

**ferrum**

**MEG RECOVERY ON OFFSHORE FACILITIES  
VERTICAL BASKET CENTRIFUGES**





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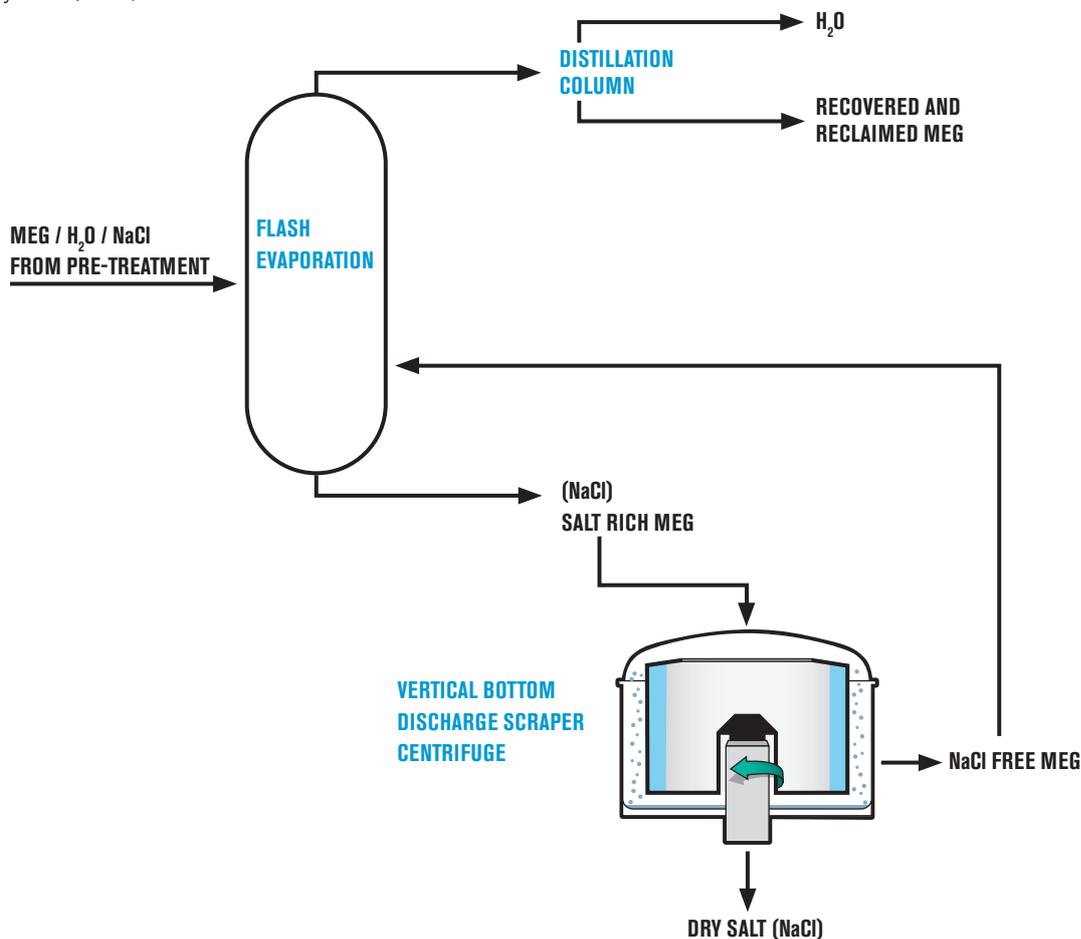
# + MEG RECOVERY PROCESS

Processes have been developed which use monoethylene glycol MEG as a hydrate inhibitor for deep sea gas pipelines offshore. The advantage of MEG is the higher flash point temperature compared to other inhibitors used previously which improves safety. Furthermore, the MEG can be reclaimed. This saves running costs and helps to protect the environment.



## MEG RECOVERY

- + The contaminated MEG is first treated to remove undissolved solids such as sand and then degassed.
- + The remaining liquid is a mixture of MEG, water and dissolved salt (NaCl).
- + After a primary thermal process, much of the water is evaporated leaving a mixture containing less water, MEG and now solid salt crystals (NaCl).
- + The solid NaCl crystals are removed with high efficiency from the MEG by use of a vertical bottom discharge centrifuge.
- + MEG is returned to the MEG cycle. The NaCl crystals are deposited back into the sea from where they originate.





# TYPE VBC-W<sup>+</sup> MEG RECOVERY CENTRIFUGE

One of the final process steps to recover MEG is to separate crystalline salt (NaCl) from the recovered MEG. Ferrum has designed a vertical bottom discharge centrifuge specifically for this application. This refers not only to the centrifuge process itself but also to design features unique for operation on offshore platforms. This includes fulfilling the highest demands for material identification, procurement as well as for manufacturing quality assurance and recording as required by the oil and gas industry.

## SPECIAL DESIGN FEATURES

- + Suitable for offshore conditions
- + Designed for ATEX zone 2 installation (ATEX zone 1 possible)
- + Contacted stainless steel parts in Duplex 22 Cr or Super Duplex 25 Cr
- + InertoSafe<sup>®</sup> inertisation system to reduce degradation of MEG due to atmospheric oxygen
- + Residual moisture in NaCl < 4 % -w/w
- + Solid NaCl in filtrate < 0.2 %-w/w



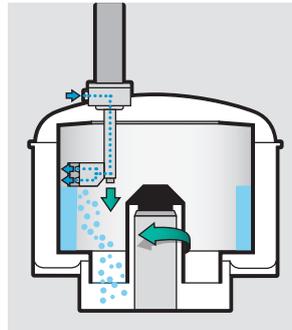
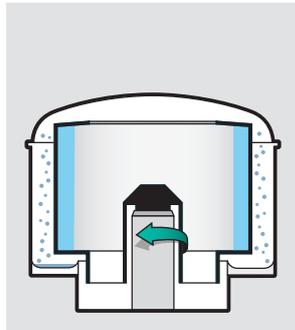
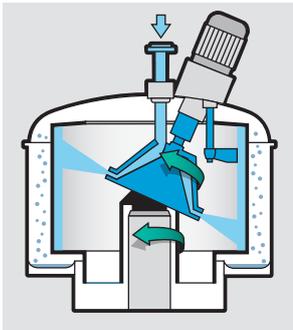
# PRINCIPLE OF OPERATION

**Process steps** | The solid-liquid separation process using MEG Recovery centrifuges is discontinuous in a sequence of specific process steps as described below. The 2 following options are available:

**Filling**

**Centrifugation**

**Scraping,  
residual heel removal,  
solids discharge**



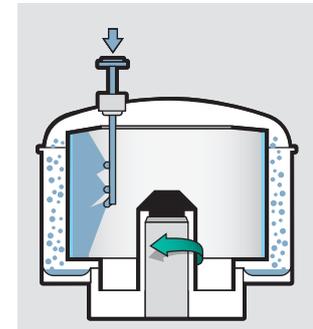
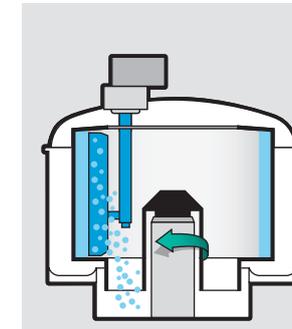
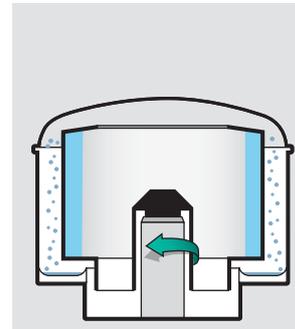
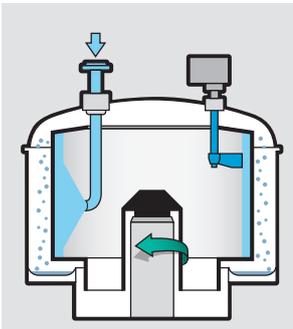
**Option 1: Inclined feed disk and scraper knife with axial and vertical movement**  
Residual heel removal during scraping with air / nitrogen

**Filling**

**Centrifugation**

**Scraping,  
solids discharge**

**Residual heel removal**



**Option 2: Feed pipe and scraper knife over entire basket height with axial movement only**  
Residual heel removal with condensate / sea water

**Filling**

The MEG / NaCl / H<sub>2</sub>O suspension is applied evenly to the centrifuge basket via a feed pipe or an inclined feed disk. The fill level control prevents overfilling of the basket.

**Centrifugation**

Centrifugation takes place until the required residual moisture of the filter cake is reached, usually at the max. possible basket speed.

**Scraping, solids discharge**

At reduced speed the scraper knife swings into the filter cake and scrapes out the product vertically downwards.

**Residual heel removal**

To protect the filter cloth during scraping, a residual heel is left on the filter cloth. The residual heel can be removed periodically by using a separate wash pipe, or pneumatically using a residual heel removal system.

# + OPTIONS ADVANTAGES



## FEED SYSTEMS

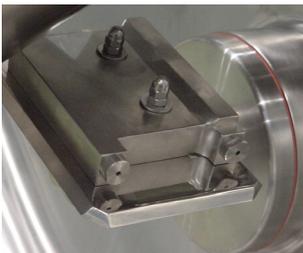
**Inclined feed and wash disk** | Ferrum Innovation to allow even suspension distribution over the entire basket height, leading to less unbalance and therefore smoother running of the centrifuge

**Feed pipe** | For even distribution with appropriate products and adjustable pipe positions for smooth filling

## SCRAPER UNITS

**With axial and vertical movement** | High degree of scraper settings, scraping at reduced speed and product discharge vertically downwards

**Over entire basket height with axial movement only** | Short discharge times and compact machine dimensions



## RESIDUAL HEEL REMOVAL

**With nitrogen** | Ferrum Innovation to prevent clogging of the filter cloth. Nitrogen supplied through the shaft and knife holder is blown onto the residual heel to break the heel loose. Scraping and residual heel removal is performed in one process step.

**With water** | Condensate or sea water is used to remove the residual heel after the scraping process to prevent clogging of the filter cloth.

## ADVANTAGES

- + The separated MEG is almost 100% free of NaCl crystals. High level of MEG purity is achieved
- + The separated NaCl crystals are almost free of MEG, meaning high level of MEG recovery and reduced environmental contamination



# + CIP SYSTEM PERFECTLY CLEAN

- + Period cleaning to remove deposited NaCl crystals
- + Cleaning using condensate or salt water
- + CIP nozzles on cover, housing, chute and bearing hub
- + Minimum wash liquid consumption due to compact design and optimised cleaning programme



# + TURN-KEY DRIVE RELIABLE CONTROL



- + Turn-key drive and controls package with remote I/O and Ethernet communication
- + Offshore protection: cabinets with overpressure to avoid influx of atmospheric air
- + Extra rigid cable trays for harsh environments

## WORLDWIDE

