

# Active Petrol Filling Station - Lombardy, Italy

## A Combination of RegenOx and ORC-Advanced for MTBE Treatment



### Summary

During the upgrade of an active petrol filling station in Lombardy, its tank farm was replaced and most of the contaminated surrounding soil removed, leaving residual MTBE contamination both in the vadose zone below the excavation area as well as in the groundwater underneath, and downgradient of, the tank area.

The source area was not directly accessible for treatment due to the presence of new storage tanks. The remediation strategy therefore consisted of injections upgradient from the source with simultaneous pumping downgradient, in order to enhance product distribution into the areas that required treatment.

### Treatment

An integrated treatment strategy was devised for remediation of the site, with a special focus on minimising field application costs. RegenOx and ORC-Advanced were applied through 6 direct push injection points located upgradient of the tanks farm area. Two existing abstraction wells located downgradient of the tank farm were used to pump groundwater for 15 days following the injections, in order to enhance product distribution below the tanks.

### What's Special

- Two complementing treatment technologies were applied to the aquifer in a single injection campaign:
  - RegenOx – provides rapid contaminant destruction
  - ORC-Advanced – provides a controlled release of oxygen up to 12 months after injection to address the residual contamination via aerobic biodegradation
- The combination of injection activities with targeted groundwater abstraction allowed for successful treatment of the source areas that were not directly accessible.

### Remediation Details

#### Site Type:

Active Petrol Station

#### Project Driver:

Compliance with Italian Standard Target Levels (CSC)

#### Remediation Approach:

ISCO and Enhanced Aerobic Bioremediation

#### Technologies:

RegenOx<sup>®</sup> and ORC Advanced<sup>™</sup>

#### Geology

	Bedrock
X	Gravel
X	Sand
	Silt
	Clay

#### Medium

X	Groundwater
X	Saturated Soil
X	Vadose Zone

#### COC

X	Petro HCs
	Petro LNAPL
	Chlorinated VOCs
	Metals

#### COC Concentration Levels:

MTBE between 100 and 200 µg/l  
TPH in sat. soil approx 500 mg/kg

#### Treatment Depth:

1.5 m (from 3 to 4.5 m BGL)

#### Treatment Area (m<sup>2</sup>):

approx 50 m<sup>2</sup>