



# MINIPLANT

## Short-Path Evaporator - Plant

### Type: SPE025-U

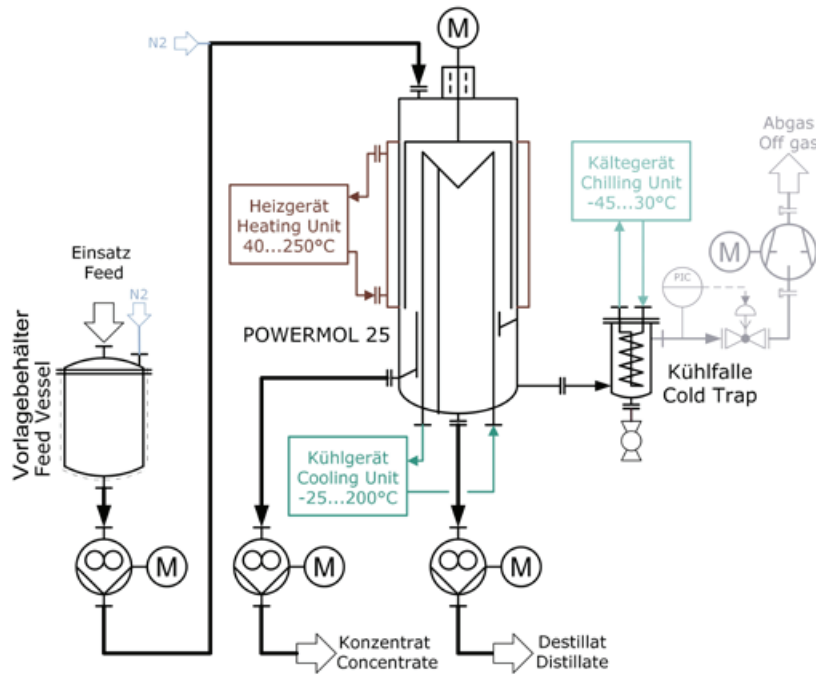
The Miniplant Type SPE025-U is a complete short-path evaporator plant, consisting of the following:

- storage tank
- oil-heated short-path evaporator with internal condenser
- cold trap for protection of the vacuum pump
- 3 transfer pumps
- vacuum pump
- heating and cooling devices
- control cabinet with control system

It is designed for a process pressure from 0.01 to 1000 mbar (abs).



## Principle Scheme



## Functionality

The feed material is continuously conveyed from the storage tank into the short-path evaporator, distributed using the wipers over the entire circumference of the heating wall and transported further as a product flow.

The light volatile components are evaporated and liquefied directly on the internal condenser of the short-path evaporator (distillate).

The less volatile components (concentrate) do not evaporate at the respective process pressure and exit the short-path evaporator at the side. The distillate and the concentrate are conveyed via gear pumps into the collection tank.

The volume flow rates are determined via the speed of the respective pump. Alternatively, the collection tank can be positioned on the platform scales provided by the client.

The advantage of the short-path evaporator lies in the integrated condenser, which minimises the route for the vapours to the condenser and leads to a shortened, gentle evaporation process.

## Advantages

- Low pressure loss in spite of high evaporation rate
- Gentle evaporation and therefore suitable for the distillative cleaning of many different substances which cannot be separated through other thermal processes

## Main Equipment

Equipment	Technical Specifications
Short-Path Evaporator	POWERMOL with 0.25 m <sup>2</sup> heating surface, follow up wiper, -1 ... + 0.5 bar, 0 ... 250 ° C; single-acting mechanical seal, internal condenser
Cold Trap	with internal spiral
Feed Vessel	25 liters, electrical trace heating for temperature control
Feed-, Distillate-, Concentrate Pump	Gear pump, magnetic coupling
Vacuum Pump	two-stage rotary vane pump, including equipment and oil separator
Switch cabinet	4 x frequency converter, digital recorder, vacuum regulator, control panel, completely wired
Heating - Evaporator	+40 ... +250 °C; max. 10 kW heating output at +220 °C
Cooling - Evaporator	-25 ... +200 °C; max. 7 kW cooling output at +20 °C
Freezing - Cold Trap	-45 ... +30 °C; max. 1,2 kW cooling output at -20 °C

all parts in contact to medium in 1.4571 or similar

Note: All units are air-cooled: no water connection is required for operation!

## Plant Performance

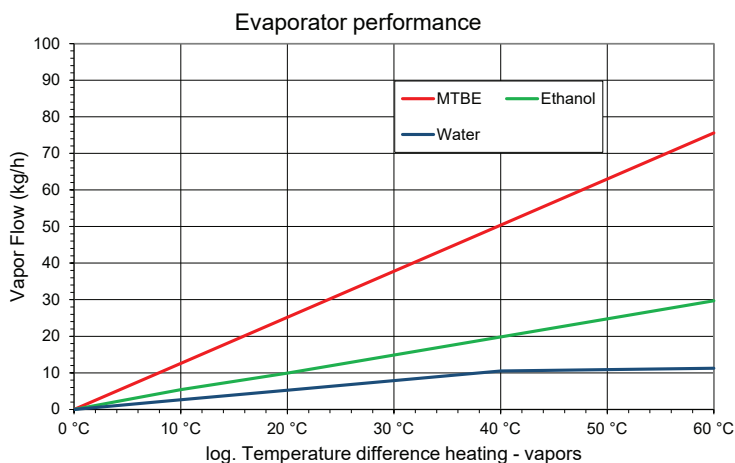
The performance of the plant is primarily dependent on the product, pressure and temperature. It should be observed that the hydraulic efficiency accords with the examples shown in the nominal capacity table below. The plant has been designed for viscosities of up to 2000 mPas.

### Rated Capacity (kg/h)

Product	Feed	Vapor
MTBE	≤ 60	50
EtOH	≤ 30	25
Water	≤ 10	9

MTBE = Methyl-tert-butylether      EtOH = Ethylalcohol (Ethanol)

### Theoretical evaporator capacity depending on heating temperatur:



## Supply

The plant must have an electrical supply: 400 V, 50 Hz, 25 kW connection capacity

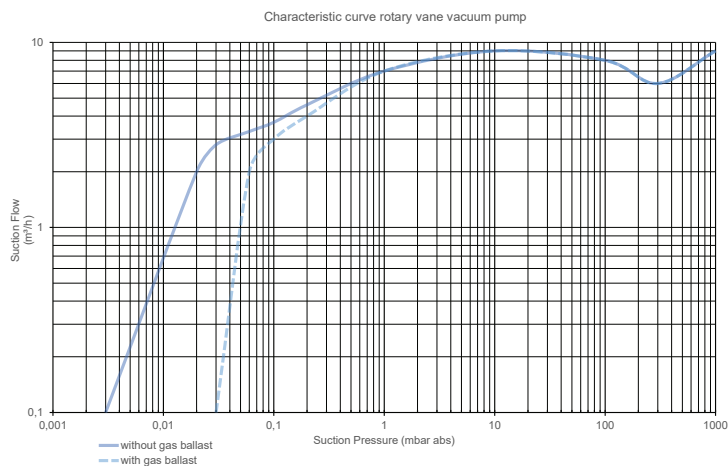
## Delivery / Design

The product is delivered in an empty state. The operating material for the initial filling is supplied in separate packages. On request, designs in other materials are possible.

## Vacuum System

The desired operating vacuum is generated using a two-stage rotary vane vacuum pump, and kept constant using a pressure control loop.

### Nominal pumping speed:



## Explosion Protection

Design in accordance with ATEX regulation 2014/34/EU.

Process area and surroundings: ATEX II 3/3 G Ex T3 Gc X<sup>a)</sup>



a) All guidelines and determinations in the operating instructions must be observed.

## Scope of delivery

The plant is supplied as a "Plug and play" unit.

Prior to commissioning, only the following work has to be executed:

- Follow the Operating instructions
- Visual inspection
- Provide the energy supply
- Connect the exhaust gas line (route to a safe place)
- Provide the nitrogen supply (Permanent connection or gas cylinder)
- Provide the collection tank for distillate and-concentrate
- Fill the operating material for heating and cooling and vent the plant

# MINIPLANTS

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## Dimensions & Weight

