



MAGNETISING FAQs

Revision 2

Document Control

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Magnetising FAQs

The following products can be magnetised: cables, umbilical's, flexible flowlines and smaller diameter rigid pipes.

Why magnetise cables?

To allow tracking of these at significantly greater burial depth (Detection up to 5m, Tracking up to 4.5m). Magnetising impresses a coherent, strong, repeatable magnetic field onto the cable. The cable then becomes more detectable within the background fields to the Innovatum Smartrak cable and pipe tracking system. This increase in detectability allows high accuracy passive tracking, at greater depths. Magnetising is an add-on, extra service provided by Innovatum Ltd., purely to enhance the performance of Smartrak. Magnetising is an “insurance policy” as an aid for future location and survey of magnetised cables.

Smatrtak survey system can detect Magnetised cables in its “Passive Magnetic” mode, providing a major operational benefit as the cable does not need to be live or taken out of service so that a tone can be applied.

When was the first commercial cable magnetisation carried out by Innovatum?

Innovatum are the only company to offer a cable magnetising service and carried out the first commercial cable magnetisation in 1999, which has been successfully re-surveyed 18 years later. Since 1999 Innovatums Submarine cable magnetising service has grown in strength and has been used by the majority of the leading cable manufacturers. Innovatum has produced a separate Cable Magnetising Project History highlighting all cables magnetised

In 2018 Innovatum magnetised over 1000 km of submarine cables

What sort of cables, can be magnetised?

Any cable which has steel. (ferrous) content i.e. Any cable containing material that has an intrinsic magnetic field. This is normally in the cable armour.

What sort of cables, cannot be magnetised?

- Any cable with no steel (ferrous) content. For example: copper cable.
- Cables after they have been installed.
- Cables that have been previously magnetised.

Does magnetisation have any other side effects to the cable?

The magnetisation process only enhances the magnetic field of the metallic armour section of the cable and has no other effect to any other components.

What is magnetising?

Magnetising enhances the magnetic footprint of the cable by “organising” the intrinsic magnetic field of the ferrous content present. The controlled magnetisation process gives the

entire cable a magnetically similar signal, producing steady, repeatable data. The magnetisation signal is sufficiently strong to enable Smartrak Survey system to perform high accuracy of tracking in both the horizontal and vertical planes.

When is magnetisation carried out?

Magnetisation process can only be carried out pre-lay / pre installation.

The magnetising process can take place:

- During manufacture.
- At cable loading to the lay vessel (most straight forward, commonly used method).
- During the laying operation.
- Magnetisation process does not limit the speed of the cable movement or cable load out.

How long does magnetisation last?

- Magnetisation lasts for the lifetime of the cable if the stress on the cable does not exceed the elastic limit of the ferromagnetic material.
- Natural de-magnetisation of the cable is a very slow process with a time scale of centuries.

How is the magnetisation process carried out?

There are 2 types of Innovatum magnetising systems, mechanical and electrical. Mechanical magnetisers are used for small (up to 50mm diameter) cables. The cable is passed through a series of powerful rare earth magnets similar to those used in generators, motors etc. The second type is the electrical magnetiser, used for larger diameter cables and pipes, which are passed through an annulus of electro-magnets.

The magnetisation process continues for the entire length of the cable with continuous 24 hour operation. This process must be monitored by an Innovatum technician at all times. The magnetising equipment is set up in a position on the cable run, that allows 24 hour safe controlled operation; provides a suitable safe, work environment for the technician; has a power supply, and provides waterproof shelter for all electrical equipment.

Approximate dimensions of the larger magnetiser: L 2m x H 1.2m. x W 1.3m.

How does Innovatum prove a cable is magnetised?

The process is carried out and recorded by trained Innovatum personnel. During the process, a monitoring system checks and records that magnetising is measuring the magnetic strength against distance, typically shown as a sine wave on one of the monitoring laptops. The magnetic signal can also be checked using a field strength meter. The field should vary along the cable with peaks at approximately every 5 metres.

Innovatum provides a report of the measured magnetic field along the length of the cable after the process is completed.

When can we start passive tracking the magnetised cable with Smartrak?

Immediately post-lay and for the life of the cable and any time during the lifetime of the cable.

Is the magnetiser available for purchase or as a magnetising service only?

Magnetisers are not available for purchase, because magnetisation is a “one time only” process: there is no second chance if it is not carried out correctly. Therefore it is essential to ensure the process is carried out and recorded by trained personnel only.

By providing magnetising as a service only, Innovatum can guarantee that the cable is magnetised.

Costs

The costs charged to magnetise per kilometre, are kept to a minimum. An agreed day rate is charged for the hire of the magnetiser. Two technicians are required for 24 hour operation. Daily subsistence for the technicians is also charged.

Environmental Issues

Numerous studies have failed to identify any effects on fish, sharks, whales, dolphins or turtles due to magnetic fields at the levels produced by the magnetiser. The magnetic strength is considerably weaker than the earth’s magnetic field.