Oil & Gas Wastewater Treatment

Mol Duna Refinery, Budapest, Hungary

How we created value

- Oil and grease separation ratios of over 98% achieved
- Discharged wastewater quality meets the most stringent EU requirements
- Operating costs are reduced by reducing regulatory burdens

MOL Group uses Ovivo DAF technology to exceed EU standards for wastewater at its Duna Refinery.

Background

MOL Group is the only refiner of petroleum products in Hungary, Slovakia and Croatia and has a considerable presence in the North Italian market. The MOL Duna Refinery in Hungary is one of the most efficient in Europe. One of its top priorities is to comply with the latest environmental regulations and its major projects aim at improving environmental cleanliness and product quality.

As a responsible business, reduction of water consumption is a priority. The treatment costs of industrial water are increasing so, MOL Group was urged on in this goal by the increasing costs of industrial water use and the regulatory need to reduce the amount of discharged wastewater relative to processed crude.

The European Union obliges industries that exceed wastewater discharge limits to pay a "dilution fine". An Environmental Burden Fee is levied proportional to the quantity of discharged pollutants. Taking into account all of these factors, the refinery decided to partially reuse its treated wastewater.

Process

Two Ovivo DAF systems each of 15m diameter were supplied. Capable of treating 1000m^3/hour each of oily water coming from the refinery, they fitted MOL's long-term objective of eliminating water takeout completely from the Danube and relying solely on internal resources.

The typical segregation scheme of a mineral oil refinery consists of a “clean” water channel, an oily wastewater channel and a channel for heavily contaminated wastewater. Processed wastewaters from the refinery are separated appropriately, and collected separately for the most effective handling and recycling.

The new wastewater treatment plant incorporates a state-of-the-art Ovivo dissolved air flotation (DAF) unit and an automatically operated, cyclic activated sludge separator (CASS). Treating process wastewater, ground water and communal wastewater from employee facilities, Ovivo’s DAF is capable of continuously meeting the discharge requirements specified in EU regulations.

Performance
Oil and grease separation ratios achieved are sometimes over 98%. The Duna Refinery exceeds relevant regulatory requirements as shown on the right.

Discharge	Quality requirements for river discharges (mg/l)	Quality of treated Duna wastewater discharged 2007 (mg/l)
COD	80	47
Total Hydrocarbons (GC)	3	0.9
Sulfide	0.6	0.02
Total Nitrogen	25	1.6
Phenol	0.15	<0.01
Total Phosphorus	1.5	0.31
Cyanide	0.1	<0.01

(Source: Isaák, G., Söjtöri, P., Kondor, R. E. & Gyôry, B. E. *Possibilities for wastewater reuse in Duna Refinery*: MOL Group, 2008.)

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