

IDENTIFICATION AND DETECTION OF BURIED NETWORKS

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RESPONDING TO CHALLENGES FOR IDENTIFICATION AND DETECTION OF BURIED NETWORKS

Densification and generalisation of **buried networks** (water, gas, electricity, telecommunication, etc...) has increased the **risk of damages to networks** by nearby construction work. These damages could seriously compromise the safety of construction workers as well as local residents and would generate significant costs to the community in case of an incident (water, gas, electricity or telecommunication network shutdown...).

Onset fitting of detection devices to buried networks could reduce costs generated by further investigations as well as help map out the network without delaying burying nor site delivery.











Samex company, specialised in signalling buried networks, can provide a range of detection devices suited to your needs.

Simple, tested devices, ease of use and **effectiveness** are characteristics of our products.





* TraceFil® device and its dedicated connector technology:

Detection system via a tracer wire which enables to detect, localise and characterise a buried network in a **continuous way**.

All types of networks, whether dry or humid, can be equipped with the IP68 CableBox access box which is compact and waterproof.

A tracer wire is connected to a surface transmitter via the CableBox access box.

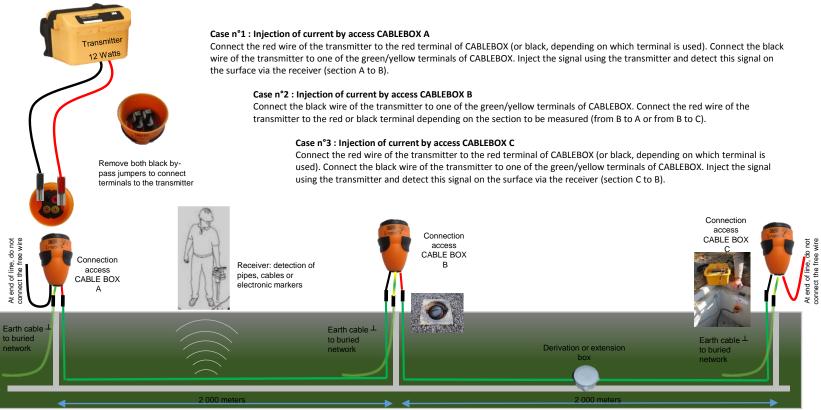
The detection is undertaken from surface access points, such as key-locked boxes, handholes, manholes, etc....





Set up of a main detection line for all types of networks



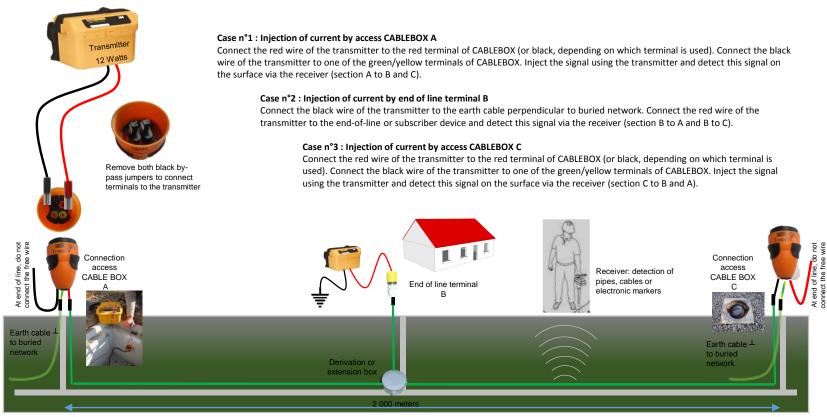


Ground application for identification and detection of buried network.



Set up of a main detection line and derivations for all types of networks





Ground application for identification and detection of buried network.







❖3 M Dynatel™ system:

3M Dynatel™ solutions offer a **complete system for numerical detection** by locating, marking and mapping buried networks. This system is made up of **markers and a receiver**.





Identification et détection des réseaux enterrés

Marking can be carried out during initial installation of pipes, or during maintenance work. Benefits of this solution are **important gains, cost wise and time wise**, for all stakeholders (instructing parties, operators, network managers, construction companies...). Duration of construction work is shortened, disturbance to local residents is reduced, incidents and accidental pipe rupture are strongly minimised...

Depending on network, markers are available in different **standardised colours**, which relate to standardised frequencies. Detection is therefore carried out by **frequency**, with **no interferences** with other markers, hence preventing confusion between networks.

RFID markers are favoured on all **important points** (valves, T junctions, changes in direction, utility crossings...), whereas EMS markers are placed on straight lines.



> EMS (passive) 3M[™] markers

Used for detection, characterisation and localisation of networks at **singular points**.

EMS 3M™ markers are placed along the line or on singular points of pipes. They enable detection of the type of network and buried depth.

This technology is implemented during initial construction of the network or during subsequent maintenance intervention.





> RFID (active) 3M[™] markers

This RFID marker has the same functionalities as EMS markers, however, thanks to its **RFID chip, information related to the network can also be numerised**.

RFID marker balls - Reading depth 1,50 m



RFID marker plates - Reading depth 2,40 m





> 3M Dynatel™ receiver:

In order to offer **global technical solutions**, our entire range of devices can be read, detected by most equipment, receivers or detectors available on the market.

However, the selected 3M Dynatel[™] receivers have been designed to work in an optimum way with 3M [™] markers but also with our TraceFil[®] devices as they possess several detection modes.





Detection of markers is done through **rapid sweeping** of the targeted area with the 3M DynatelTM receiver.

Information stored in the RFID **marker memory**, as well as **mapping**, can be managed through a GPS system, via a receiver of the DPA type, tablet or PC.

Field detections are stored numerically, allowing the creation and updating of a **database**, as well as transfer of information between stakeholders.





<u>Detection by 3M[™] Dynatel of EMS or RFID markers emitting a radio frequency signal:</u>

Locator Energizes
RFID Marker

RFID Data read by Locator

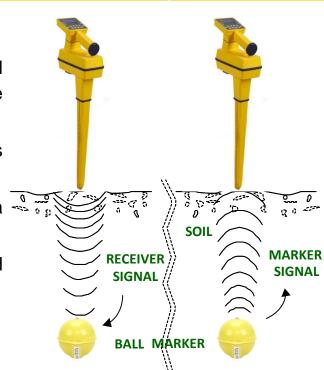
How does it work?

The receiver transmit a radio frequency signal to the buried marker, which is activated and sends back its location to the receiver.

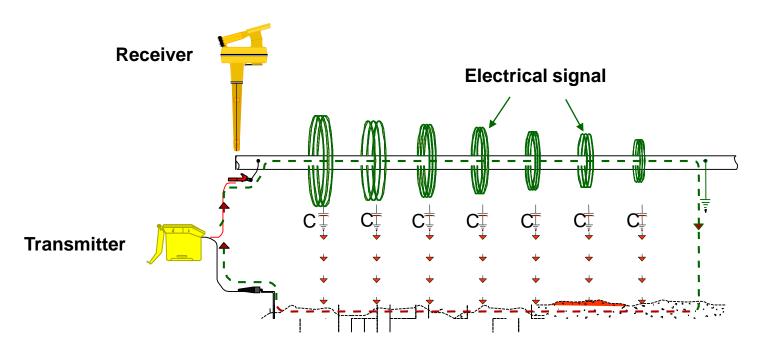
Geo-locating operations become easy: the receiver measures the depth and communicates with a GPS.

Information are then integrated into SIG in order to get a complete mapping.

3M receivers communicates with all professional GPS and accurately read markers depth



Detection by 3M[™] Dynatel receiver of a tracer wire emitting an electrical signal:





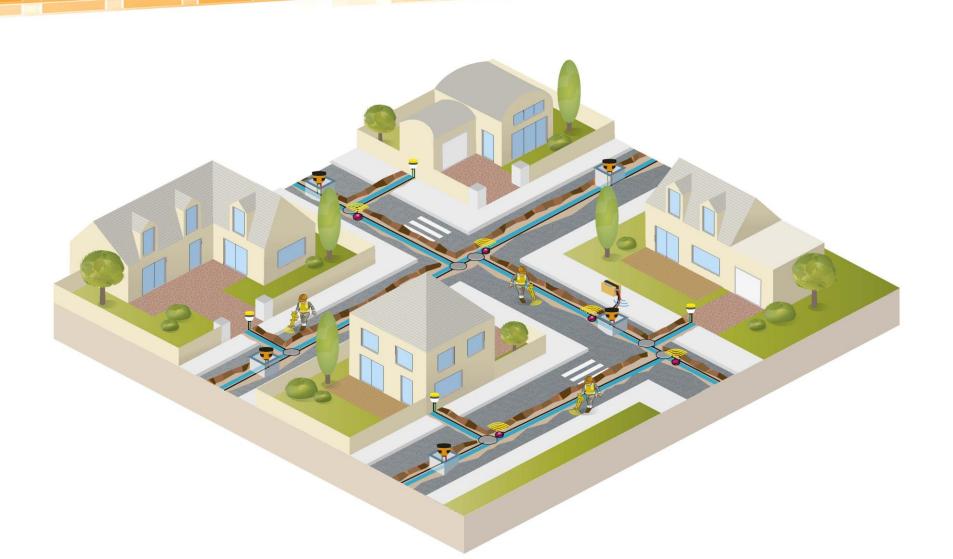
♦ Combination of TraceFil® device and 3M Dynatel™ system

Following field observations, it seemed that it could be **useful to associate both methodologies** in order to cumulate advantages of both technical solutions and also **optimising** the **cost per kilometre of network detection**.

Combination of both system enables a **continuous detection** by visualising the network path thanks to the signal emitted from the tracer wire, as well as **reading and managing the information** related to the network identification thanks to **RFID or EMS markers**.

The tracer wire is positioned on top of the network and EMS or RFID 3M[™] markers are located along the line to identify single points, junctions, change of direction or depth or a specific position as defined by the operator.

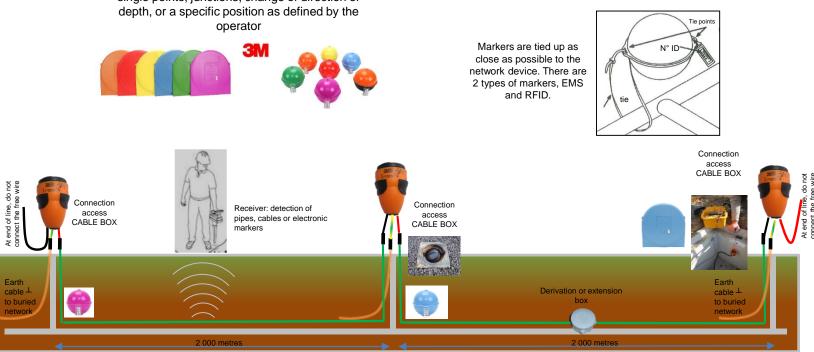




Set up of a main detection line coupled with EMS/RFID markers for networks



Markers are located along the line to identify single points, junctions, change of direction or



Ground application for identification and detection of buried network



Visuals and diagrams presented in this document are proposals to illustrate the installation of our different solutions. They are not contractual.

The effective field implementation of the systems are at the entire responsibility of companies specialised in conception and construction of buried network infrastructures.



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