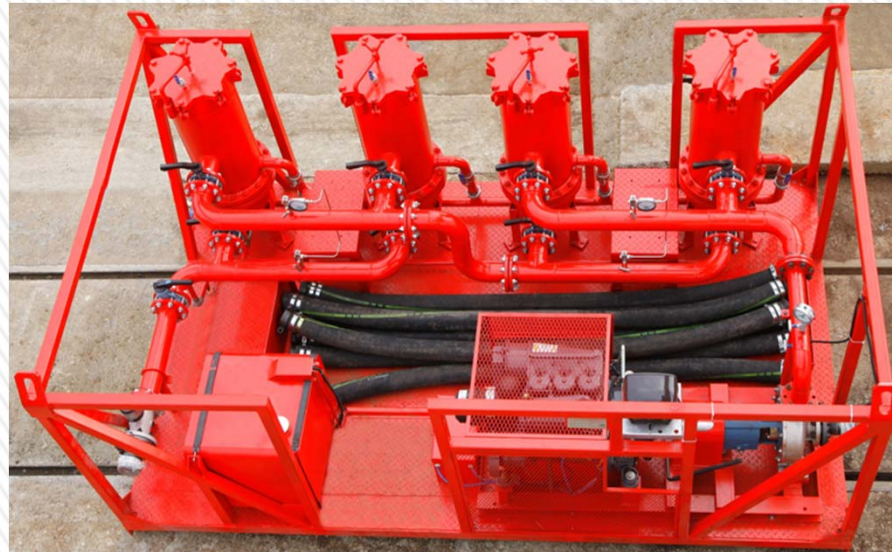


SALT WATER FILTRATION SKID

In the action of developing equipment aimed for the oil and gas industry, Confind designed a salt water filtration system that can help increase the ultimate recovery factor of crude oil from depleted fields



General information on the equipment and its functional role

The process of water injection in reservoirs requires a good control over certain parameters (pressure, flow) , as well as the correct filtration level. To ensure the level of filtration required, Confind designed and built a two stage water filtration system :

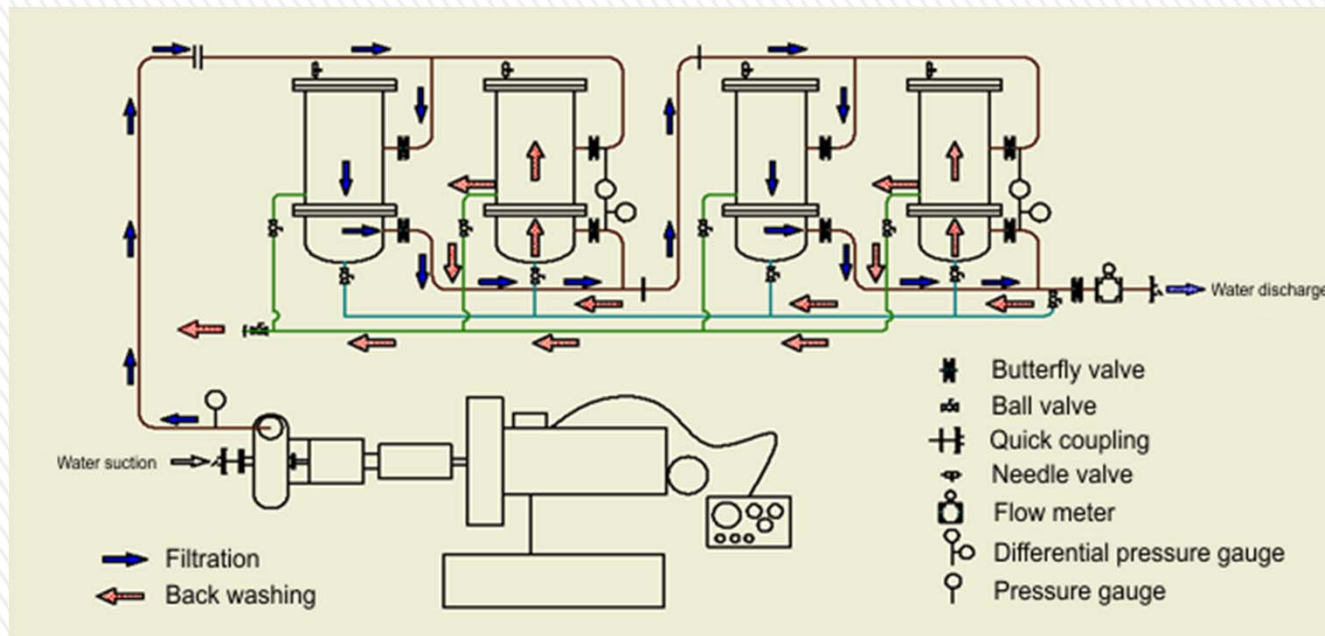
1st filtration stage that separates the solid impurities bigger than 150 μm at a rate of 95-98%;

1st filtration stage that separates the solid impurities bigger than 20 μm at a rate of 95-98%;

SALT WATER FILTRATION SKID

The installation consists of the following elements:

- Skid platform(base frame);
- Sterling centrifugal pump (stainless steel);
- Diesel engine with clutch, battery, diesel tank, control panel;
- Two filter vessels on 1st filtration stage;
- Two filter vessels on 2nd filtration stage;
- Manifold;
- Two differential pressure gauges for determining filter cartridges clogging level;
- Volumetric electromagnetic flow meter for measuring filtered water;
- Interconnecting piping
- Connection hoses



SALT WATER FILTRATION SKID

Each filter stage consists of two vertical cylindrical filters, one active and one back up.

To determine the clogging of filter cartridges, the two stage filtration are equipped with differential pressure gauge. The level of clogging, as specified for the cartridges is up to 1.7-2 bar, amount determined by differential gauges.

Filter itself consists of a vertical cylindrical body with a diameter of 406 mm and height of 1515 mm, equipped with hinged top cover .

The cartridges are placed vertically on a special plate. Filtration is performed from outside to inside for both filtration steps. Thus, the impurities are deposited on the outer wall of the cartridge and can be cleaned by reversing the flow.

Flushing is applied when the pressure drop indicated by the differential gauges is 1.7-2 bar.

The filter to be cleaned is isolated by means of two valves and the clean water flow is reversely flushed through the DN25 valve located at the bottom of the filter.

Disposal of contaminated water is evacuated simultaneously due to the opening of the valve DN50 positioned at the bottom of the chamber in which the cartridges are located.

Cleaning duration depends will on the nature of impurities resulting from filtered water.

It is important to know that after cleaning, water flow drops, especially on the 2nd filtration stage.



SALT WATER FILTRATION SKID

| Main characteristics | |
|--------------------------------|--|
| Working fluid | Reservoir water, free from crude oil impurities |
| Design code | 97/23/EC |
| Maximum filtered water flow | 90 cm/h |
| Operation pressure | +5°C la +45°C |
| 1 st stage fineness | 150 µm |
| 2 nd stage fineness | 20 µm |
| Filtration efficiency | 95% |
| De-clogging | Replace cartridges/ back wash |
| Pump type | Centrifuge – stainless steel |
| Power | Diesel engine, clutch, flexible coupling, diesel tank, control panel, 12 V battery |
| Operating pressure | 8 bar |
| Dimensions | 4200x2400x1800 mm |
| Weight | 4150 kg |
| Corrosion protection | Inside-outside |