

# ePack

## Electrostatic Plate Pack Coalescer for Oil Separators

## Double oil production or reduce water carryover to less than half

The ePack is an electrostatic plate pack coalescer which can be built into new or existing gravity separators to improve the oil-water separation process. Electrostatic separation is commonly used in industry for removing residual water from oil. The ePack and its unique design features now makes it possible to perform electrostatic separation reliably also with presence of gas and large quantities of water. The technology will dramatically increase the separation efficiency which can realize increased oil throughput, reduced water carryover, reduced cost of heating and reduced size of processing equipment.

### Benefits

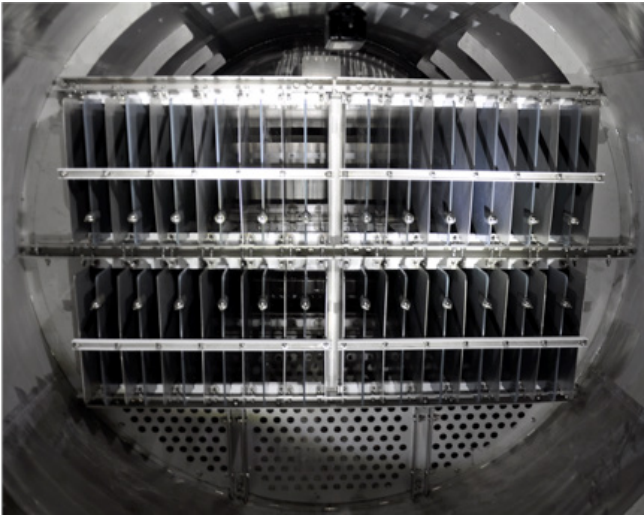
- Enabler for increased production, reduced heating costs and reduced footprint of equipment
- Electrostatic coalescence can be performed in a conventional separator with gas presence
- High water tolerance due to electrically insulated electrodes
- Non-stick coating reducing risk of clogging
- Internals installation without hot work in 2 days
- Short-circuit proof power supply with automatic stepless load control
- Low power consumption (3-7 kVA under normal operation)

### Design Specifications

|                                  |  |
|----------------------------------|--|
| <b>Power unit specifications</b> | 17.5 kVA, 10 kV dry type, input 50/60 Hz, 440, 600, 665/690 single phase             |
| <b>Power unit certification</b>  | CSA, CE marked, designed according to DNV-OS-D201/202 and IEC EMC 61000-4/60945.IP54 |
| <b>Communication</b>             | PLC, Ethernet TCP/IP   |
| <b>Power entry certification</b> | ATEX and IEC Ex 60079 (Ex eb T3 IIC Gb IP 66)  |
| <b>Operating pressure</b>        | < 60 barg  |
| <b>Operating temperature</b>     | < 140°C  |
| <b>Inlet water cut</b>           | v0 – 100%  |
| <b>Inlet gas volume fraction</b> | 0 – 100%   |



**Ask us about available testing facilities to demonstrate the technology for your oil**



**Operation and separation efficiency:**

The ePack is built as a wall between the normal water interface level and the normal oil level. When stable oil emulsion flows through the ePack, water droplets are subjected to an intense alternating current electric field which polarizes droplets and create a strong attraction between them. Droplets collide, coalesce and grow to larger droplets which settle to the water phase of the vessel. The oil quality is dramatically improved.

For heavy viscous emulsions the ePack can easily reduce the water carryover to a few percent. For conventional and light oils, the ePack will guarantee that the quality for oil export is achieved.

The ePack power supply uses a patented magnetically controlled inductor to control the voltage to the ePack. The technology was originally developed for subsea use to offer voltage boosting for long distance step outs.

The power control concept avoids common challenges of operating electrostatic coalescers with both high and low water content. The voltage is easily controlled whatever conditions the ePack wall is subjected to. The power unit has the uniqueness of an inherit short-circuit protection without any active electronic components in the main circuit and is super-robust!

**Applications and business case:**

The ePack technology has the potential to offer considerable savings in CAPEX or OPEX depending on how it is applied. We summarize some typical business cases below.

Capacity or performance increase of existing separators

- Separators may be challenged by increased water production, tie-in of new wells or relocation of FPSO
- Retrofitting separator with ePack brings performance back to an acceptable level.

Bulk water removal in heavy oil treatment systems

- Heavy oil processing is characterized by considerable heating and upsets due to strong emulsions.
- Increasing water removal by applying ePack will reduce heating cost and protect electrostatic treater against high water loading.

Enabler for compact light oil trains

- Conventional electrostatic treaters cannot accept gas a low pressure separator is required for degassing the oil.
- ePack can be installed in the low pressure separator and the conventional electrostatic treater can be removed.

Desalting applications

- Reducing carryover of water from the low pressure separator will reduce wash water consumption and may in some cases eliminate one desalting stage.

For test separator

- The ePack can be introduced in test separators to increase its functionality when producing challenging well streams.

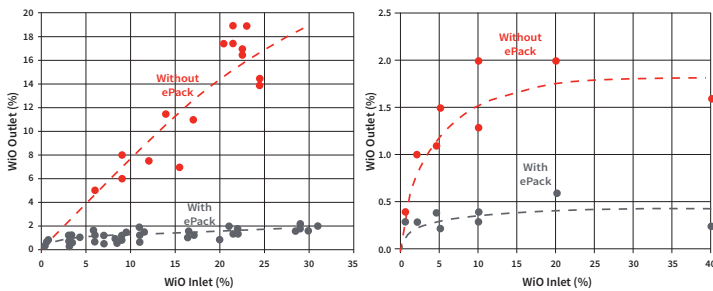


Figure: Typical results for heavy- or very stable oil emulsions (left) and conventional oil (right) with separation time of 5-10 minutes.