

## Active Petrol Filling Station, Tuscany , Italy

### A combination of ORC-Advanced and ORC Primer for MTBE treatment



#### Summary

- The groundwater was impacted with MTBE and residual concentrations of BTEX at an Active Petrol Filling Station in Tuscany, Italy.
- Several pilot tests have been carried out on site in order to select the best treatment technology.
- For full scale treatment, dissolved oxygen release – through a combination of RegenesiS' ORC Advanced® and ORC Primer® – was selected over Air Sparging (AS) and Biosparging (BS) technologies, allowing for better treatment efficiency.

#### Treatment

ORC-Advanced and ORC Primer have been applied through 17 injection wells in order to cover the contaminated area as best as possible, as access is restricted due to the existing operational tank farm. Both ORC products – each with different oxygen release patterns – can be applied together in a single injection activity. Three equal injection campaigns have been scheduled in accordance with the approved remediation plan.

#### What's Special?

ORC not only allows for better efficiency than Air Sparging and Biosparging on this low permeability site – minimising preferential pathways and providing oxygen already in dissolved form and not in air form – but also minimises disturbance to site activities and does not require periodical equipment maintenance.

Furthermore, as RegenesiS can provide a range of ORC compounds with different oxygen release patterns, treatment can be customised by combining of products into a mixture to best meet the aquifer's specific needs.

#### Remediation Details

##### Site Type:

Active Petrol Filling Station

##### Project Driver:

Compliance with Italian Risk Based Target Levels (CSR), and Standard Target Levels (CSC) at boundary

##### Remediation Approach:

Enhanced aerobic bioremediation

##### Technologies:

ORC-Advanced®, ORC Primer®

#### Geology

	Bedrock
	Gravel
X	Silty Sand
	Silt
	Clay

#### Medium

X	Groundwater
	Saturated Soil
	Vadose Zone

#### COC

X	MtBE and BTEX traces
	Petro LNAPL
	Chlorinated VOCs
	Metals

##### COC Concentration Levels:

MTBE: up to 500 µg/l, BTEX: up to 2 µg/l

##### Treatment Depth:

from 2 - 4 m BGL

##### Treatment Area:

approx. 170 m<sup>2</sup>

##### Injection Grid:

3 m X 3 m