CRIMSON Pluss

MCS-OIL
Mobile Cleaning System

Activity of
"CRIMSON PLUSS" company
on implementation of cleaning
method for oil products storage
tanks

2011

Agenda of the presentation

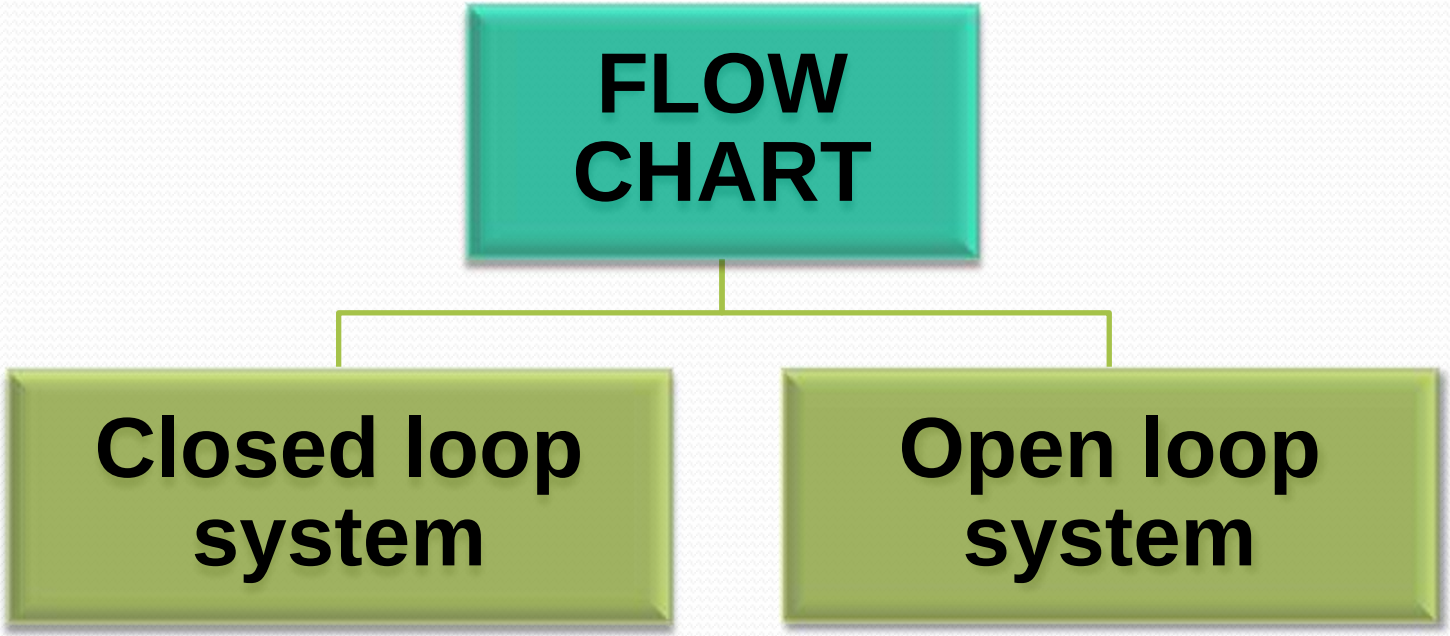
- Company profile
- Technology description
- Chemical detergents
- References

Company profile

CRIMSON PLUSS is an EU-based company working in tank cleaning field in Northern Europe, South Asia, Middle East and North Africa.

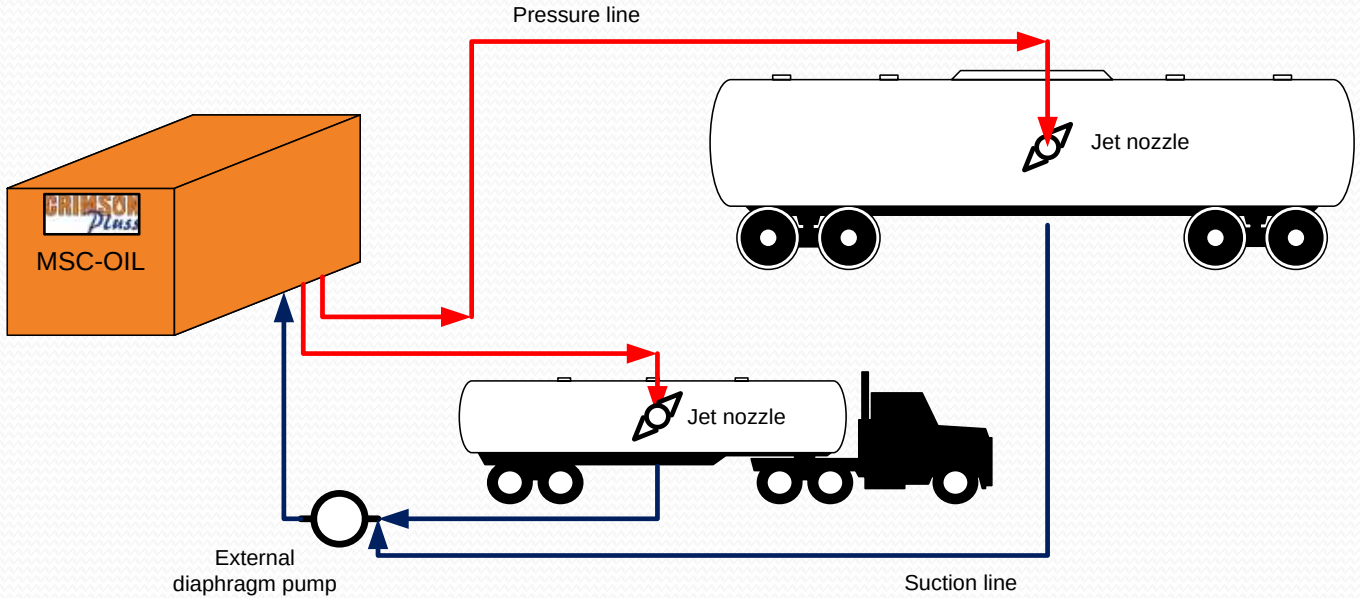
Main activities:	• Cleaning of tanks for storing liquid hydrocarbons of a broad spectrum.
Main technologies:	• Mechanized cleaning of internal surfaces of tanks with technical detergent. • The use of technological schemes of closed and open loop system.
Main petroleum products:	• All types of light motor fuels, light mineral oils. • Hydrocarbons from secondary processes in petroleum refining and petrochemicals. • Gasoil, distillate fuel oil, light crude.

Main description



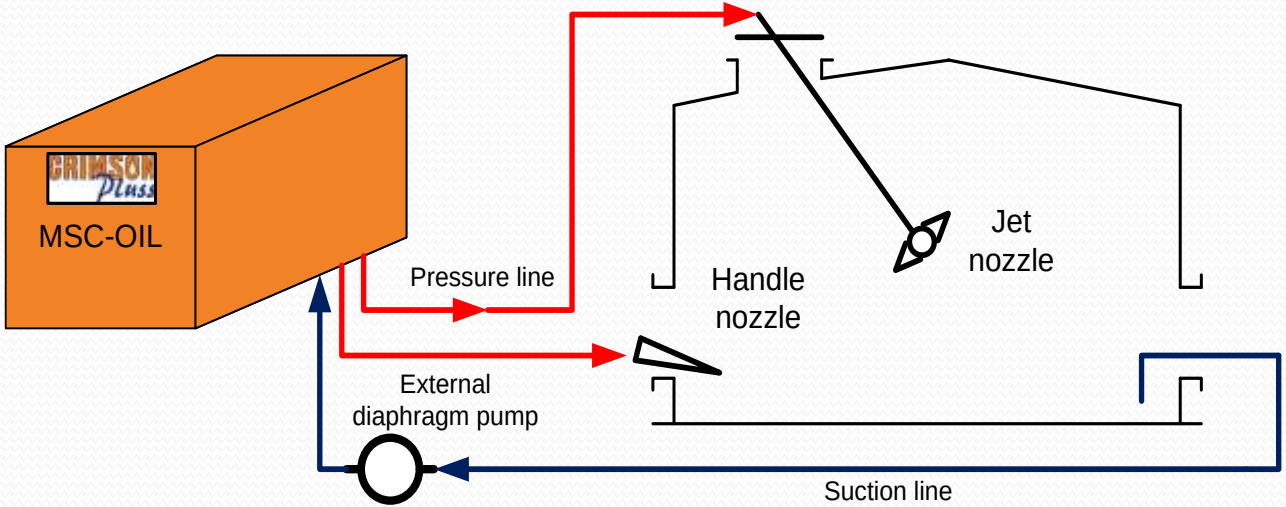
Closed loop system

Suitable for small and medium-sized tanks. Allows to clean without the personnel presence inside of the tank. Entry into the tank only for quality control or treatment.



Open loop system

Used for tanks of medium and large capacities. Allows to effectively clean the bottom of the tank, saving the overall execution work time.



Technology description

Stages of tank cleaning process

- 1. MCS preparation for operation.
- 2. Removal of the residue products from the tank.
- 3. Washing the inner surfaces of the tank.
- 4. Degassing of the interior of the tank to safe level
- 5. Quality control of tank cleaning

1. MCS-OIL preparation for operation.

- Determination of location for MCS-OIL unit by agreement with the Client.
- Safety fencing of work area and warning signs installment.
- Electricity connection, grounding MCS-OIL unit to the tank grounding loop.
- Laying of MCS-OIL temporary pipes and hoses.
- Water filling inside MCS-OIL TCR tank, preparation of washing solution.
- Trial start to test equipment.
- Obtaining a permit for hazardous work.

Technical requirements for MCS-OIL System

- Water for detergent mix: 12 m3
- Electric power: 60-100 kWt

Replacement of technical solution is executed depending on the volume and level of contamination of the tank.
Depending on the degree of tank contamination, additional external equipment may be used: mobile compressors, fans, etc.

2. Removal of the residue products from the tank

- Removal of the residue products from the tank is performed using diaphragm pumps. These pumps are safe for use with liquid hydrocarbons and effective for the removal of the maximum residue.
- The pumptechnological scheme is simple to use and reliable in operation.It is possible to transfer the product into the receiving tank of the Client.
- It is possible to store s are powered by mobile air compressors.
- This up to 16m3 of product in MCS OIL unit section for temporary storage.

3. Washing of the inner surfaces of the tank

Washing of the inner surfaces of the tank is carried out using a jet nozzle or hand-held nozzle, depending on the selected flowchart.

Nozzles are installed using a special locking device that can change the direction of nozzles.

4. Degassing of the interior of the tank to the safe level

- Degassing is performed using fans. For decontamination of air space inside of the tank, fresh air is fed into the tank.
- The remnants of detergent are dried away during the degassing of the internal surfaces of the tank.
- This degassing system allows the tank to decontaminate to the required safety standards.

- The quality of tank cleaning allows repairs with welding work after completion.

5. Quality control of tank cleaning

- Quality control is performed by the Client.
- Quality control procedure determines air quality in the tank and purity of inside surfaces.

Chemical detergent

- Self-purifying technical detergent is used during tank cleaning.
- Detergents are based on low molecular weight alcohols and surfactants.
- Due to its composition detergents may be used in the process of cleaning tanks repeatedly.

Cleaning detergents

- **BOK 3** - detergent main characteristic is the separation of the hydrocarbon components off the surface and further self-cleaning based on high demulsifying properties.
- **CLEWOR Universal Profi** - is a concentrated alkaline detergent for removal of heavy technical dirt (grease, oil, crude oil, rust,) from different surfaces.
- In certain cases with heavy residues or bitumen like sludges special solvents might be applied.

Main equipment set

- Ø Mobile Cleaning Complex MCS-1000
- Ø Washing Detergent
- Ø Gas analyzer (device)
- Ø Additional pumps
- Ø Hoses 1“, 2“, 3“.
- Ø Washing head MMT 5, jet nozzles
- Ø External air compressor
- Ø Personal protection Items & equipment
- Ø Air Conditioner (during hot season)
- Ø In-built internal MCS compressor
- Ø Degassing fans
- Ø Hand tools
- Ø Steam generator (if needed)

Manpower

- Project manager
- Site Manager responsible for safety
- Team supervisor
- Operators
- Labors

Types of tanks that can be cleaned using the technology.

- Welded steel vertical tanks (cylindrical and spherical)
- Welded steel tanks horizontal and underground
- Car tanks, railroad tank cars and tank containers
- The tanks of cargo ships of river-sea class
- Underground tanks trench type
- Technological tank pipelines

Welded steel vertical tanks (cylindrical and spherical)

Welded steel tanks horizontal and underground (tank terminals, gasoline station)

ISO Auto tanks, auto tanks, railroad tank cars and tank containers

Tanks of cargo ships and river-sea class tanks

Underground tanks of trench type

Technological tank pipelines

Additional features

- Technology allows for jet fuel tank storage cleaning.
- Washing is carried out using water with no use of detergents.

Advantages of the technology

Minimal human presence inside of tank.
Minimal water and electricity consumption.
Increased safety
Time efficency
Non toxic washing solution

References

Reference list of the last projects (period 2009-2011)

- **Statoil Eesti ESTONIA**, undeground gas station tank.
  Product: gasoline. Contact: (372) 6238727
- **Neste Eesti ESTONIA**, undeground gas station tank.
  Product: gasoline. Contact (372) 5031062
- **Vopak Eos ESTONIA**, rail car tanks.
  Product: heavy fuel oil. Contact:+3726266100
- **Sillamäe Oil terminal ESTONIA** cylindrical horizontal 63 000 m3 x 2, 12 000 m3.
  Product: crude oil, fuel oil. Contact: (372) 3929150
- **Milstrand ESTONIA**, undeground concrete. 30 000 m3.
  Product : diesel fuel Contact: (372)6055951
- **Velsicol OU ESTONIA**, cylindircal vertical 3 000 m3.
  Product: toluol Contact:(372)3325900
- **Kivioli terminal ESTONIA**, cylindrical vertical, fixed roof with IFR 30 000 m3 x 2
  Product: crude oil. Contact: (372) 51 222 60

References

- **BioDiesel AG AUSTRIA**, cylindrical vertical, cylindrical horizontal. 4000m3, 55000m3 Product: biodiesel, heavy fuel oil. Contact: (43)6646108232
- **Dugas terminal UAE**, cylindrical, cone roof.
  Product: 65 000m3 liquid gas condensate
- **IRPC Public Company THAILAND,** cylindrical horizontal, 500 m3, 1000m3.
  Product: mineral oil.
- **UBE Group THAILAND**, cylindrical vertical 1200 m3.
  Product: alkali washing, cyclohexane.
- **National Electricity Corp (NEC),** Sudan, Khartoum North, 30 000 m3,
  Product: heavy fuel oil.
- **ASV Tapa Depood ESTONIA**, railroad tank cars, in progress.

Thank you for your time!

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