

Soil Remediation at Four Electricity Substations in Gliwice (Poland)



BAUEREnvironmentGroup

The company GZE S.A. belongs to the Vattenfall Group and is one of the biggest Polish electricity distribution companies. GZE S.A. commissioned the Polish Branch Office of BAUER Environment Group to remediate contaminated soil at four electricity substations in the surroundings of Gliwice. In the past, damages to transformers and operational losses of mineral oil contaminated the soil with petroleum-based hydrocarbons. Concentrations of up to 76,000 mg/kg of total petroleum hydrocarbons (TPH) were reached in the upper soil layer, and 3,700 mg/kg TPH in the deeper layers.



For the in situ remediation multiple wells were installed providing the soil with fresh air. Aeration and nutrients supply stimulate the activity of naturally occurring microorganisms which degrade the organic contaminants.

200 tons of soil were removed from the upper layer and treated in a soil treatment centre. The deeper soil layers were remediated in situ.

Remediation Site

Since high-voltage transmission lines run near the surface at all four sites limiting the headroom, a mini excavator was required to remove the upper soil layers.

Results

The heavily contaminated upper soil layers were excavated by the mini excavator to a depth of 0.3 metres. The excavated material was transferred to a

biological treatment plant and disposed off after treatment.

For the in situ remediation, 6 to 10 small-diameter wells were installed at each site. Their screens reached depths of 3 m. Four of the wells provided the soil with fresh air. The other wells were used to suck off the contaminated soil vapour. Passing an activated carbon filter, the soil vapour was decontaminated. The aeration and additional supply with nutrients stimulated the microbial activity of autochthon microorganisms resulting in the degradation of the organic contaminants.



A mini excavator was used to excavate the heavily contaminated top soil. Thus, the efficiency of the remediation increased significantly.

An external laboratory supervised the remediation progress by continuous sampling.

The target value of < 3,000 mg/kg TPH is expected to be reached one year after remediation start. Then, all wells will be removed and the excavated area will be filled with unburdened top soil.

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| Client: | Vattenfall Distribution Poland (Górnośląski Zakład Elektroenergetyczny S.A.), Gliwice |
| Supervision: | Ekoprojekt, Pszczyna |
| Scope of works: | Soil replacement and in situ remediation |
| Contract Period: | July 2005 until December 2006 |

