth the cost, they often rely on Controlled Source Electro Magnetic (CSEM) technology. This technology utilises the differences in the electrical resistance of different bottom layers to provide signs of the location and size of oil fields. The CSEM technology uses a very strong power source to generate an electro-magnetic field, as well as several receivers to record the fields. These tripod receivers are placed on the sandy bottom and pick up electromagnetic signals that have been changed by the layers through which they passed.

In 2016 Petro-Marker placed 25 new tripods in the North Sea. What sets this technology apart is a new measuring method that uses a vertical transmitter and receiver to find resources. This enables a much more detailed resolution and data measurement up to 5,000 meters beneath the seafloor.

The tripods are about 4 meters high and made from a combination of glass fibre and special foams. Due to the sensitive electronics, metal parts cannot be used. This far below the surface, the pressure is extreme, and the salt water is hostile. At the centre of the tripods (receivers), the antennas are aligned as vertically as possible on the seabed.

The system uses a maxon controller (EPOS) and a compensator. The units are encased in plastic to protect them from salt-water corrosion. Several modifications were required to meet the requirements of this application: An EC-i 40 motor, GP 42 planetary gearhead and compensator that were all customised. A dual seal, that imitates typical submarine technology, ensures the system is able to resist the enormous water pressure. The control electronics of the underwater drive are housed in a pressure-neutral glass ball that is able to resist the pressures of up to 600 bar – one of the challenges of this extreme application.

For more information or to speak to one of our Sales Engineers call tel. +61 2 9457 7477.

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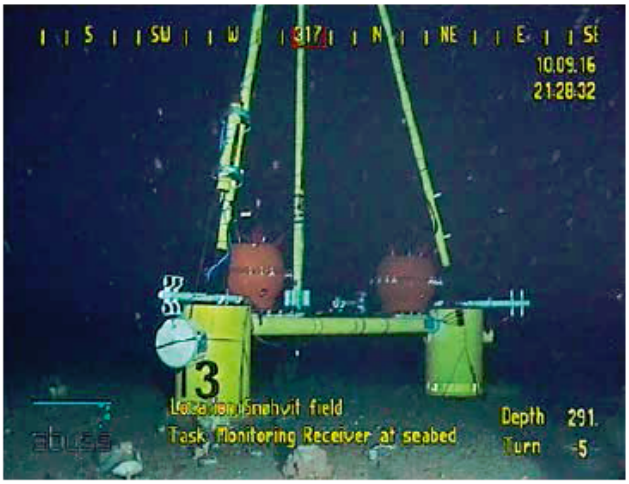
The media release is available on the internet at: www.maxonmotor.com.au



At the center of the tripods (receivers) the antennas are aligned as vertically as possible on the seabed. © maxon motor

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