Tank cleaning stations: Optimal construction and effective operation

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Tank cleaning in chemical logistic

- Important factor of quality
- Important factor of efectivity
- Part of chemical logistic network
- Good locatity – efective operation and good bussines
- Locality of the chemical companies, logistic companies, food industry

Factor of modality – road and multimodal

- Road tank cars and tank containers cleaning
- Station in area of chemical companies, logistic companies, food industry
- Locality of high flow of chemical good
- Start, end, storage, transit
- Road net conection

Factor of modality – rail

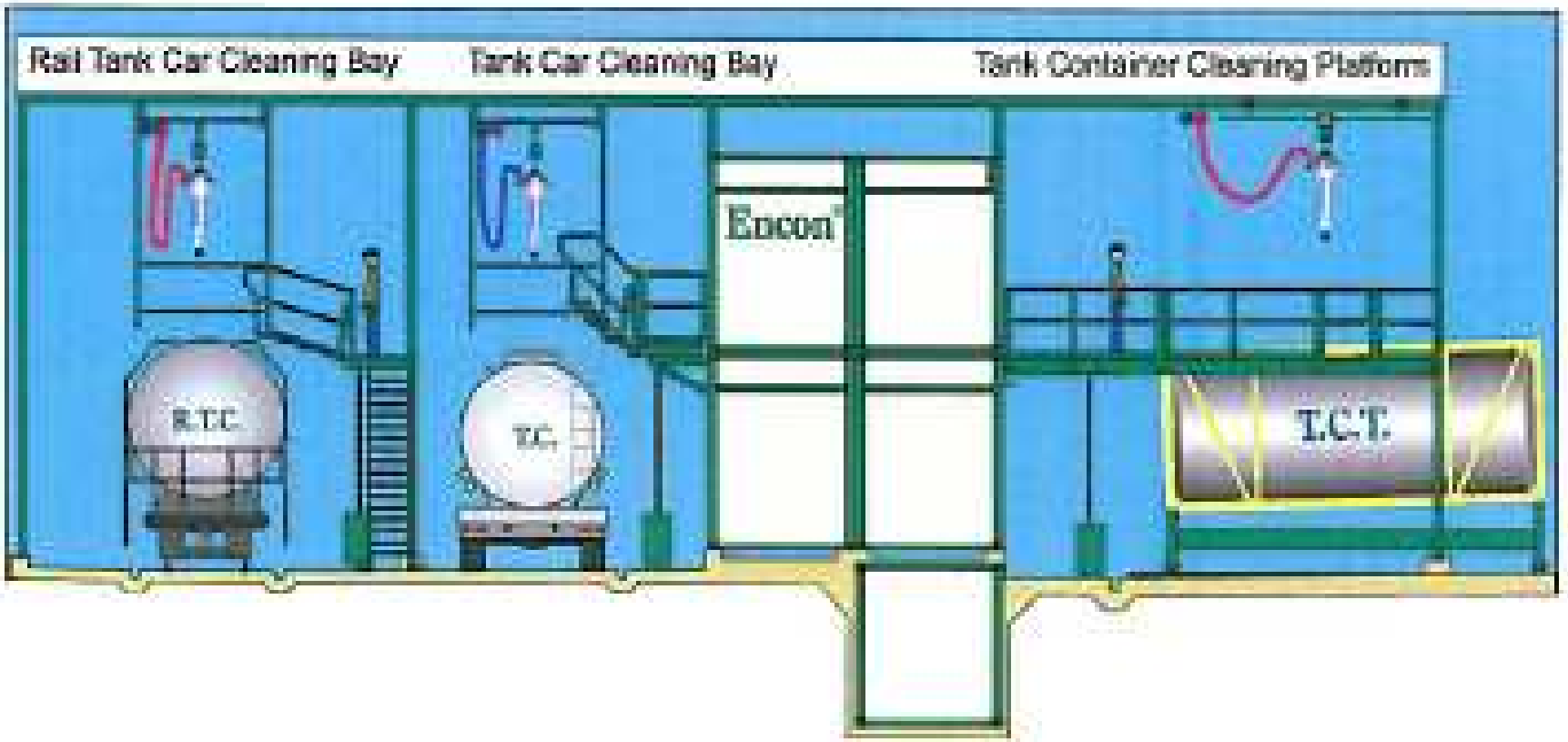
- Connection to rail network
- Frequency of cleaning is lower then by road
- Rail tank cars are cleaning infrequent
- By repairing, maintenance, presure test
- Change of product is infrequent
- In area is chemical, storage company, owner or repairing (maintenance) of RTC

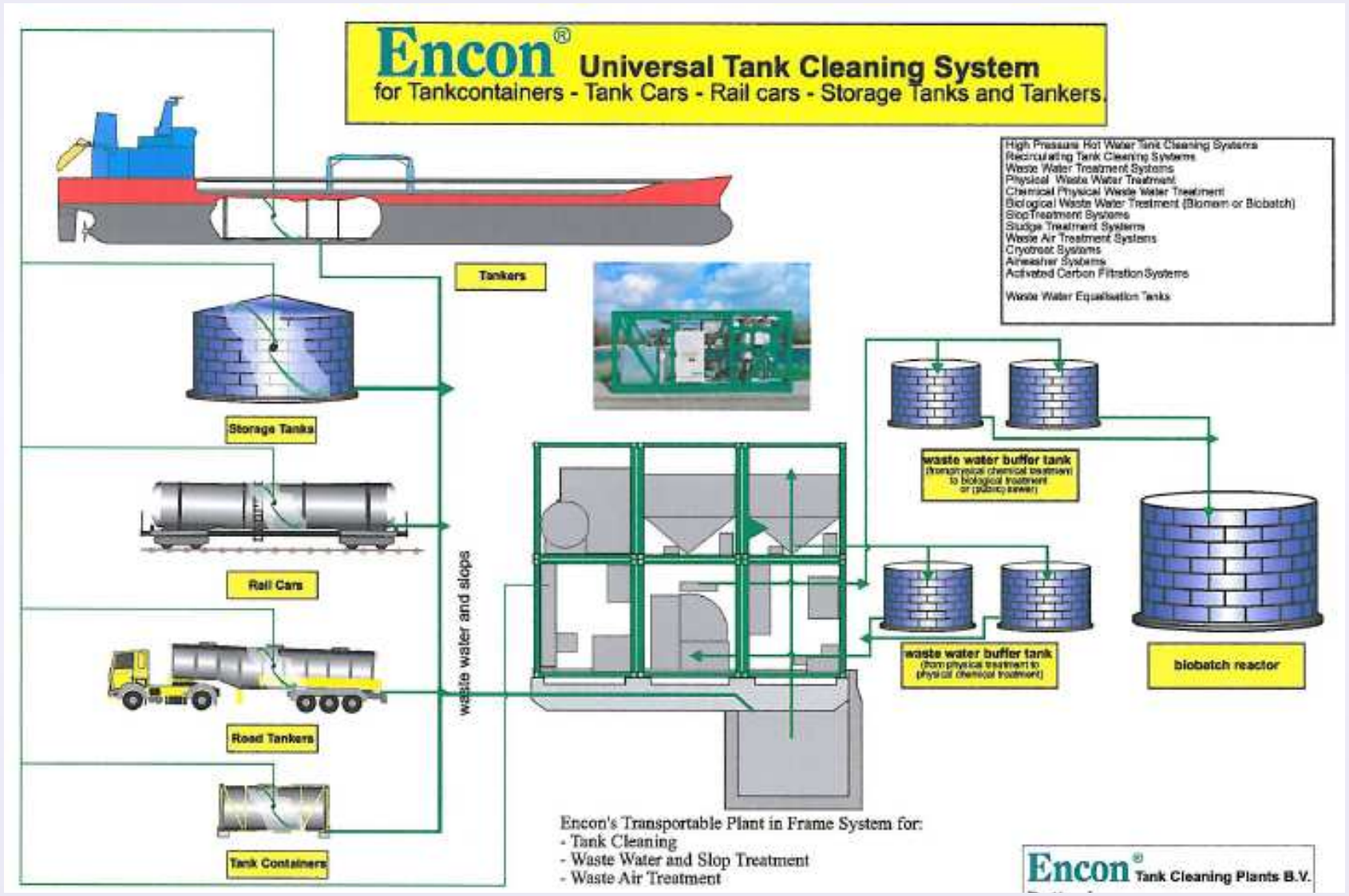
Tank cleaning net in Italy

Topic questions of cleaning - technical

- Transport mode: rail, road, multimodal
- *Capacity of cleaning: No. of tanks per day*
- Accepted classes: 3, 5.1, 8,9, foods
- Problematic products: toxic-6.1, adhesives,
- Sources: Natural gas, heating oil, electricity 3x400/230 V 50 Hz, steam 0,3-1MPa
- Waste management – water cleaning station

Tank cleaning for rail, road and tank containers




Encon® Universal Tank Cleaning System
for Tankcontainers - Tank Cars - Rail cars - Storage Tanks and Tankers.
High Pressure Hot Water Tank Cleaning Systems
Recirculating Tank Cleaning Systems
Waste Water Treatment Systems
Physical Waste Water Treatment
Chemical Physical Waste Water Treatment
Biological Waste Water Treatment (Biomem or Biobatch)
SlopTreatment Systems
Sludge Treatment Systems
Waste Air Treatment Systems
Cryotreat Systems
Airwasher Systems
Activated Carbon Filtration Systems
Waste Water Equalisation Tanks
Tankers
Storage Tanks
Rail Cars
Road Tankers
Tank Containers
waste water and slops
waste water buffer tank
waste water buffer tank
biobatch reactor
Encon's Transportable Plant in Frame System for:
- Tank Cleaning
- Waste Water and Slop Treatment
- Waste Air Treatment
Encon® Tank Cleaning Plants B.V.

Topic question - economical

- Important customers in area 50 km
- One or more cleanings – chemical, food, IBCs
- Other services as cleaning – maintenance, press tests, closed parking, dushe, food,
- Quality level – SQAS - ECD, ISO 9000, 14000
- Financial sources – EU founds, bank sources

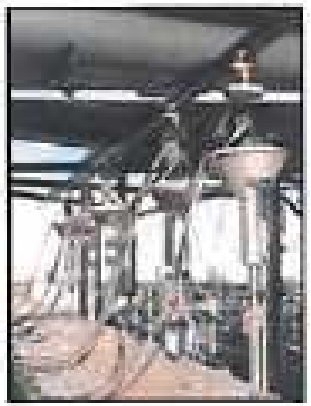
Cleaning metods

- High pressure water jet – (50 – 150 bar)
- Temperature 10 – 85o C
- Steam low press (max. 140oC)
- Detergents – middle, strong, alkaline, acid...
- Cleaning agent – acetone, kerosein, diesel...
- Cleaning of hoses, equipment, pumps...
- Hand cleaning by jet, by brushing

High presure rotated cleaning head

Encon Cleaninghead

- Jetting with hot or cold water at variable speed
- Vapour evacuation
- Hot air tank interior drying

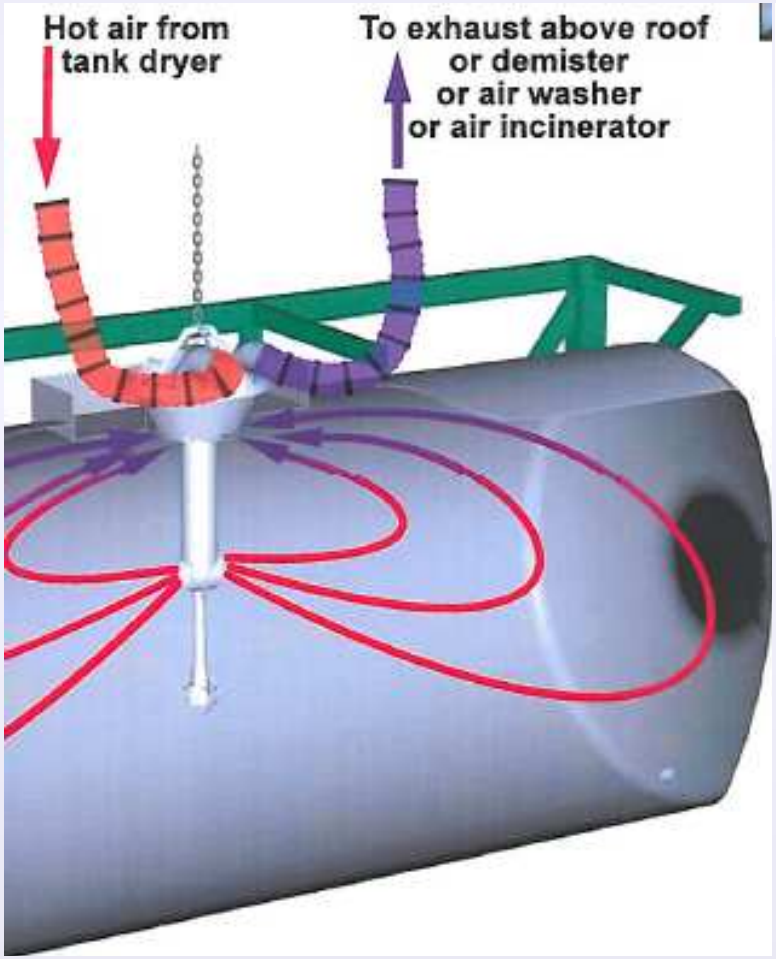


Tank Car Cleaning Bay may be serviced by 1, 2, 3, 4, 5, or 6 Encon High Pressure Cleaninghead(s) HPCH-250

Air equipment

- Drying of tanks by hot air, steam
- Overpressure air ventilation
- Vapour evacuation by cleaning head
- Vapour cleaning by carbon filtration system
- Cryogenic liquefacation of vapour
- Smelted product – cleaning in open space

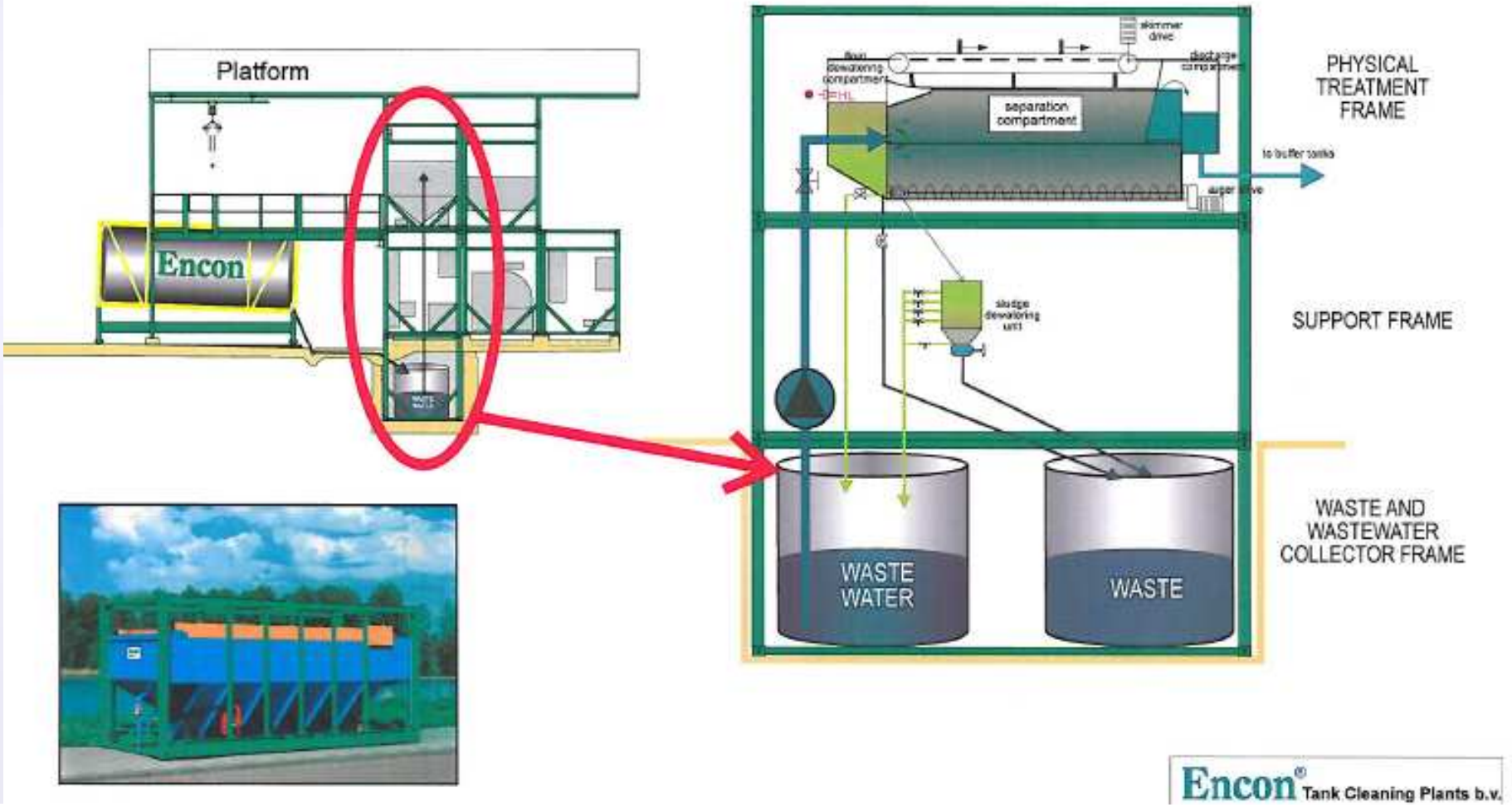
Drying of tanks



Waste water management

- Cleaning : mechanical, chemical, biological
- Slop treatment – separation, concentration
- Neutralisation of waste water – acid, alkaline
- Is effective own waste water cleaning station?
- Biological cleaning – capacity XX m3/day

Waste management – collection, separation



Waste water treatment

Plant in Frame System®, model - Buffer Pumps and Biobatch Biological Wastewater Treatment Unit.

One 20 ft ISO Frame and four Tanks (sizes depending on demand, tanks to be supplied by the customer).

Equipment integrated in frame complete with:
electric - electronical control, instruments, piping, etc.
Pumps for the Buffer Tanks
Aeration system for Biological Treatment,

BUFFER TANK BEFORE BIOLOGICAL TREATMENT

EQUIPMENT FRAME

BIOLOGICAL TREATMENT TANK

BUFFER TANKS BEFORE CHEMICAL PHYSICAL TREATMENT

Encon® Tank Cleaning Plants b.v.
Rotterdam +31 10 4046600

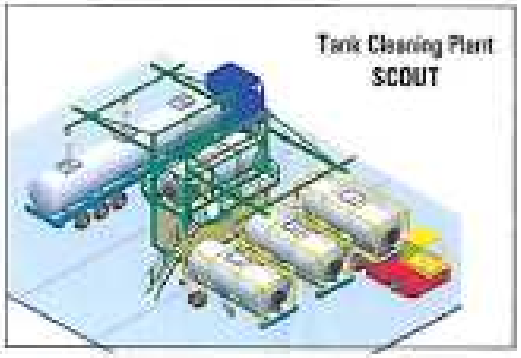
Cleaning of black oil tanks – waste water

Stabile or modular cleaning stations

- Modules – equipment in containers
- Simple and fast construction
- Station is transportable, if is needed
- Addition capacity if is needed
- Cleaning know – how with construction
- Expensive, but smaller investment risk
- Open construction – in winter could frosen

Tank cleaning & wastewater treatment
Plant-In-Frames®

- Modular system: start small and add capacity when needed.
- A secured investment: plants can be relocated.



- Designed to meet ISO, SOAS and CDI requirements.
- On-line operational monitoring for trouble-free performance.
- Energy conservation options built in.

Tank cleaning plant Scout – main components and characteristics

- Up to 15/25 general cleanouts / 16 h day;
- Low Pressure Steam boiler 400 kg/h;
- High-pressure cleaning head pump:
- 1 600 l/h / 50 bar / 80 °C;
- High-pressure Encon cleaninghead;
- High-pressure detergent dosing system with dosage pump for automatic precise dosage of strong alkaline detergent;
- Water softener;
- Cold water buffer tank;
- Storage heating system;
- Overpressure air ventilation;
- Control system;
- Steam heating system.

Tank cleaning plant Pioneer – main components and characteristics

- Built according to ATEX requirements;
- Approx. 30 general cleanouts / 16h day;
- Low Pressure Steam boiler 1.000 kg/h;
- High-pressure cleaning head pump with electronic capacity control:
- 6.000 l/h / 100 bar / 85 °C;
- High-pressure jet-gun pump to feed jet guns simultaneously;
- 2.400 l/h / 50 bar / 85 °C;
- High-pressure Encon cleaninghead;
- High-pressure detergent dosing system with dosage pump for automatic precise dosage of strong alkaline detergent;
- Water softener;
- Cold water buffer tank;
- Storage heating system;
- Air inlet;
- Hot air tank dryer;
- Super dry pressurized air system;
- Pressure keeper;
- Overpressure air ventilation;
- Control system;
- Steam heating system.

The Expandable Pioneer has a capacity up to 18.000 l/h / 100 bar / 85 °C and up to 90 general cleanouts / 16 h day.

Tank cleaning station - Pionier

Biological water cleaning

- Effective volume of cleaned water
- Connection to sewage or to river

Future

- Effective net – area round 50 – 70 km,
- Working time – min.16 hours, optimal 24 hours, Mo – Sat.
- Addicional services – for drivers,
- Dusche, buffet,
- Maintenance of tank wagens
- Parking with security agency

Thank you for attention