

INNOVATUM

CABLE MAGNETISER SYSTEM

Locating and tracking buried submarine cables at burial depths of greater than 1.5 metres has only been previously possible using an injected low frequency current (tone). Tone injection systems are limited by both distance and the requirement that the cable has often to be taken out of service during signal injection.

INNOVATUM now presents a new system, enabling passive tracking of armoured and un-armoured un-powered submarine fibre optic cables at depths of burial in excess of 3 metres, with the promise of more to follow!!

Using a simple magnetiser tool, (shown in use at right), the magnetisation of the cable armour or strength member is significantly increased prior to cable lay. This magnetisation may be carried out during manufacture, at cable loading to the lay vessel, or during the laying operation. The enhanced magnetisation is permanent, and the cable can thus easily be located many years later. The increased magnetisation has no harmful effect on the cable. A monitoring system is used to ensure and quality control the magnetisation achieved, and this data may be logged for future reference.

Using an **INNOVATUM SMARTRAK** or **ULTRA** tracking system in passive mode, the cable magnetisation signal is similar to a much larger target. Since the magnetisation is controlled, all of the cable has a similar signal, giving steady repeatable data. Tests have proved detection ranges in excess of 4 metres with an 11 mm diameter miniature fibre optic cable, and 6 metres with a 51 mm armoured cable. Accurate tracking and depth is given at ranges of 3 metres and 4 metres respectively. Future developments may include "coding" of the cable for identification and distance marking.

This new system will enable newly laid or repaired cables, buried to depths of more than 1 metre, to have their depth of burial protection accurately monitored without requiring an externally injected signal. The tracking performance is unaffected by signal traffic on the cable.

Use **INNOVATUM** to locate and track buried cables using all known methods - Passive Magnetic, Active AC (Tone), Active DC and Pulse Induction. Only **INNOVATUM** can offer all methods simultaneously with one system.

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INNOVATUM *INTERNATIONAL Ltd.*

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MAGNETISER FACTS

- * The magnets used in the *INNOVATUM* Magnetiser are commercial rare earth magnets with pole strengths of approximately 20,000 Gauss and are similar to magnets commonly used in motors, generators etc.
- The earth's surface field strength varies from 0.3 Gauss at the equator to 0.6 Gauss near the poles. Maximum magnetic field strengths of magnetised cable at a distance of 1 metre from the cable range from about 0.03 Gauss (smallest non-armoured cable) to 0.15 Gauss (large double armoured cable), i.e. between 10% and 50% of the earth's field at the equatorial surface.
- * Maximum field strength at 1 metre from the axis of a small cable is comparable to that of a 12 inch diameter steel pipeline at 1 metre from the pipe axis. Maximum field strength from a large double armoured cable is comparable to that from a 24 inch steel pipeline at 1 metre from the pipe axis.
- * Magnetic fields produced by the magnetiser have no effect on signal propagation in optical fibres.
- * Numerous studies have failed to identify any effects on fish, sharks, whales, or turtles due to magnetic fields at the levels produced in cables by the magnetiser.
- * Magnetisation of the cable is permanent if the stress in the cable does not exceed the elastic limit of the ferromagnetic material. Natural demagnetisation of the cable is a very slow process with a time scale of centuries.

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MAGNETISER PRICES

Effective 31 July 2007

1. SMALL DIAMETER CABLE MAGNETISER

0 to 1000 kilometres	GB£ 40.00 per kilometre
1001 to 10,000 kilometres	GB£ 20.00 per kilometre
10,001 to 100,000 kilometres	GB£ 10.00 per kilometre
100,000 kilometres +	Call for quote
Plus	
a) Onshore use	GB£ 100.00 per day
b) Offshore use	GB£ 170.00 per day

2. LARGE DIAMETER CABLE, FLEXIBLE FLOWLINE & PIPE MAGNETISER

a) Onshore use	GB£ 100.00 per day
Plus	GB£ 50.00 per kilometre
b) Offshore use	GB£ 170.00 per day
Plus	GB£ 50.00 per kilometre

3. ENGINEER FOR INSTALLATION & OPERATION

Per man per day	GB£ 445.00
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All days rates are charged strictly on a "Door to door" basis.
Tracking systems are available for lease or purchase.
Magnetisers are currently available for lease only.
All expenses recharged at documented cost plus 10%
Innovatum International Ltd standard terms and conditions apply

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