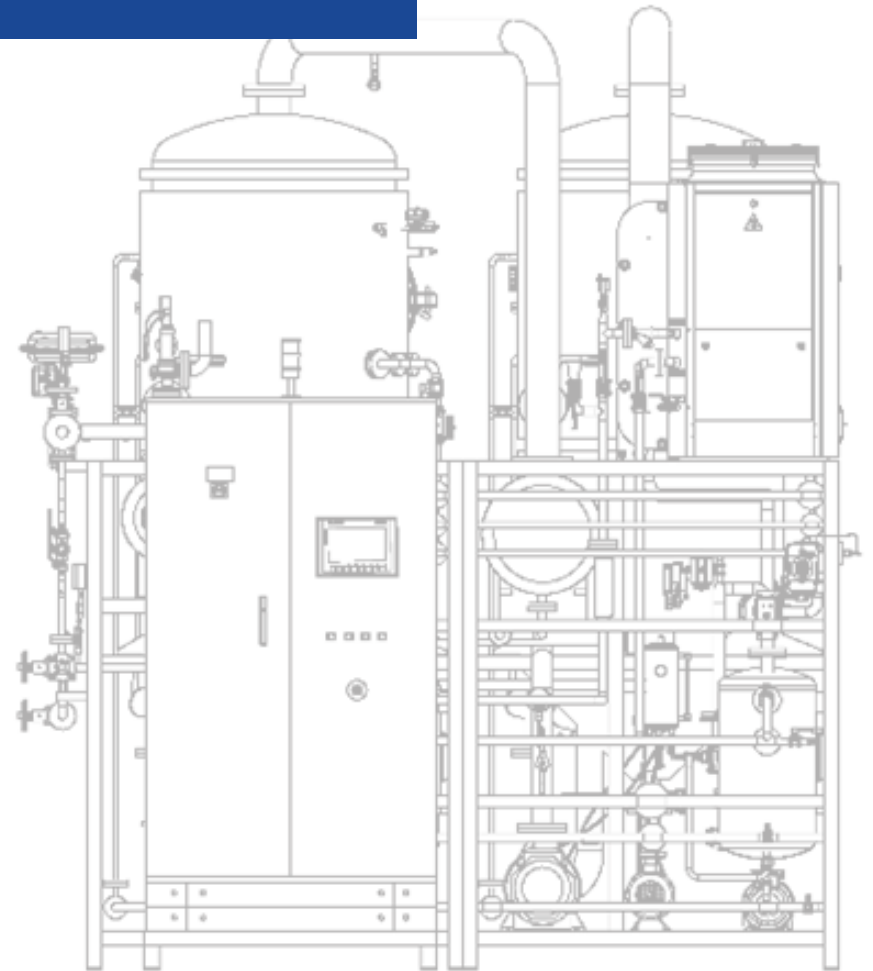


MULTIPLE EFFECT EVAPORATOR POWERED BY STEAM OR HOT WATER

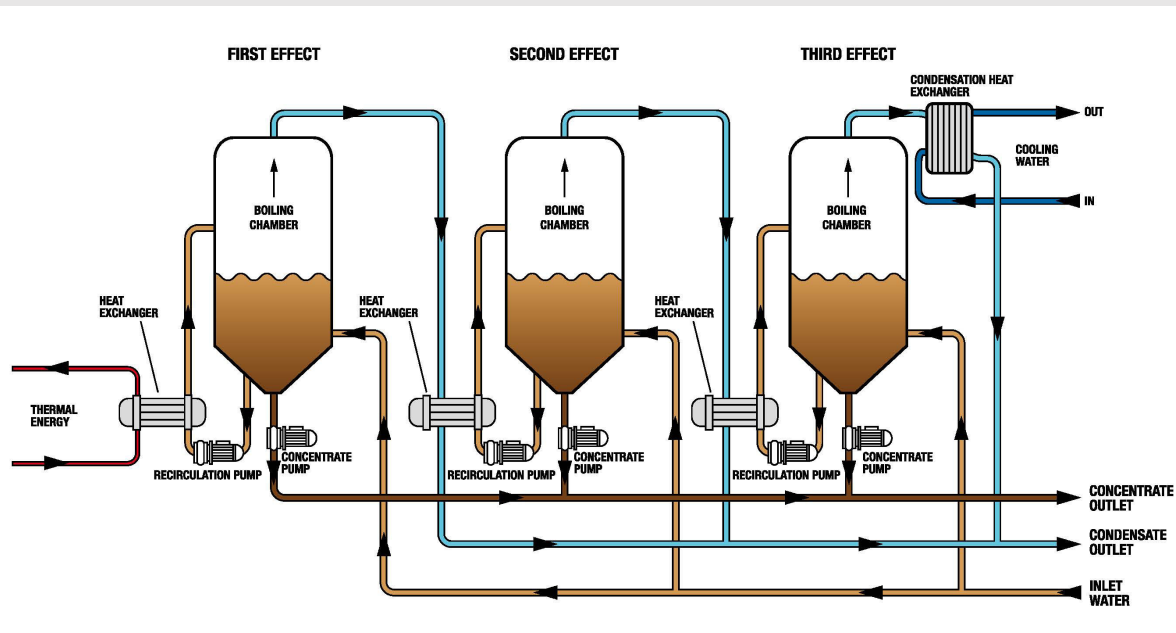
ECO DPM SE *DATA SHEET*



Plant start-up begins with the application of vacuum to the system thanks to a generation vacuum circuit. The wastewater is taken from a storage tank through the opening of a pneumatic valve installed on the load line. To achieving “work level” threshold, the load valve closes and begins the distillation process: the fluid is heated to a variable temperature based on the type of power supply and the number of effects.

The vapor formed in the process is used as thermal vector to heat for free the second stage. The vapor generated from the last effect is condensed by an external condenser. Lastly, the distillate produced is automatically discharged in a separate way for each effect. The wastewater volume in the boiling chamber is maintained constant, adding new raw product to compensate the evaporated water. Reaching the desired level of concentration, the concentrate is automatically discharged through a pump and send for storage. During the concentration cycle, if it is necessary, occurs an automatic antifoam dosage, while various checks are done on parameters to guarantee appropriate pressure and temperature for the correct and secure system functioning.

At the end of the concentration phase, the evaporator can be set to start an automatic cleaning cycle or a new concentration cycle if the boiler washing is not necessary. The PLC, adjustable through a color touch display, automatically manages all the functions and controls in real time, for a complete automated and secure functioning.



- *Mono or multiple effect system.*
- *High efficiency external heat exchanger with high-speed circulation.*
- *24/7 total automated functioning.*
- *Thermal recovery process with multiple effect.*
- *Easy future expansion without increasing energetical cost.*
- *Unmatched duration and maintenance cost very reduced.*
- *Total controllable from color touch panel.*

Description

Modular multiple effect vacuum evaporator, suitable for the concentration of large quantities of water-based solution. Projected for 24/7 unattended working in automatic. Boiling chamber with vertical design and external tube bundle heat exchanger. Powered by steam or hot water, condensation with plate heat exchanger or special condenser. Totally controlled from a color touch display. Easy to expand, over time, to a maximum of three stages. Standard execution in AISI316- special alloys on request. Standard range of evaporator (double stage) from 10 to 200 m³/day of nominal capacity.

200.000 DPM3 SE

Powers and Consumption		UM
# effect	n°	3
Distillate* production	L/h	8333
*Nominal capacity referred to water	m ³ /24h	200
Installed electrical power	kW	130
Thermal requirement	kWt	2350
Voltage		400/3/50
Compressed air	Bar	7

Approximate Measurements (the condensation section is not included)

Length	mm	11000
Width	mm	5500
Height	mm	6400

Main connection

Wastewater inlet / Distillate outlet	Ø pollici	1
Concentrate outlet (with pump)	Ø pollici	1
Compressed air	mm	Ø 8mm
Cleaning inlet water	Ø pollici	1
Antifoam inlet	Ø pollici	1/2
Service water inlet	Ø pollici	1/2
Hot water/steam inlet	Ø pollici	2" 1/2 - 3"
Hot water - condensate outlet	Ø pollici	2" 1/2 - 1"

Main Application

ECO DPM SE mainly design for:

- oil emulsions, vibratory finishing wastewater, exhausted washing
- die-casting (release agents, glycols, lubricants)
- galvanic wastewater, exhaust bath, eluates from resin regeneration
- landfill leachate
- washing of reactors, process wastewater for chemical/ pharmaceutical industry
- treatment of water-based solution

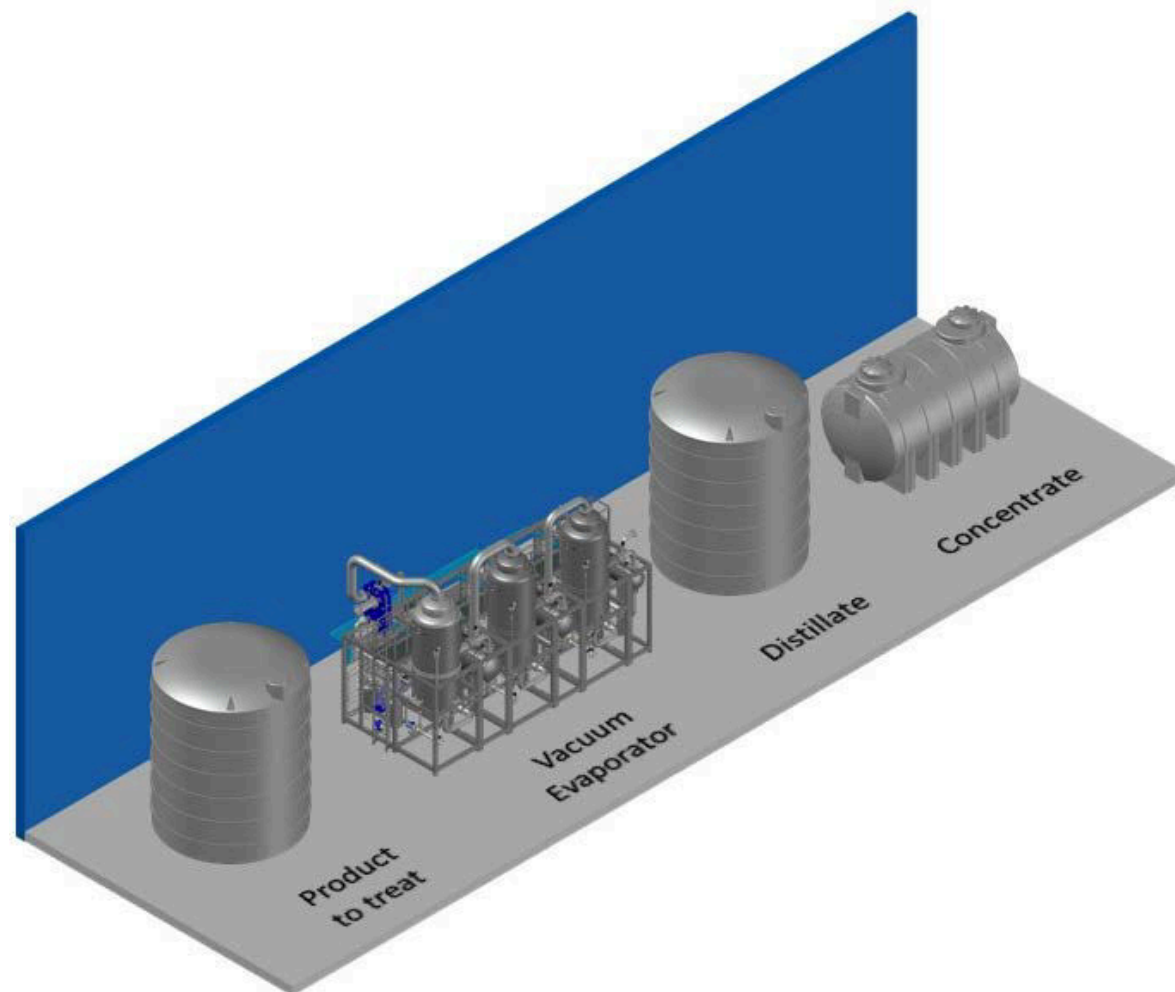


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ECO DPM SE CONSTRUCTION MATERIALS



Boiling vessel	AISI316 / 316L certificate. Double flanged structure for an easy disassembly and maintenance.	Heat exchanger – product heating	AISI316 / 316L certificate
Recirculation circuit	AISI 316 / 316L certificate	Densimeter	With magnetic floating - design Eco-Techno
Recirculation circuit valve	AISI 316 / 316L certificate (flanged)	Level sensors	Electronics with vibration - design Eco-Techno
Sight glass with lamp	design Eco-Techno	Antifoam circuit and valves	AISI 316 / 316L certificate
Backsplash demister system	PP – design Eco-Techno	Cleaning circuit and valves	AISI 316 / 316L certificate
Condensation exchanger	AISI 316 / 316L certificate	Concentrate outlet valve	AISI 316 / 316L certificate (flanged)
Vapor condensation circuit	1.4401/1.4404	Concentrate outlet piping	AISI 316 / 316L certificate
Distillate tank	AISI 316 / 316L – design Eco-Techno	Piping	AISI 316 / 316L certificate
Distillate tank exchanger	AISI 316L – design Eco-Techno	Support frame	AISI 304
Vacuum circuit	AISI 316 / 316L certificate (flanged)	Concentrate pump	AISI 316 / 316L certificate (flanged)
Vacuum pump	AISI316 / 316L certificate (flanged)	PLC and operator panel	Siemens (A+B on request)
Vacuum circuit valves	AISI 316 / 316L certificate (flanged)	Cabling junction	PVC
Product inlet valve	AISI 316 / 316L certificate (flanged)	Cables	Flame retardant
Screws	AISI 316		



OPERATING CONDITIONS

Installation site*: T min - max +5 / + 35 °C (sheltered from weathering such as rain, snow or hail).

**In case of installation in outdoor areas with risk of frost, it is possible to require the insulation of the boiling chamber and the primary pipings.*

RECOMMENDED STORAGE

Wastewater: Recommended a double storage volume compare to the daily nominal capacity of evaporation.

Distillate: Recommended a double storage volume compare to the daily nominal capacity of evaporation.

Final concentrate: Recommended a storage volume for the optimization of the disposal product (referred to the specific plant).

Condition of inlet product, outlet distillate and concentrate: Until 0,5 Bar the plant is autonomous. For higher prevalence it is needed a dedicated system of relaunch.

LIQUID TEMPERATURE

T Max inlet product: Avoid Temperature greater than 30° C and lower than 10° C for the inlet product.

T distillate outlet: 35 - 60 ° C

T concentrate outlet: 45- 70° C
Variable values based on the type of power supply, condensation and number of effect.

INSTALLATION AREA

Minimum recommended project area: In order to ensure the ordinary maintenance operations, consider a meter for each side minimum. The plant doesn't need of any air exchange in the installation room.

Control unit

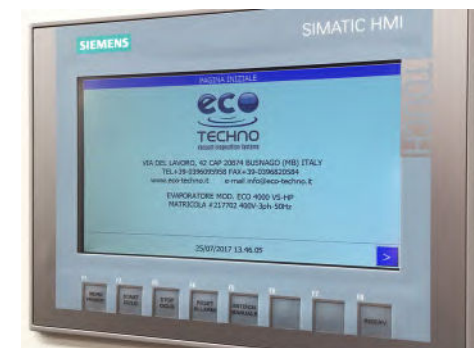
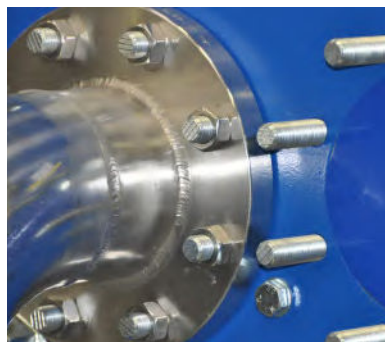
- Completely automated process: manual interventions are not needed.
- HMI Siemens control system guarantees an easy and intuitive control for every operation.
- A specific codification makes the comprehension of the functions very intuitive and understandable.
- Languages customization.
- The operations are customizable for specific needs.
- 6 months of remote assistance included (if the Web Teleservice control system is installed).
- Pressure, temperature and values are monitored with high accuracy by analogic control; the values are visible on wide HMI display.

Materials

- Extreme attention on the material choice (all certified) and on the assembly.
- Certification on every type of welding.
- Tracking guarantee on the used material (e.g.: 10204: 3.1 for stainless steel).
- High accuracy on production standard according to most restrictive regulations (ISO EN 3834).
- Quality check during the production (NDT on welding, individual check on every boiler and pressurized element) by issuing specific certificates (PED Pressure Equipment Directive).

Main features

- Compact and well-kept specific design.
- Easy and rapid installation.
- Process in VACUUM; no fumes or smelling leakage, installation areas very safety.
- Assembly on skid with easy access from every sides.
- Very easy and quick ordinary maintenance on periodic checks of values and functionality.
- Piping, valves, pumps and every component flanged to guarantee the seal over time and for ease of intervention in case it is necessary.
- The plant is provided after accurate internal test.
- Cleaning operations can be automated, reducing manual intervention. The access to the internal parts is easy thanks to wide frontal or top hatches.
- Foam control system completely automated.
- Densimeter system with magnetic control for discharge determination. The densimeter can be calibrated on specific user needs by automatically determining the concentration threshold and the automatic discharge.
- Automatic recirculation system useful for a constant mixing of the product during the concentration phase. In this way, it is possible to minimize the stratification effects and obtain a better plant efficiency.
- Every function and setting is variable and monitorable from a touch panel.
- Every plant is tailor-made for every customer.
- Programmed maintenance on request.
- Worldwide assistance.





Vacuum Evaporators since 1984



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