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The MoClean® system cleans a pyrolysis gasoline tank at Ruhr Oel in Germany

The size and scope of this particular tank cleaning job approached the limit of the MoClean® system capacity, but it nonetheless provided an excellent possibility to prove the flexibility and applicability of the MoClean® system.

The MoClean® system cleaning a pyrolysis gasoline tank.

The Oreco MoClean® system is an automated tank cleaning system specially geared for cleaning of smaller and medium sized oil product tanks containing diesel, kerosene, jet fuel and other petroleum product. Tank sizes normally range from 8-35 m.

The cleaning challenges

This particularly tank was located at Ruhr Oel GmbH refinery in North Rhine Westphalia. It was a floating roof tank with a size of 35,7 m in diameter, thereby slightly in excess of the recommended tank size for a MoClean® tank cleaning job. Furthermore, the content of the tank was Pyrolysis Gasoline with a Benzene content of max.1%. The potential hazard of exposure to carcinogenic Benzene made the tank cleaning job more critical, and thus favoured the avoidance of personnel entry by use of the MoClean® system.

Innovative mobilisation solution

The normal procedure when cleaning tanks with the MoClean® system is to install one or more tank cleaning nozzles through flanges or manways on the tank roof. In this case, however, this method could not be employed, as the ladder leading to the tank roof from the tank rim was defective, and access to the tank roof was thereby not possible without a crane. Consequently, an alternative method of installing cleaning nozzles throug four man-holes was implemented.

The cleaning process and result

Initially, 30 m³ of gas oil (SDK) was added to the tank and mixed with the existing Pyrolysis Gasoline to obtain a sufficient circulation flow. The tank cleaning machines were operated in succession, ensuring that the entire inner tank surface was cleaned. After 5 hours the tank was emptied and an additional 30 m³ of gas oil was added and circulated for 10 hours, after which the oil was routed back to the Ruhr Oel pipeline for reprocessing.

The last cleaning step was a cold-water wash (20 m³ water mixed with 200 l proprietary solvent to optimise the removal of Benzene from the tank). Finally, the tank was emptied and the water was pumped to the refinery's wastewater system.

Facts and figures

Location:	Ruhr Oel GmbH, Gelsenkirchen, Germany
Contractor:	Toftejorg Technology (Oreco)
Tank size:	Volume: 15.000 m³ Ø: 35,7 m, Height: 14 m Floor area: 1.001 m²
Tank content:	Pyrolysis Gasoline containing <1% Benzene
Safety code:	Dangerous goods class. code A-1, WGK: 2, Flashpoint <15º
Roof:	Floating roof
Sludge content:	30 m³
Cleaning nozzles:	4 Single Nozzle Sweepers
MoClean in use:	Oil washing: 13 hours Water washing: 4 hours
Time:	Mobilisation: 40 manhours De-mobilisation: 18 manhours Ventilation: 23 hours
Consumption:	Gas oil: 2 x 30 m³ Water: 20 m³
Recovery:	Hydrocarbons: 99%