

IMS High Capacity Carbon Adsorber System Meets Zero Odor Requirement at OIL ONE SA Treatment Plant in Athens, Greece

The OIL ONE SA treatment facility in Athens, Greece, undertakes the selective transport and treatment of oil residues from ships and land-based units, including industrial and shipbuilding units. The company also manages all liquid residues generated by ships during operation. Utilizing cutting edge technologies to handle and treat oily waste, including oil spills, up to 160 m³/h, OIL ONE are driven by a “zero waste” principle. They have developed a sophisticated process that converts

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Plant Manager, OIL ONE SA

oily wastewater into high-quality oil that can be reused as raw material, such as a clinker for the production of high quality cement, or as an alternative fuel.

Because it’s located in a populated area close to the port of Piraeus, OIL ONE operates a “Zero Odor– Zero Noise” facility. Their treatment process is dedicated to protecting the environment with a special array in the tanks to handle volatile gases. Based on an active carbon system with full safety devices for complete odor control, a physicochemical treatment procedure is applied during the water treatment process, including a special oil plate separator and a dedicated dissolved air flota-

tion (DAF) unit combined with a coagulation/flocculation system.

Hydrogen sulfide (H₂S) was a serious odor and hazard concern for the employees that were operating the DAF unit. To ensure employee safety and prevent odor, OIL ONE installed an activated carbon adsorber. However, an undersized system and inadequate carbon media caused an internal thermal reaction inside the system’s bed that melted the polypropylene body of the system.

After careful market research, OIL ONE contacted Integrity Municipal Systems, LLC (IMS) to help them select a better, safer odor control technology. Following a site visit and evaluation, IMS proposed a modular skid-mounted carbon adsorber designed to use a high H₂S capacity carbon media for the removal of H₂S from the odorous DAF. The proposed carbon media has a very high adsorption capacity of 0.30 grams of H₂S per cubic centimeter of carbon, four to five times greater than other types of carbon media. In addition, the proposed carbon was not impregnated; it had a high ignition temperature as well as low pressure drop characteristics to fulfill the requirements of the project. Moreover, the media was landfill disposable and non-hazardous with near neutral pH even after use.



IMS MCS-200 installation at Oil One SA



OIL ONE SA Treatment Plant, Athens, Greece

The carbon adsorber odor control system consists of an exhaust fan, damper, interconnecting ductwork, vessel with activated carbon (900mm bed) and a local control panel that is also controlled by the SCADA of the plant. All components were pre-mounted, pre-piped, and pre-wired on a skid and made of superior material of construction, FRP, for the corrosive seaside environment. The airflow capacity of the system is 300 m³/h to treat the headspace from the access manways of the DAF system with inlet average H₂S concentrations of 10 ppm and peak concentration of 30 ppm. The overall H₂S removal efficiency of the system was 99% or 0.1 ppm at the

outlet of the system.

The system was delivered and installed at the plant with the assistance of a local integrator, Machinor S.A, and commissioned by IMS in December 2016. The plant manager of OIL ONE, Mr. Konstantinos Floudopoulos, expressed his gratitude and satisfaction with the quality of the IMS carbon adsorber as well as the operation and efficiency of the system: "The MCS-200 carbon adsorber has provided simple operation and maintenance and excellent efficiency. And, I must say, just looking at the system shows me the superiority of this product."