

TSC U41

Detection and sizing of surface-breaking cracks



U41 BENEFITS

Who else but Eddyfi Technologies to modernize subsea ACFM inspections?

MODERNIZING SUBSEA ACFM®

For the last 30 years, ACFM® technology has been used globally as the method of choice for the detection and sizing of subsea surface-breaking cracks. Recognized and approved by many certification bodies, including DNV, ABS and Lloyds, the technique has been used successfully against traditional uncomputerized and more user dependent methods, such as MPI.

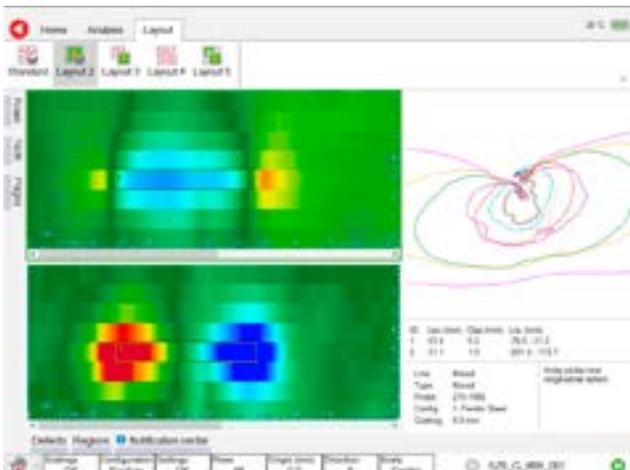
As today's industry is looking to scale the use of auditable NDT methods to all their assets, faster, more flexible, easier to deploy inspections and better reporting capabilities are required. Who else but Eddyfi Technologies to redefine and modernize subsea surface crack inspection with its new TSC U41.

APPLICATIONS

- Structural node welds on jackets
- Caisson inspection
- Pipeline damage
- Spudcans
- Welded plate structures
- Mooring systems including chains

FASTER INSPECTIONS

- Connect 3 probes simultaneously to avoid frequent returns to the surface, thus saving time.
- 10 x faster acquisition electronics, improving scanning capabilities and inspection integrity.
- Diver mini-array probe and ROV full-array probes reduces the number of scans and allows for faster recognition and characterization of defects.
- Reduced cleaning requirements, no need to clean to bare metal.



IMPROVED DATA QUALITY

- Increased ACFM signal quality with 14x increase in data resolution, improving the accuracy of data acquisition with the better ability to zoom on acquired signals.
- Probe calibration files are saved on the probe instead of a remote PC. This removes the potential for incorrect probe calibration being used.
- Lower noise increases the signal-to-noise ratio, inspect through coatings twice as thick compared to previous model
- Capable of inspecting corroded surfaces or through non-conducting coatings several millimeters thick.

EASIER TO USE

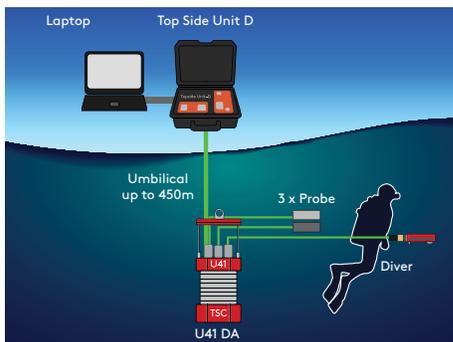
- New Assist3 reporting software version, with a simpler and more modern interface, and with continuous evolution.
- Umbilical reel dramatically reduced in size: 1/3 less weight and 1/3 less storage. Up to 3 umbilicals can be connected for a total length of 450 m.
- Easy to configure communications with support for multiple protocols to ROVs (Ethernet, RS232, RS485, VDSL).
- Global network of service centers

DEPLOYMENT METHODS

Bringing high-quality True ACFM inspection data to the surface

DIVER FROM FIXED PLATFORM, VESSEL OR FROM SATURATION BELL (U41D/U41DA)

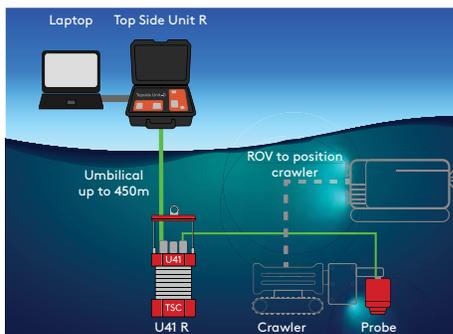
The subsea bottle is lowered to the diver and the diver uses probes connected to the bottle through a 5m cable. There is an umbilical cable from the bottle to a topside unit that provides power to the bottle and communication protocol conversion between the VDSL used down to the bottle and Ethernet which is connected to a controlling laptop. The umbilical is 150m standard with subsea connectors at both ends. Three umbilicals may be connected together for a total length of 450m. A 15m whip is provided between the top umbilical and the topside unit so that this can be temporarily fixed-routed to the dive shack (normal ACFM operator location). The diver uses simple Bx/Bz pair probes or the mini (8 channel) array (requires the DA version).



CRAWLER DEPLOYED FROM BASKET (U41R)

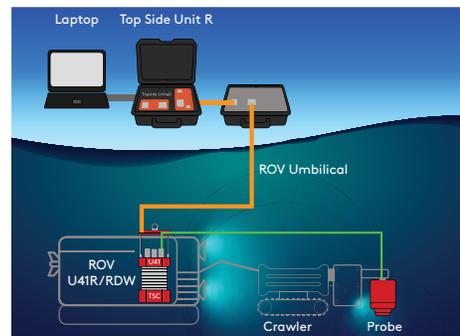
A remote crawler is used to inspect a weld or section of parent plate using a swept array probe. The crawler is placed in a basket with the bottle and joined via a long probe cable (up to 50m may be required). This is lowered over the side of a vessel or platform.

The crawler is taken out of the basket by an ROV which then places it near the work zone. The bottle is connected to the surface by its own umbilical (using VDSL - similar to the diver situation) and there is no electrical interface between the bottle and ROV.



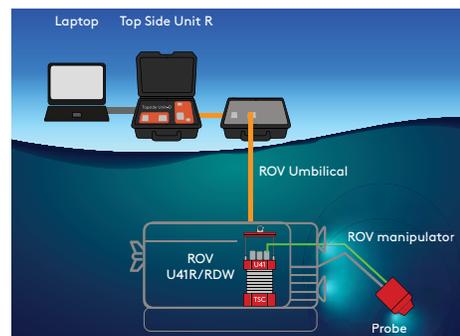
SCANNER USED WITH ROV (U41R/U41RDW)

A scanned array probe is fitted to a custom scanner which is itself deployed to the inspection site by a ROV. The bottle is integrated onto the ROV skid with a long umbilical to the probe (up to 50m required). A short whip is used to wire the bottle to the ROV electrical system through which the bottle receives power and comms. The ROV can have various comms protocols depending on the age and type of ROV. This can be RS232, RS485 (2-wire), RS485 (4-wire) or Ethernet. Whilst there is a move towards newer ROVs supporting Ethernet, there are still many ROVs that only have the older serial protocol facilities.



PICK-AND-PLACE ARRAY DEPLOYED DIRECTLY FROM ROV MANIPULATOR (U41R/U41RDW)

The connections are the same as the above however the probe is placed directly on a weld by the manipulator and held in place briefly while a short linear array of coils is read. The probe is then moved along the weld to a new place (ensuring some overlap with the previous placement) and another set of readings taken. The weld is therefore inspected in short sections that may be joined together.



SPECIFICATIONS

MODELS		U41D	U41DA	U41R	U41RDW
Connectors		3 × SENSU2 UW	3 × SENSU2 UW	3 × SENSU2 UW	3 × SENSU2 UW
Max umbilical length		450m (VDSL)	450m (VDSL)	450m (VDSL) ¹	450m (VDSL) ¹
Array		No	4 × rows mini	Up to 32 × rows	Up to 32 × rows
Communications		VDSL only	VDSL only	Ethernet/RS485/RS232/VDSL	Ethernet/RS485/RS232/VDSL
Depth rating		300 m	300 m	300 m	2000 m
Topside units type		Topside unit D	Topside unit D	Topside unit R	Topside unit R
Bottle dimension	with lifting cage	156 × 156 × 430 mm	156 × 156 × 430 mm	156 × 156 × 430 mm	Contact Us
	without lifting cage	156 × 156 × 292 mm	156 × 156 × 292 mm	156 × 156 × 292 mm	Contact Us
Bottle weight (in air)		9.2 kg	9.2 kg	9.2 kg	Contact Us
Frequency		Single	Dual	Multiple	Multiple

1. otherwise limited to ROV umbilical length

GENERAL	
Operating temperature range	0–45°C (32–113°F)
Environmental protection (topside unit)	IP64
Probe cable length	5m (16ft)
Umbilical cable length	20m (65ft) topside integration cable 150m (492ft) umbilical extension (Up to 3 can be used in series) (Max total length topside unit to bottle = 470m (1542ft))
Serial communications cable length	5m Ethernet cable to PC (supplied) Longer, off-the-shelf, Ethernet cables also can be used
Power requirements	Topside: 110 V AC / 400 mA U41: 48 Vdc / 1A

The information in this document is accurate as of its publication. Actual products may differ from those presented herein.

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