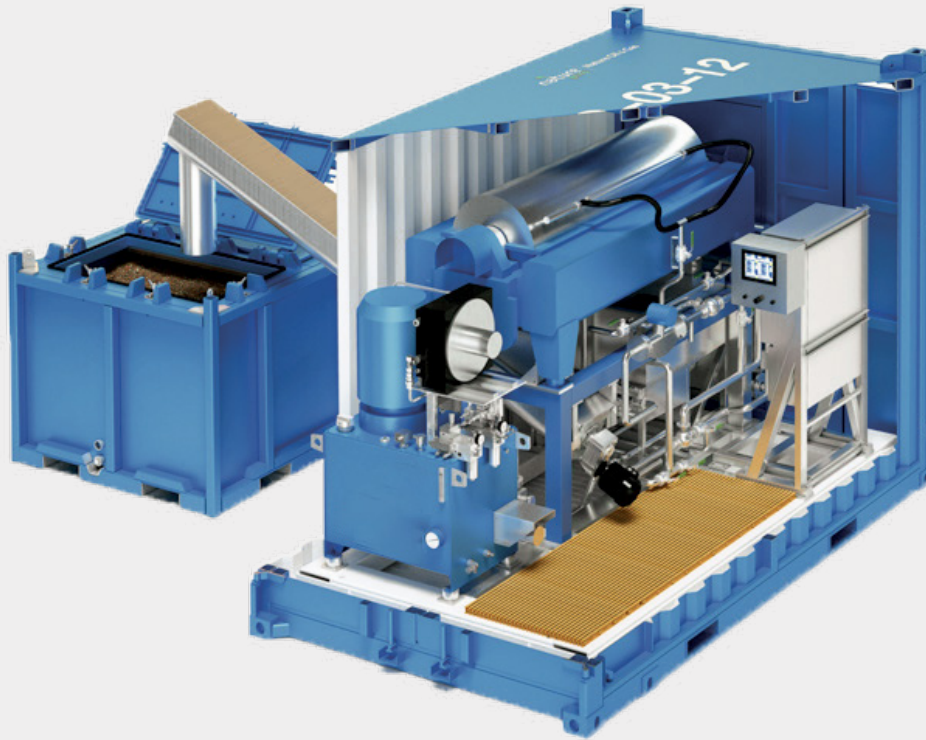


# STU

## Sludge Treatment Unit

The Sludge Treatment Unit (STU) is designed for treating heavier slop waste such as sludge, water saturated mud etc.



### Description

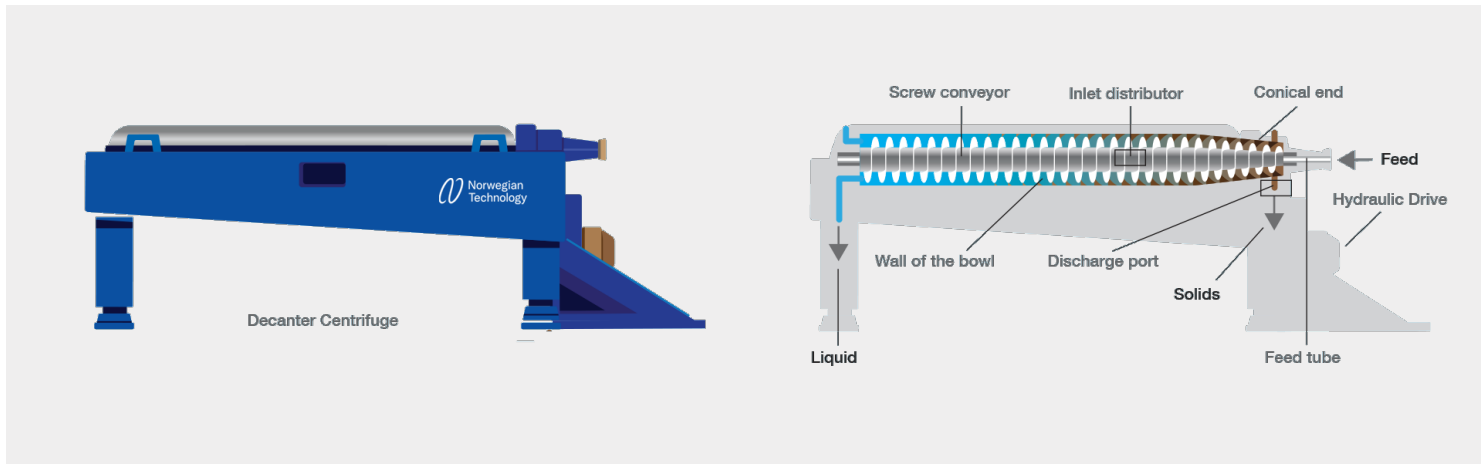
The separation technology includes an emulsion breaker injection system in combination with a decanter centrifuge with high slenderness ratio. The unit is perfectly equipped to separate the solids from the water. The effluent water is suited for water treatment with the Compact Treatment Unit (CTU).

### Features

- Small footprint, 14 ft container
- Capacity, 10 m3/h
- Proven technology
- Hydraulic drive
- Variable speed & differential speed
- Multipower, 400 – 690VAC 50/60Hz
- Standalone unit
- Works together with CTUs
- Controlled by PLC system
- NORSOK Z-015 standard and DNV 2.7-1

### Benefits

- Dewatering of sludge/mud to prepare water for water treatment with the CTU.
- Cost reduction on transport of sludge/mud to shore and hazardous waste handling.
- The STU can further dewater the CTU sludge and therefore make it more efficient.
- The STU has extra ISO fittings so it can be stacked on top of the CTU for the saving of deck space.



#### Technical details

Container	5' DNV 2.7.1
Size/weight	14 ft / 11 000 kg
Dimensions (mm)	L: 4 267; W: 2 438; H: 3 002
Treatment capacity	Up to 20 m3
Standards & Specifications	Norsok Z-015
Inlet	2" Cam-Lock Male
Reject	2" Cam-Lock Male
Solids	Chute to ship
Water discharge	2" Cam-Lock Male
Water supply	1" Chicago Claw
Air supply	1" Chicago Claw
Oil in Water Monitor	Internal
Water usage	Max 100l/h (washing)
Chemical usage	Dosing based on lab report
Electromotive force	400-480 V 50-60 Hz
Power connection	Plug / junction box / 70 kw - 125A
Pressurized air usage	34.5 Nm3/h
Capacity	1-10 m3/h
Design pressure	10 Bar
Design Temperature	-5 +35 °C
Design pH	2-12
Pressurized air	Min 5 barg

Chemically breaking the emulsion of heavy slops.



# CTU

## Compact Treatment Unit

The Compact Treatment Unit (CTU) designed for treating slop water and produced water offshore.



### Description

The separation technology includes coagulation, flocculation, dissolved air flotation with dosing pumps and control system. The treatment system is built into a 12 ft container in compliance with the NORSOK Z-015 standard and approval for ATEX II/3G.

### Features

- Small footprint, 12 ft container
- High treatment capacity, 20m<sup>3</sup>/h
- Proven technology
- Target discharge less than 5 ppm OIW
- Multipower, 400-480 VAC, 50/60 Hz
- Low power consumption, 16 kW
- Controlled by PLC system
- Internal NTU monitor  
(can be correlated to independent OIW monitor)

### Benefits

- Reduces onshore delivery of hazardous waste from the rig up to 95% dependent on water characteristics
- Cost reduction on transport of water to shore and hazardous waste handling
- Avoid production of H<sub>2</sub>S during transportation and storage
- Treated water released offshore, not in coastal areas

## Operations

A touch screen operates the treatment system. The PLC/HMI controls the pumps, motors and valves, and monitors the process variables. The treatment system consists of 7 steps:

- ❶ Inlet – flow control.
- ❷ Mixer – coagulation and flocculation.
- ❸ Treatment chambers – dissolved air in water is introduced into the chambers for flotation of the flocculated particles. Sludge is skimmed of the top and discharged to sludge skip.
- ❹ Discharge balance tank – level control by mechanical weir.
- ❺ Barrier 1 – a turbidity meter measures the purity of the water, this controls an automated valve if high turbidity occurs.
- ❻ Barrier 2 – in case of emergency oil adsorbing filter elements clog up if oil enters into filters.
- ❼ Discharge – discharge pump to sea.

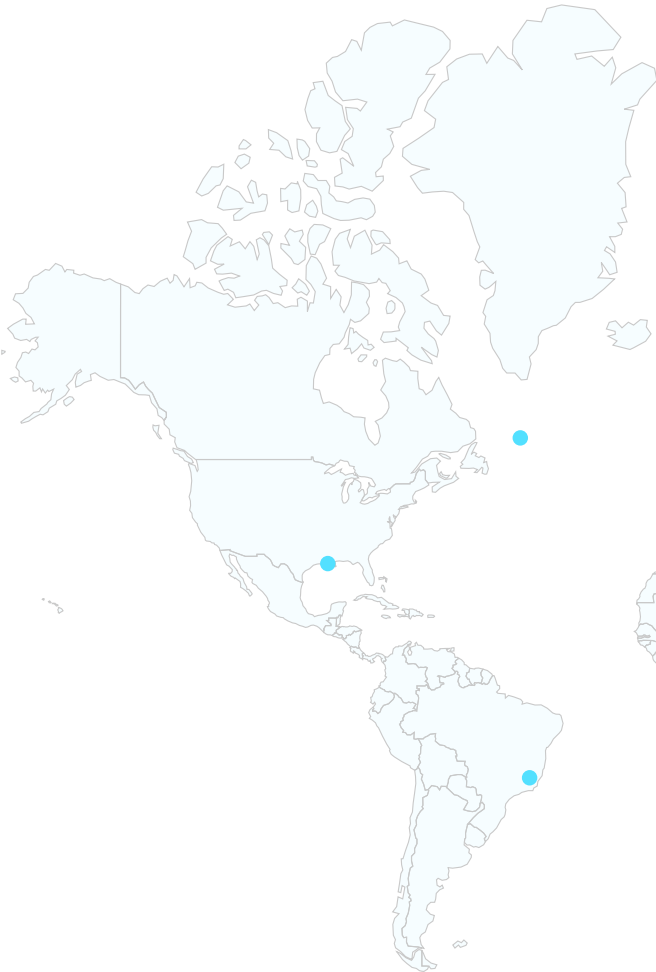
## Technical details

Container	5' DNV 2.7.1
Size/weight	12 ft / 9 000 kg
Dimensions (mm)	L: 3 674; W: 2438; H: 3 000
Treatment capacity	Up to 20 m <sup>3</sup>
Standards & Specifications	Norsok Z-015
Inlet	2" Cam-Lock Male
Discharge	2" Cam-Lock Male
Return	2" Cam-Lock Male
Sludge	2" Cam-Lock Male
Decanter supply (opt)	2" Cam-Lock Male
Decanter return (opt)	2" Cam-Lock Male
Water supply	1" Chicago Claw
Air supply	1" Chicago Claw
Oil in Water Monitor	Infracal TOG / TPH Analyzer
Water usage	Max 100l/h (washing)
Chemical usage	Dosing based on lab report
Voltage	400-480 V 50-60 Hz
Power connection	Plug / junction box / 16,5 kw - 32A
Pressurized air usage	34.5 Nm <sup>3</sup> /h
Capacity	1-10 m <sup>3</sup> /h
Design pressure	10 Bar
Design temperature	-5 +35 °C
Design pH	2-12
Pressurized air	Min 5 barg

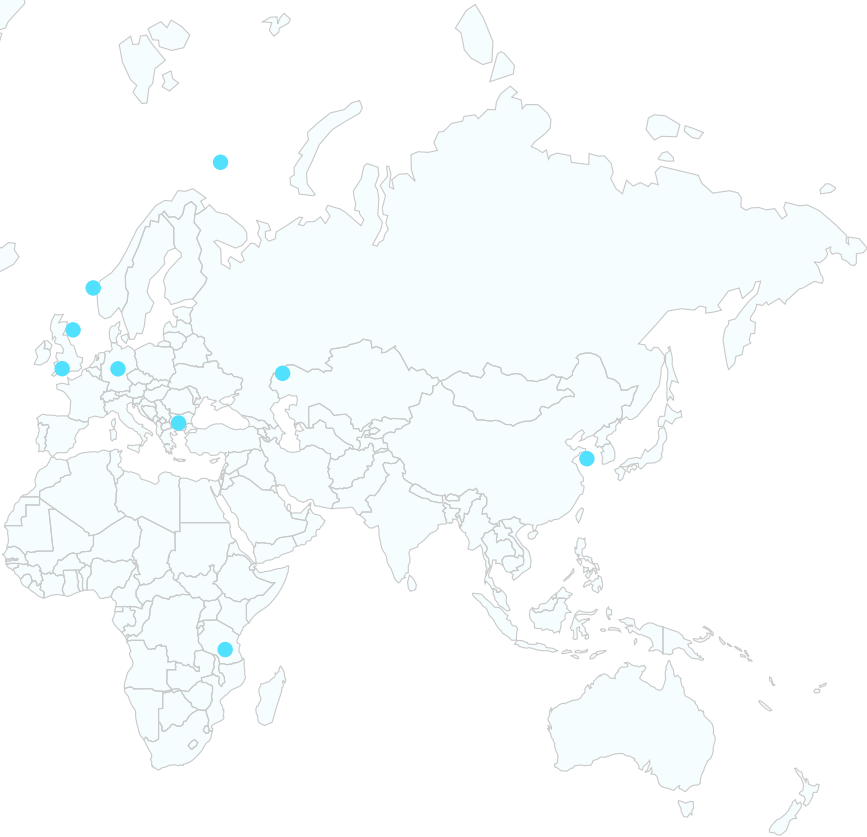
## Coagulation, flocculation and flotation



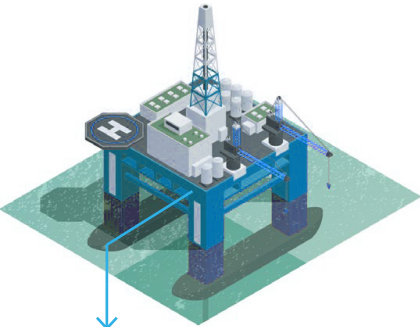
Group global footprint



Regions where Norwegian Technology AS products are qualified for field application.



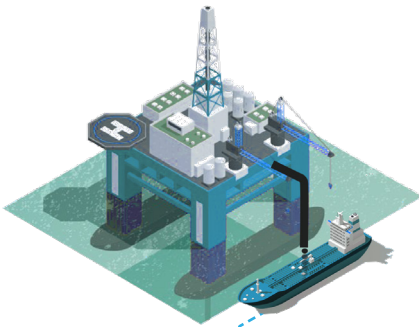
The Norwegian Technology way:



95%

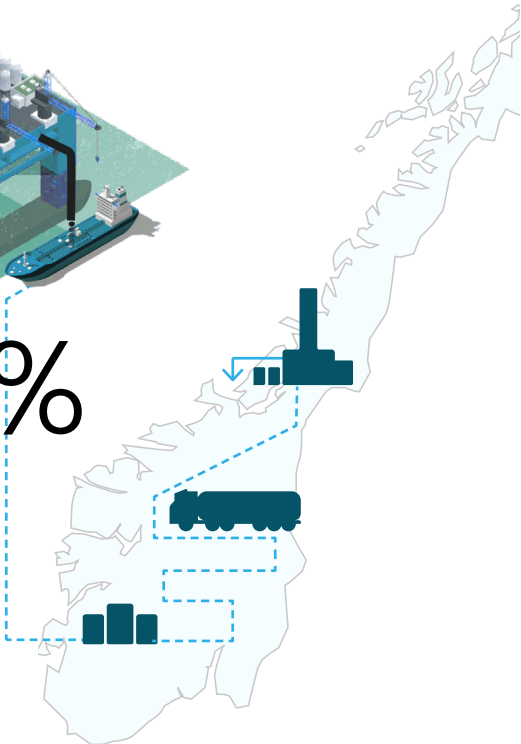
Treated water  
> 5ppm

The traditional way:



100%

Untreated slops



# Reliable treatment of liquid waste

