GEA Crude Oil Treatment Systems

Available units and process setup

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Ready-to-use crude oil treatment systems

GEA supplies modular systems for the dehydration and desalting of crude oil, at the heart of which is a high-performance centrifugal separator which can be flexibly supplemented by additional units.

These robust and modular units are designed to flexibly meet the stringent requirements of the oil industry and are able to handle different process conditions efficiently. In addition, the GEA crude oil centrifuges are high-performance units and offer space- and weight-saving solutions that comply with the strictest environmental regulations.

The units can be configured into a fully functional stand-alone system and integrated into any existing upstream and downstream production process to improve oil quality and solve oil separation challenges. The modular design allows the combination of several centrifuge units and provides the required flow rate flexibility. Depending on the requirements, the system can be designed for either crude oil dehydration or desalting.

Applications

- Dehydration of crude oil
  - Heavy crude oil
  - Off-spec (opportunity) crude oil
- Desalting of crude oil
  - Heavy crude oil
  - Off-spec (opportunity) crude oil

Benefits at a glance

- Stand-alone system or as expansion of the capacity of the oil treatment system in place to compensate for existing bottlenecks
- Extremely flexible due to modular design
- Very high efficiency
- Simultaneous separation of water and solids
- Efficiency of water and salt removal 90 % - 99 %
- Efficiency of solids removal > 99 %
- Hazardous area (Zone 1 and Zone 2) compliance
- Compact design with overall small footprint
- Continuous operation with an uptime of > 98.5 %, depending on the service level agreement
- Adaptation to NACE and sour crude oil possible

Overview of available units

Centrifuge unit

Capacity	30 - 150 m³/h | 5,000 - 23,000 BPD
Dimensions* L x W x H (appr.)	8,000 x 3,000 x 4,550 mm | 26 x 10 x 15 ft
Weight* (empty)	17,700 kg | 39,000 lb
Required power	P = 75 - 150 kW / 100 - 200 HP

Feed pump unit (optional)

Capacity	30 - 150 m³/h | 5,000 - 23,000 BPD
Amount of pumps	1 x 100 % positive cavity pump
Dimensions* L x W x H (appr.)	5,200 x 1,200 x 2,900 mm | 17 x 4 x 10 ft
Weight* (empty)	9,500 kg | 21,000 lb
Utilities	Power 45 kW / 62 HP

Heat exchanger unit (optional)

Heating capacity	45 °C – 105 °C | 113 - 220 °F
Dimensions* L x W x H (appr.)	5,200 x 1,200 x 2,900 mm | 17 x 4 x 10 ft
Weight* (empty)	9,500 kg | 21,000 lb
Utilities	Saturated steam, thermal oil

Multi-stage mixer unit for the desalting process (optional)

Capacity	30 - 150 m³/h | 5,000 - 23,000 BPD
Dimensions* L x W x H (appr.)	3,800 x 3,800 x 5,500 mm | 12 x 12 x 18 ft
Volume	up to 7 m³ | 1,850 gallon
Weight* (empty)	10,000 kg | 22,000 lb
Utilities	Power: 4.0 kW / 5.4 hp Wash water: 1 - 5 % of the crude oil feed flow

Heat recovery unit (optional)

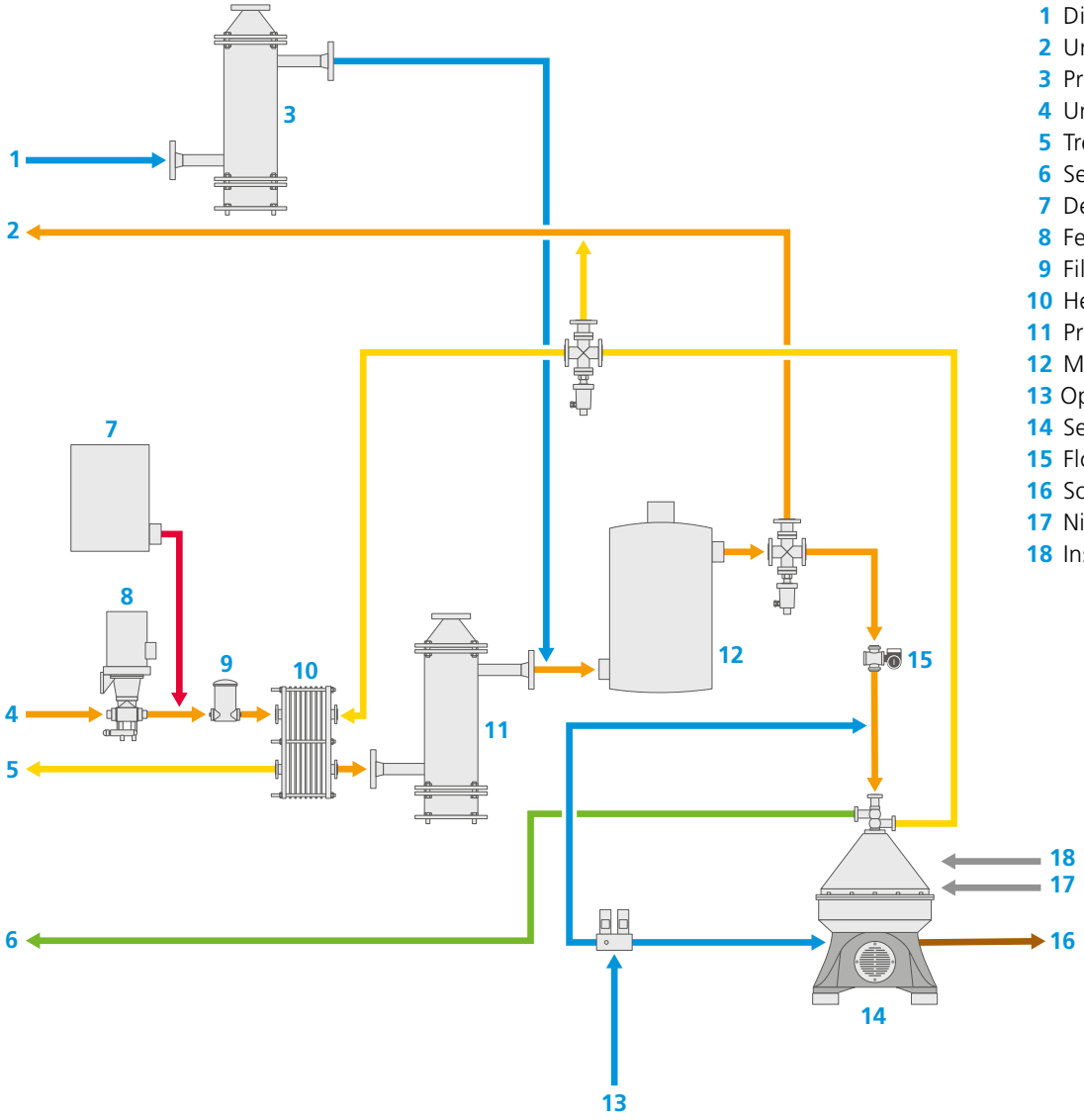
Heating capacity	660 - 3,300 kW
Dimensions* L x W x H (appr.)	5,200 x 1,200 x 2,900 mm | 17 x 4 x 10 ft
Weight (empty)	9,500kg | 21,000lb
Utilities	Treated crude oil

Chemical dosing unit (optional)

Capacity	1 - 2 m³/h | 4,4 gpm
Dimensions* L x W x H (appr.)	2,500 x 1,500 x 2,000 mm | 8,2 x 5,0 x 6,6 ft
Weight (empty)	1,000 kg | 2,200 lbs
Utilities	Power 2 kW | 2,8 HP

*Weight and dimensions are based on a capacity of 30 - 85 m³/h

Process setup



1 Dilution water
2 Untreated crude oil return
3 Pre-heater
4 Untreated crude oil feed
5 Treated crude oil discharge
6 Separated water discharge
7 Demulsifier
8 Feed pump
9 Filter
10 Heat recovery unit
11 Pre-heater
12 Multi-stage mixer
13 Operating water
14 Self-ejecting separator
15 Flow transmitter
16 Solids discharge
17 Nitrogen
18 Instrument air

Process setup variant for crude oil desalting

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