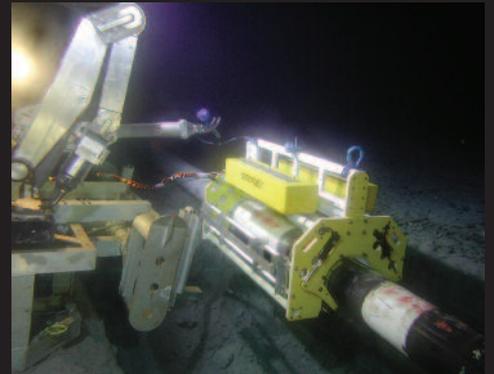


## Rov-iT

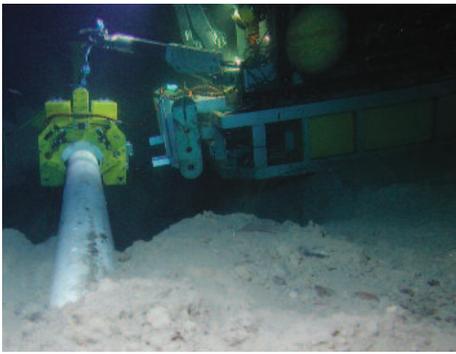
Sonomatic — the world's leading provider of automated ultrasonic subsea inspection for more than 30 years — has developed a range of ROV-deployed tools that offer significant advantages over traditional diver-deployed systems. Among the key benefits is the ability to carry out inspection work without the need for a dive support vessel, and at much greater depths.

Sonomatic has strategically-placed offices which allow us to respond to clients globally and supply a range of quality products backed by outstanding customer service. As well as providing field services, we also offer training and consultancy at our UK bases and at clients' premises anywhere in the world. Our commitment is to enhancing asset performance through applied, innovative technology, and delivering these benefits to our customers through our products and services. We are also committed to working with our customers as value-added partners to fully maximise the benefits of inspection technology.



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Sonomatic has offices in strategic global locations so we can respond quickly to customers' requirements wherever they may be situated. Our high quality products are matched only by our customer service. In addition to our field services, we offer training and consultancy at our sites in the UK or at clients' premises anywhere in the world. Sonomatic is committed to improving asset performance through applied and innovative technology; to delivering these benefits to our customers in the products and services that we provide; and to working with our customers, as value-added partners, to realise the maximum benefits of inspection technology.



Sonomatic's ROV-deployed tools have been designed for inspecting pipelines, risers, caissons, and structural assets. The tools are adaptable, operating on both horizontal and vertical pipes. Ranging from 6" to 30" diameter. A range of ultrasonic inspection techniques can be deployed, including corrosion mapping, Time of Flight Diffraction (TOFD), automated shear wave pulse echo, and component profile measurement.

They can be used for the following applications:

- Verification of ILI tool findings
- Inspection for internal corrosion and erosion (corrosion mapping and/or TOFD)
- Inspection for preferential weld corrosion/erosion (TOFD)
- Inspection for fatigue cracking (TOFD)
- Inspection for wet H<sub>2</sub>S damage in sour service (corrosion mapping, automated pulse echo and TOFD)
- Inspection for chloride pitting/SCC in corrosion resistant alloys (corrosion mapping, automated pulse echo and TOFD)
- Inspection of subsea fabrication and repair welds (TOFD and automated pulse echo)
- Component geometry measurement including ovality inspection (0 deg line scans).

The tools are built around Sonomatic's extensive field experience with challenging subsea inspections and integrate our proven Microplus ultrasonic systems and software with bespoke in-house designed scanner hardware. The ultrasonic system is located in a subsea module mounted on the ROV to allow high reliability digital transmission of data via the ROV's communication systems. After positioning by the ROV, the scanner is fully controlled by the inspection team topsides. The ultrasonic system is highly configurable for each specific application and provides a comprehensive range of presentation formats including A, B, C and D-Scans. The data is analysed real time using Sonomatic's proprietary software routines and analysis algorithms to allow accurate and reliable results to be provided in single or composite images for each inspection location. The full data sets, including individual a-scans, are also stored for detailed post inspection analysis and comparison with previous data.

The inspection systems can be adapted for use with work class ROVs, and can also be used with both wide-angle video cameras on a multiplexer and with LED lighting systems, which are pressured-rated to 2000 metres. The tools are

connected to the ROV via a short umbilical which supplies all electrical and motion services. Data is transferred in real time back to the surface through the ROV umbilical and no additional cabling is needed.

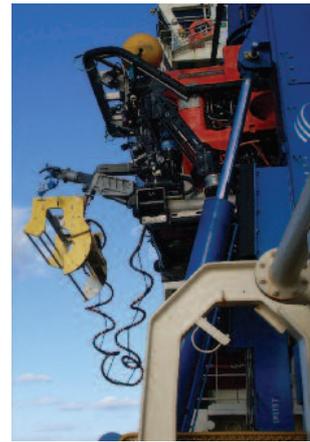
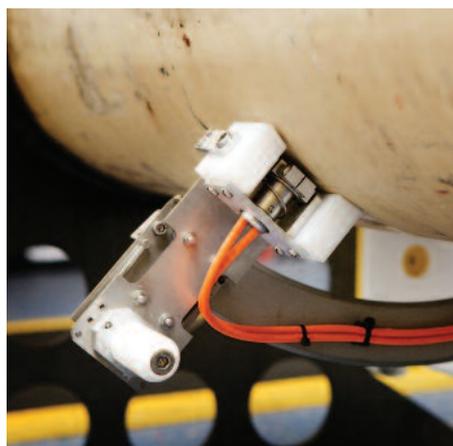
All additional services typically required for a subsea inspection campaign, such as excavation, weightcoat removal, cleaning and re-instatement, can be provided by ROV-operable tools.

### Key features

- Corrosion mapping, TOFD and automated pulse echo
- Inspection for a range of degradation mechanisms including corrosion, erosion and cracking
- Inspection for internal liner detection and component profile determination
- Flexible Riser Inspection
- Full 360 degree coverage
- Scan lengths of 1m
- 2000m depth-rated
- Horizontal and vertical scanning.

### Key benefits

- Cost-effective inspection
- No Dive Support Vessel (DSV) required
- Deepwater inspection capability
- Diverless operation reduces personnel risk
- Fully ROV-integrated operation
- Work class ROV deployable
- Rapid Inspection process
- Detailed verification of ILI data
- Accurate data for Fitness for Purpose Assessment
- Quality data suitable for statistical analysis in support of integrity management.
- Ability to determine degradation rates for use in remaining life assessment
- Effective monitoring of known damage
- 24V DC drawn from the ROV supply.



### QA and HS&E

It is Sonomatic's ongoing commitment to supply services and products, through the application of technical and engineering excellence, which complement both the customer's and our own QA and HS&E requirements.

Sonomatic's commitment to quality is maintained through continuous assessment and review of our Quality Management Systems to BS EN ISO 9001:2008. Sonomatic actively promotes the development, implementation and improvement of our QMS as a part of our ongoing drive to enhance customer satisfaction by meeting or exceeding customer requirements. In 2009 Sonomatic achieved UKAS accreditation as an Inspection Body to BS EN ISO/IEC 17020 (UKAS IB4276).