

Datasheet

PERVATECH CONTINUOUS MODE PERVAPORATION PLANT; CP0736 (2 m² / 4 m²)

Pervatech provides industrial scale continuous mode pervaporation plants as turn-key installations. These can be used for the whole variety of pervaporation applications, and can be custom-made for specific customer demands.

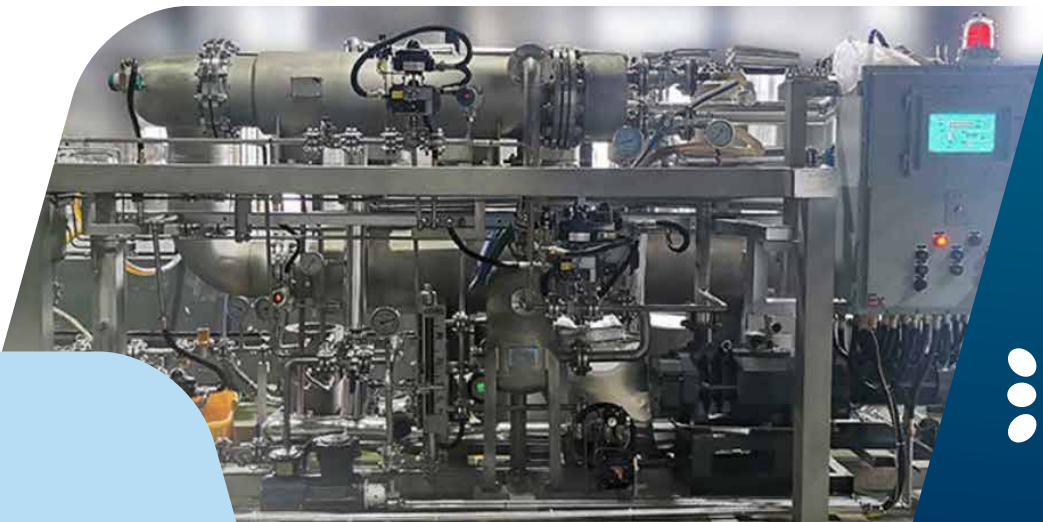
TECHNICAL SPECIFICATIONS OF THE SKID MOUNTED PILOT PLANT

Scope of supply

- Pervaporation pilot plant system for continuous process, skid mounted
- The pilot plant includes membrane modules with membranes and seals, feed pump, heat exchangers and filter, vacuum pump and permeate vessel
- Standards of the pressure vessels and pressure pipelines according to ASME or CE
- Membrane surface area: 2 m² or 4 m² Pervatech Hybrid Silica HybSi[®] Acid Resistant membranes
- Electrical and control system (voltage and frequency needs to be confirmed)
- Tubing, cables, and other supporting devices
- User manual and documentation
- Relevant certificates and declarations (e.g. ASME / CE / ATEX / PED)

Not included:

- Feed system or feed vessel
- Retentate vessel
- N₂-supply
- Cooling water and steam supply
- Site works
- Site regulatory



Operational window

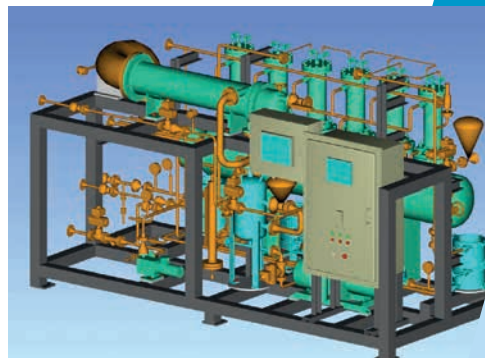
- Feed flow rate:
For 2 m² membrane surface area:
60-150 kg/h (according to feed and outlet requirements)
For 4 m² membrane surface area:
120-300 kg/h (according to feed and outlet requirements)
- Process operating temperature: maximum 150 °C
- Process operating pressure: maximum 10 barg

SYSTEM DESCRIPTION

The pervaporation setup consists of

- i) a feed loop, and
- ii) a permeate side under vacuum.

The pervaporation membrane allows the separation of two or more components which are difficult to separate using common thermal separation processes such as distillation, e.g. in case of azeotropic compositions and solvents with high boiling points.



The feed line is heated by an in-line heat exchanger system.

A nitrogen line is connected to the plant. Nitrogen is used for blanketing purposes, to avoid contact of air and solvent in the feed vessel and retentate the vessel, only requiring a slightly positive pressure. Furthermore, nitrogen is used for discharging the permeate.

During the pervaporation process, the vapor of the permeating component is collected from the permeate side of the membrane. The continuous removal of the vapor permeate with a vacuum pump creates a concentration gradient over both sides of the pervaporation membrane. This concentration gradient is the driving force for the separation process.

The vapor is cooled via a condenser and collected in the permeate vessel. The actual cooling temperature depends on the vacuum level. Chilled water should be used (e.g. 1 °C or lower) for a vacuum of 10-20 mbar (or lower when a higher level of dewatering is required).

The unit requires 400 V / 50 Hz electrical utilities (preferred, but can be flexible).

The unit is mounted on a skid. The footprint is approx. 2200 x 4000 x 2200 mm.

MEMBRANES, SPARE PARTS

The unit is to be supplied with a package of Pervatech Hybrid Silica HybSi[®] Acid Resistant membranes, modules, seals and spare parts.

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