

Specialised Survey ROV Offshore Testing is Underway



MMT Sweden and Reach Subsea have jointly invested in developing a new, special underwater tool for seabed mapping and pipeline inspection with the Norwegian ROV manufacturer Kystdesign. The potential market for pipeline inspection and survey in the North Sea is 2 billion NOK yearly. This new, remotely operated vehicle (ROV), called Surveyor Interceptor, has the innovative shape, powerful propulsion and advanced instrumentation performs the work 4-8 times faster than existing work-class ROVs. The umbilical and handling system yields up to 6 times better endurance than autonomous underwater vehicles (AUV). The automatic tracking and station holding system delivers unsurpassed stability.

Gassco operates the Norwegian gas transportation system, embracing nearly 8000 km of large diameter pipelines. The ROV is designed to carry survey instrumentation to perform pipe line inspection, route surveys, subsea installation surveys and environmental surveys down to 2,000m water depth. By combining a hydrodynamic favourable hull, thin umbilical and extreme propulsion with the latest sensors the vehicle is intended to deliver, never before ultra high-resolution data at a substantial lower cost per km.

The offshore testing is performed in the Haugesund area in Norway with economic support from Gassco. The ROV is onboard MV *Edda Fonn* and manned by survey specialists from MMT Sweden and ROV specialists from Reach Subsea and Kystdesign. The tests are covering launch & recovery, manoeuvring, velocity, automatic pipe tracking and survey systems.

Great emphasis is put to high resolution and accuracy. To achieve this the ROV is equipped with an onboard inverted USBL from Sonardyne doubled by regular Kongsberg Hipap transponders. This will increase accuracy and ensure redundancy. Also the positioning is supported by 2 INS systems (Sonardyne Sprint and iXBLue ROVINS) and a DVL (Linkquest Navquest 600P). The test of station holding, line running and tracking have given outstanding results.

The thruster management routines by Kystdesign have astounded us with reliability and precision. The ROV propulsion during tests speeds well over 6 knots with auxiliary power intact. The driveline will be adjusted after finishing the trials to ensure stability and power management up to 8 knots.

The Kongsberg EM2040 Quad Multibeam system delivers 40Hz ping up to 20m above seafloor. This together with the 800 beams ensures dense point coverage, even at high speed. To improve top of pipe accuracy and ovality measurements a 25Hz triangulating laser system from Cathx Ocean covers the central 5m of the survey corridor delivering mm accuracy measurements.

Three photomosaicing cameras are synchronised with powerful strobe lights, taking 3d, Stereo and geocorrected photos of the pipe to produce high resolution GIS data of pipe status and possible third party intervention. The exposure time is very short <5 milliseconds to avoid motion blur and ensure crisp color seafloor imagery. This is also a very valuable tool for environmental investigations and geohabitat classification. The quality of these systems are approximately 8-10 times that of standard HD video with georeferenced frames. The systems detail and mosaicking capacity is astonishing and a huge improvement over standard video.

Other equipment consists of an EdgeTech 600/1600kHz sidescan sonar and an EdgeTech DW106 sub-bottom profiler. Valeport provided the sound velocity profiler, the CT and the pressure sensor.