

Urban Soil Remediation: *In Situ* Thermal Desorption under a building, in the centre of Brussels

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Abstract

Nowadays, urban soil is a natural resource to preserve. Indeed, the fast urbanization of the recent years led to considerable consequences in terms of space and energy consumption as well as water and soil pollution. At the present time, urban areas contain many contaminated sites.

Two main issues can be identified which would need to be addressed through further reflection: first, the space consumption. Polluted areas in the centre of the cities are a waste of space. The clean-up of these sites is a necessary requirement to accommodate housing, parks, schools, etc. Second, some polluted areas are located under existing buildings. Their remediation is often complicated, even sometimes impossible due to stability reasons, environmental impact or access.

HAEMERS Technologies © has conducted an *In situ* Soil Remediation by Thermal Desorption in the centre of Brussels. The polluted area was located under a building. The origin of the contamination was a fuel tank leaking. The contaminated zone represented 48 m² and 3 meters deep and the contaminants of concern identified at the site were hydrocarbons. The highest concentration detected was 8 000 mg/kg (C10-C40). The aim of this project was to reach the target concentration of 300 mg/kg.

In Situ Thermal conductive heating is perfectly suited for urban soil remediation for the following reasons:

- Heating is done directly on the ground
- It requires no excavation
- The size of the installation can be adapted according to the size of the polluted area
- No noise is produced

Moreover, *In Situ* Thermal Desorption has a fast application: the target temperature, fixed at 220°C, was reached in 45 days.

The results of this project showed that the remediation was successful: the target concentration (300 mg/kg) has been reached. Even more, the presence of hydrocarbons in the soil after the treatment was almost non-existent. This project also demonstrated that the technology has a high efficiency and is perfectly suited for urban soil remediation.

The paper addresses the remediation goals that can be imposed today in urban areas thanks to technological improvements which made multifunctional use no longer unaffordable.

The case illustrates the many instances where problem owners have chosen to remediate down to background levels, despite leaving no legal obligation to do so, but mainly because the extra cost was very minor and the benefits were much larger.