Remediation near a Solvent Storage Tank on the TRICON Company Site, Freiburg

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Client:	Dunmore Europe GmbH, Freiburg, Germany
Engineering Design and Supervision:	Cornelsen Umwelttechnologie GmbH
Scope of Works:	Remediation of a Solvent Contamination caused by underground Solvent Tanks using Vacuum Strippers and Catalytic Oxidation
Contract Period:	May 1998 until 2006

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Project
FWS Filter- und Wassertechnik GmbH is operating a groundwater remediation plant in combination with soil vapour extraction on the TRICON company site since May 1998. After the treatment process the water is re-infiltrated into the soil. The main contaminants are BTEX with concentrations around 10 mg/l in the aquifer and approximately 300 mg/m³ in the unsaturated soil zone.

The picture of the treatment plant is dominated by the two 10 m high stripper towers. Catalytic oxidation takes place in a high grade steel container.

Remediation Site
Underground tanks on the TRICON GmbH company site in Freiburg – now Dunmore Europe GmbH – were used to store solvents and waste streams coming from activated carbon reactivation. Activated carbon was used for cleaning of waste gas.

Result
Five groundwater wells deliver contaminated water to a two-stage vacuum stripper unit. Then partial vacuum is produced in the strippers to increase the steam pressure of the solvents in the water. The water runs from the top to the bottom of the stripper in counterflow to the air stream. Thus the phase transfer of the solvents from water to the strip air is enhanced.

Afterwards the contaminated stripper gas stream together with the extracted soil vapour flows through the catalytic oxidation. The gas stream is warmed up by a heat exchanger and finally heated up to 400 °C before it passes the catalyst. Oxidation / mineralization of the contaminants takes place at the catalyst surface. The catalyst is operated with 180 m³/h. The treated water is infiltrated upstream in two infiltration galleries.

Nowadays approximately 30 m³/h are pumped through the five groundwater wells. In the first six month of operation approximately 1,000 kg of BTEX were removed from the underground.

Two "water ring vacuum pumps" (WRVP) suck the soil vapour and transfer it to the catalytic oxidation unit. Three other pumps produce the necessary partial vacuum in the stripper towers.

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