Project Description

Horizontal directional drilling (HDD) offers significant benefits for urban environments by minimising the disruption caused by street works. Use of the technique demands an accurate knowledge of underground utility assets and other obstructions in the drill path.

ORFEUS is a full scale EU-financed demonstration project aiming at progressing the previously developed Horizontal Directional Drilling drill tip Radar that was proven under the preceding project entitled “Optimised Radar to Find Every Utility in the Street” to a commercial stage.

ORFEUS is a Framework 7 EC-supported project aimed at progressing the prototype Horizontal Directional Drilling (HDD) bore-head radar technology that was developed under a preceding project, carried out under Framework 6, entitled “Optimised Radar to Find Every Utility in the Street”, to a commercial stage. HDD is a trenchless method of installing pipes and cables of various sizes that minimises disturbances to traffic and to people living nearby. The technique is very powerful but requires an accurate knowledge of the position of obstructions and utilities such as power cables, telecommunication lines, steel and plastic gas pipes, potable water and sewer lines. Striking, and damaging, one of these assets can be extremely dangerous and can cause significant economic losses when public services are interrupted. Consequently, the safe use of the technique demands an accurate knowledge of utility assets and other obstructions in the drill path.

The preceding project “Optimised Radar to Find Every Utility in the Street” was partly financed through the 6th FP and resulted in a prototype innovative Ground Probing Radar (GPR). Operating within the drilling head of HDD systems, the equipment provides the real-time obstacle detection needed to increase the safety margins of HDD operations to allow its use in the widest possible range of conditions.

However, unresolved technical issues were identified through the 6th FP project that required further work. Important issues are associated with (a) the optimum antenna configuration and electrical/mechanical interface to the disposable drill head, (b) the identification and validation of the most effective bore-head GPR data processing algorithms, (c) the validation of performance and ruggedisation of the data communication link and (d) the validation of performance and ruggedisation of the connector systems.

www.orfeus.org
Irish Contribution

Dublin City Council (DCC) is responsible for the spatial planning; many social services and the infrastructure for the Irish Republic’s Capital City; it also delivers services (including fire brigade and civil defence) for the Greater Dublin region which contains 40% of the population of Ireland and much of the central government functions and commercial life.

Any advancement in utility installation technology would be to the advantage of all participants in the Utility Usage Equation, i.e. the Utility, the Contractor, the Customer and the Roads Authority. To this end, DCC is an eager participant in the ORFEUS Project. Most services in Dublin must be placed by open-dig methods only, due to the potential damage caused by Trenchless Technology (TT). As such radar enabled TT would be of great interest.

Project Details

Research area: ENV.2012.6.5-2
Start Date: 01/10/2012
Duration: 37 months
End date: 31/03/2015
Funding: €2.54 million
Coordinator: United Kingdom

Project Partners

- OSYS technology LIMITED (United Kingdom)
- Ingegneria Dei Sistemi (Italy)
- EURAM Limited (United Kingdom)
- GDF SUEZ (France)
- TRACTO-TECHNIK (Germany)
- Vilkograd (Slovenia)
- Wellington Associates (United Kingdom)
- EXERGIA S.A (Greece)
- Florence Engineering (Italy)
- Dublin City Council (Ireland)
- J&P GEO (France)

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