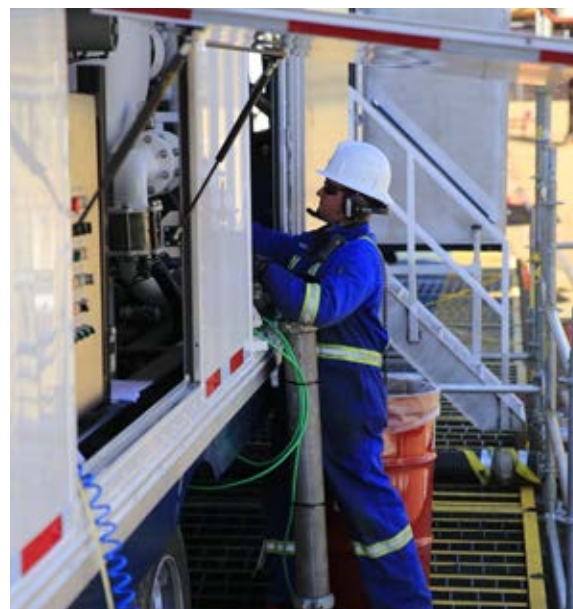


MoClean[®] ATS Tank Cleaning System

Automated tank cleaning and
sludge separation with high-end
vacuum truck operation

Added flexibility, increased opportunities and shorter
overall turnaround time for all types of product and black oil tanks

introduction



Storage tank cleaning – the issues

Storage tank cleaning is an integral part of operations in the oil and petrochemical industries. Tank cleaning is a major undertaking in terms of planning, resources, manpower, time and expense. Moreover, increasingly stringent legislation and regulations regarding the environment, worker safety and health have placed significant pressures on the industries.

As a result, more and more tank owners and managers are looking towards automated, non-invasive tank cleaning methods. In addition, systems combining tank stripping and cleaning while eliminating degassing requirements are viewed as highly desirable, especially if offering a minimal environmental footprint at a financially viable level.

MoClean® ATS – the answer

In response to this growing call for non-invasive and financially attractive tank cleaning methodologies, Oreco have developed the MoClean® ATS, a highly mobile, fully integrated process system with automatic Emergency Shutdown System (ESD) and designed for EEx-operation. The MoClean® ATS offers automated internal cleaning of tanks without placing operators and ambient environment in harm's way. The solution can be used in a large range of petroleum and petrochemical product applications, including crude oil tanks. Combining automated tank cleaning and sludge separation with a safe and sophisticated vacuum truck operation, MoClean® ATS is suitable for oil product tanks such as diesel, jet fuel and gasoline tanks and small to mid-size black oil tanks. The MoClean® ATS is the "Swiss Army knife" of automatic tank cleaning.

Key benefits of MoClean® ATS

MoClean® ATS offers a wide range of advantages and benefits:

- Shorter cleaning times and tank downtimes for significant cost reductions.
- State-of-the-art vacuum truck reduces normal stripping operation time by up to 80%.
- Closed loop, non-man entry design.
- Does not require gas freeing.
- Shortens turnaround time by weeks.
- Computer-controlled system for roof-to-floor cleaning and Clean In Place (CIP) after every use.

When it comes to Health, Safety and the Environment, MoClean® ATS is second to none. It is superior to conventional manual tank cleaning methods in its minimisation of hazardous waste and sludge for disposal, maximum recovery of hydrocarbons and minimal use of resources. MoClean® ATS is a closed loop system, resulting in no harmful emissions. All of these advantages add up to higher levels of safety, efficiency and cost savings at all stages of operation.

As a modified vacuum truck system, MoClean® ATS combines all the safety benefits of non-man entry systems with the flexibility of a mobile solution. It has a built-in ESD with 2 alarm levels designed to minimise the consequences of emergency situations, and each cleaning process is continuously monitored with ongoing report progress. In brief, MoClean® ATS offers the highest level of safety achievable on a vacuum truck.

flexible and economical technology

A key element of the MoClean® ATS system is the combination of Oreco's patented Single Nozzle Sweepers (SNS)® and time-proven MoClean®/BLABO® technology. These machines produce low pressure, high impact jets of re-circulated tank fluid which efficiently clean all internal surfaces of the tank in a precise computer-controlled pattern, with lower water usage and in shorter time than traditional high pressure cleaning methods. The MoClean® ATS system is self-sufficient for both air and power for the cleaning process, thus eliminating the need for the tank owner to supply these utilities.

MoClean® ATS: The Process

- The connection to the tank is established via a flexible antistatic hose with a diameter of up to 6".
- The system is fitted with coarse filters to avoid clogging of the oil/water separator and the heat exchanger.
- The fluid enters a vacuum tank via a distributor to ensure laminar flow in the separation system.
- The vacuum tank is fitted with an oil/water separator.
- Flow to the nozzles is established with a positive displacement pump capable of feeding the nozzles with up to 70m³/h@10 bar.
- The fluid can be heated with a heat exchanger up to a maximum of 80°C.
- A remote and PLC control manifold system ensures direction of flow to the correct areas of the tank that require cleaning.
- The nozzles can be both media driven types and externally driven SNS. The hydraulics to drive the SNS is distributed via the remote controlled manifold system.
- A small diaphragm pump ensures continuous monitoring of the tank atmosphere.



technical specifications

Oil types:	Product (white) oils, crude oils, HFO, bunker, 6 oil, and also other types such as chemical tanks or paint tanks
Recirc. capacity:	Up to 80 m³/h (504 bbl/h)
Tank holding capacity:	On the MoClean® ATS vehicle up to 12 m³ (75 bbls)
Power:	Truck is self sustained, Generator for AUX.
Working temperature:	-20 (-4F) - +80° C (176F) (winterisation option available)
Suction:	Up to 4063 Nm³/h (2391CFM)
Vacuum:	90%



health, safety and environment

Protecting human health by top level operational safety

At Oreco, Health, Safety and Environment (HSE) for both personnel and ambient environment during tank cleaning and oil recovery processes are our paramount concerns and every aspect of the MoClean® ATS system has been designed with HSE considerations in mind. Hazards associated with personnel entry into a tank include exposure to toxic substances, oxygen deficiency, injury, structural failure, and awkward protective equipment. The MoClean® ATS system eliminates the need for personnel entry during the cleaning process, thereby eliminating these hazards.

MoClean® ATS is constructed to operate safely in potentially hazardous areas and meets the highest international safety standards and directives.

MoClean® ATS offers a wide range of safety features, including:

- Gas detector integrated with truck ESD system with 2 alarm levels.
- Constant Newson Gale grounding monitoring tied into ESD system.
- Process safety such as safety valves, overflow protection, non-return valves, double block valves, etc.
- Recirculation loop powered from truck PTO.
- Over-rev protection (Chalwyn valves).
- Spark arrestors.
- Antistatic design with full grounding of all components including hoses.
- Automatic hose wheel to handle heavy suction hose.



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