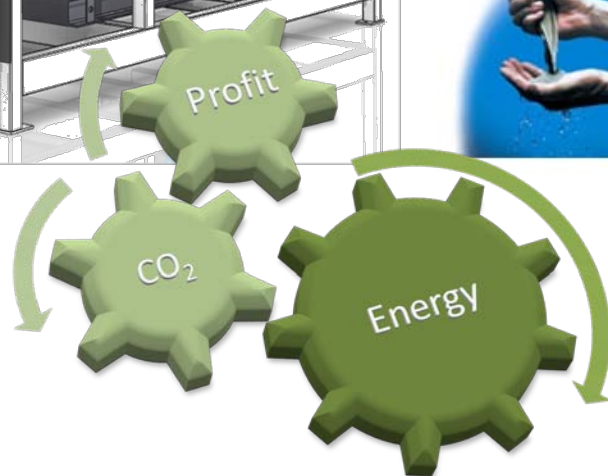


EPCOVAP-MVR

COMPACT MVR EVAPORATOR



EPCON EVAPORATION TECHNOLOGY AS

EVAPORATORS – DRYERS – DISTILLATION & DEHYDRATION – HEAT RECOVERY SYSTEMS
ENGINEERING AND AFTERSALES SERVICES

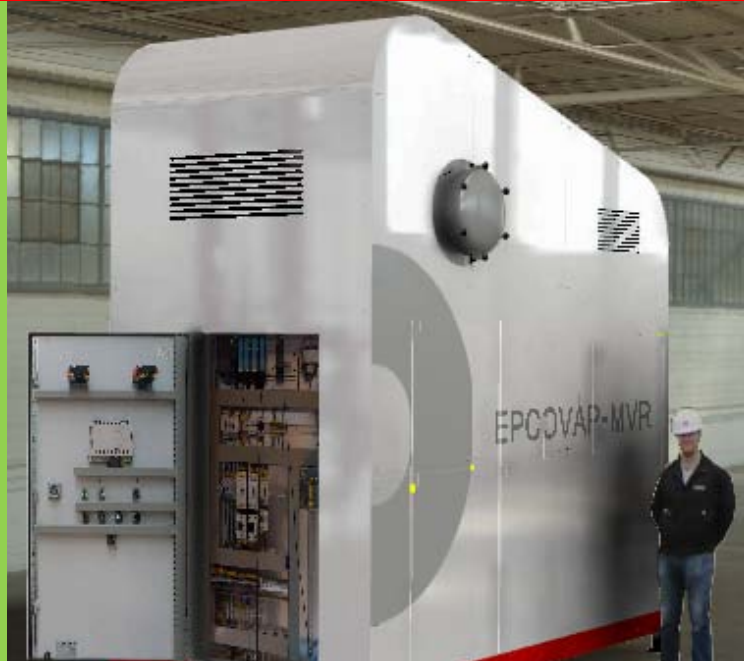
EPCOVAP-MVR evaporator

The EPCOVAP-MVR evaporators are a series of standardized compact MVR evaporators. More than 20 years of experience in MVR evaporation technology is incorporated into the design of the system.

The EPCOVAP-MVR evaporator provide our customers a robust dewatering system at the lowest installation and operational cost.

The energy savings using an EPCOVAP-MVR evaporator is 90-95% compared to a one effect evaporator using boiler steam.

Cooling water consumption is also reduced by 90-95%.



The EPCOVAP-MVR is also available as closed version. Model shown : EPCOVAP-MVR-15F

Technology

The liquid fed to the evaporator is circulated by a pump (3) and heated or boiled inside a plate heat exchanger (2). The liquid is then flashed into a vessel (1), separating the liquid and vapour.

The clean vapour goes into MVR compressor(s) (4) where it is compressed to a higher temperature and pressure before condensing in the heat exchanger (2).

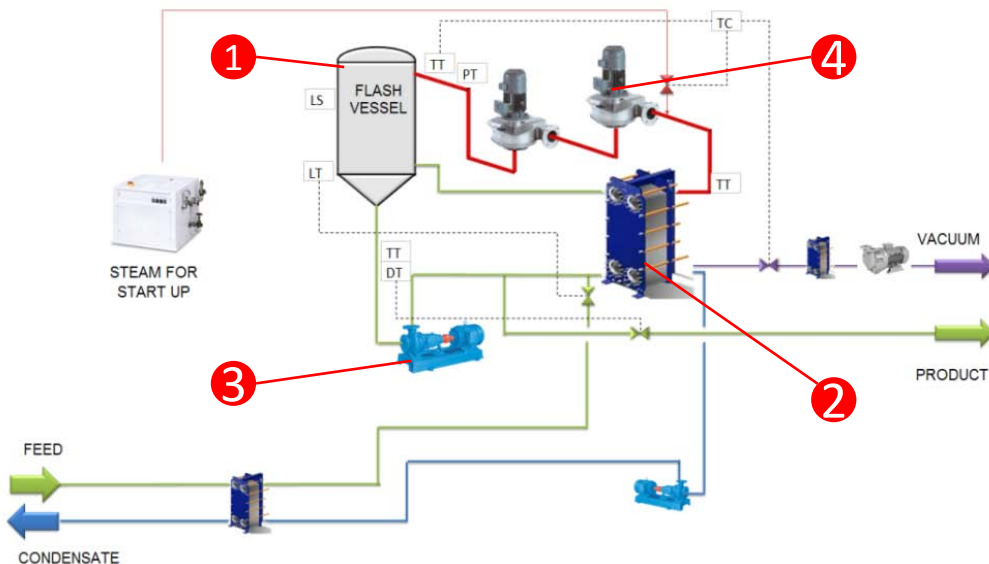
Application adaption

Each unit is adapted to the specific application.

The EPCOVAP-MVR evaporator can be delivered both with pump primed climbing film evaporation and flash (forced circulation) evaporation.

The selection is done according to the actual liquid properties.

The type of plates and plate numbers in the heat exchanger, as well as the size of the main circulation pump, is also specifically selected for each application. This ensures our customers an optimized process.



Compact unit

The evaporator is skid mounted, complete with electric wiring and automation. The unit is tested prior to delivery in our workshop.



Assembly of EPCOVAP-MVR-4

Technical data

The evaporators are equipped with a flexible vacuum system and can evaporate the liquid at different temperatures ranging from 40°C to 100°C. The evaporation capacity is depending on the selected temperature. The achieved capacity is product dependent and must be calculated for each specific application.

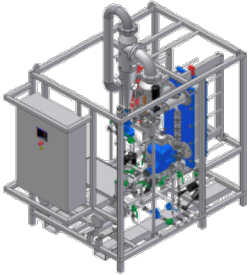
	EPCOVAP-MVR-xxC	4	8	10	15	25	40	
95°C	Evaporation rate	400	800	1000	1500	2500	-	kg/h
	Energy consumption	20	40	50	51	75	-	kW
80°C	Evaporation rate	280	550	700	1200	2000	2350	kg/h
	Energy consumption	15	30	40	44	65	80	kW
70°C	Evaporation rate	180	350	500	850	1300	1750	kg/h
	Energy consumption	10	20	32	35	47	65	kW
60°C	Evaporation rate	110	220	320	550	850	1100	kg/h
	Energy consumption	7	12	25	27	35	45	kW

Purpose

The purpose of an evaporator is removing water from a liquid product by evaporation. The feed flow is split into a concentrate and a clean condensate.

EPCOVAP pilot evaporator

EPCON has a wide range of pilot evaporation plants including a mobile EPCOVAP pilot unit.



This pilot unit allows our customers to verify that they will achieve the correct product quality using an EPCOVAP-MVR unit. The pilot unit can operate from 40-100°C and the evaporation capacity is 150 kg/h maximum.

Applications

The EPCOVAP-MVR is a flexible evaporator system that can be used for a wide range of applications including:

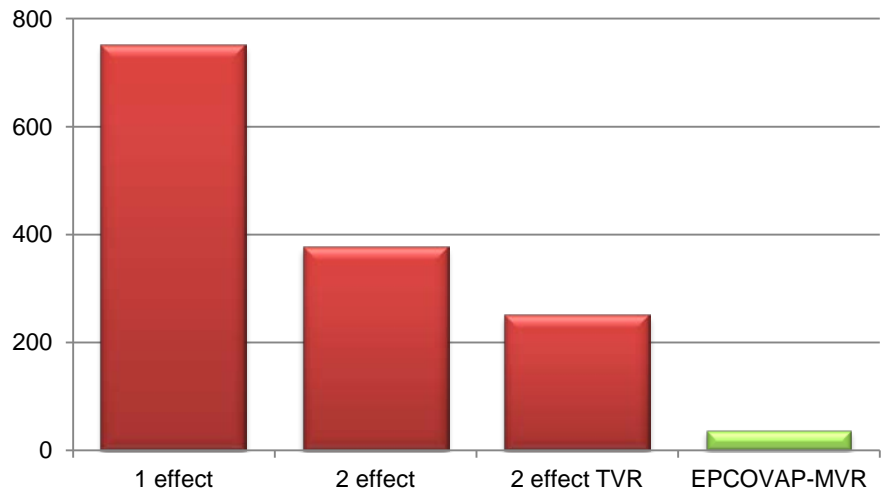
- Concentration of marine protein extracts
- Concentration of ingredients in food industry
- Concentration of products from chemical and mineral industry.
- Dewatering of wastewater from different industries.
- Dewatering of wastewater from oil and gas industry.
- Dewatering of seine (fishing nets) wastewater
- Regeneration of MEG and PEG
- Desalination of seawater
- Production of distilled water for use in food industry

After sales services

The EPCON after sales department has more than 20 years of experience with service and maintenance of MVR evaporators. This give our customers the availability of 24 hour preventive and corrective after sales services in the lifetime of the equipment..

ENERGY & ECONOMY

Evaporator energy consumption kWh/t evaporated mass



Annual savings

Below is a table showing the typical annual savings using an EPCOVAP-MVR compared to a 2 effect evaporator.

EPCOVAP-MVR-xxC	4	8	10	15	25	40	
Annual 2000h	8	15	20	35	62	74	EUR x 1000
Annual 6000h	23	45	60	110	185	215	EUR x 1000

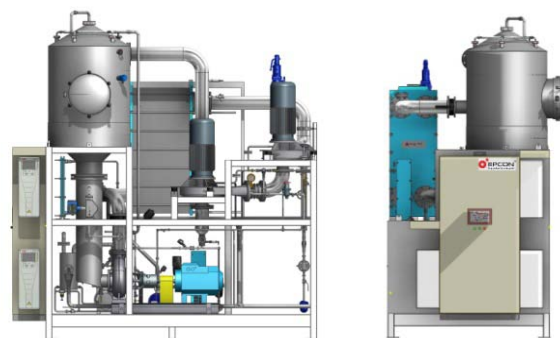


- The figures include both operating and maintenance cost .
- Evaporation at 80°C. Savings in cooling water consumption for the EPCOVAP-MVR are not included in the table above.
- Assumed energy prices electric/thermal are 0.07 / 0.05 EUR/kWh.

Standards and materials

The evaporator can be delivered according to industrial or hygienic standards. For process and utility piping a wide selection of standards are available including DIN2642, DIN11851, JIS 10K, JIS G 3447 and Ansi 150 lbs. The evaporator is available in different materials including AISI304, AISI 316(L) and AISI318LN duplex. Other materials may also be available on request.

Dimensions



EPCOVAP-MVR-	4	8	10	15	25	40	
L	3000	3500	3500	3700	4500	4500	mm
W	1400	1800	1800	2000	2400	2800	mm
H	3400	3800	3800	4200	4300	4400	mm

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