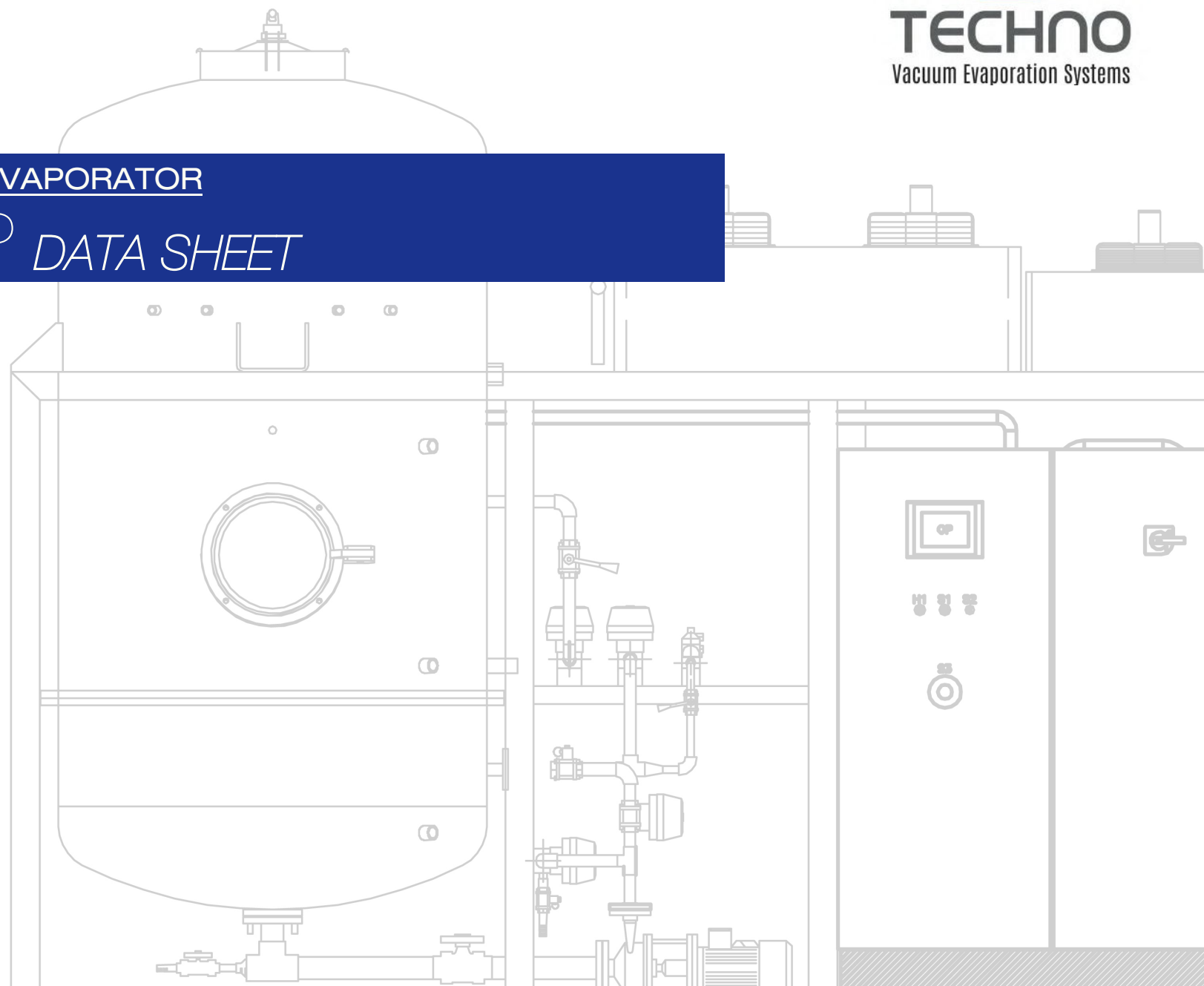


HEAT PUMP VACUUM EVAPORATOR

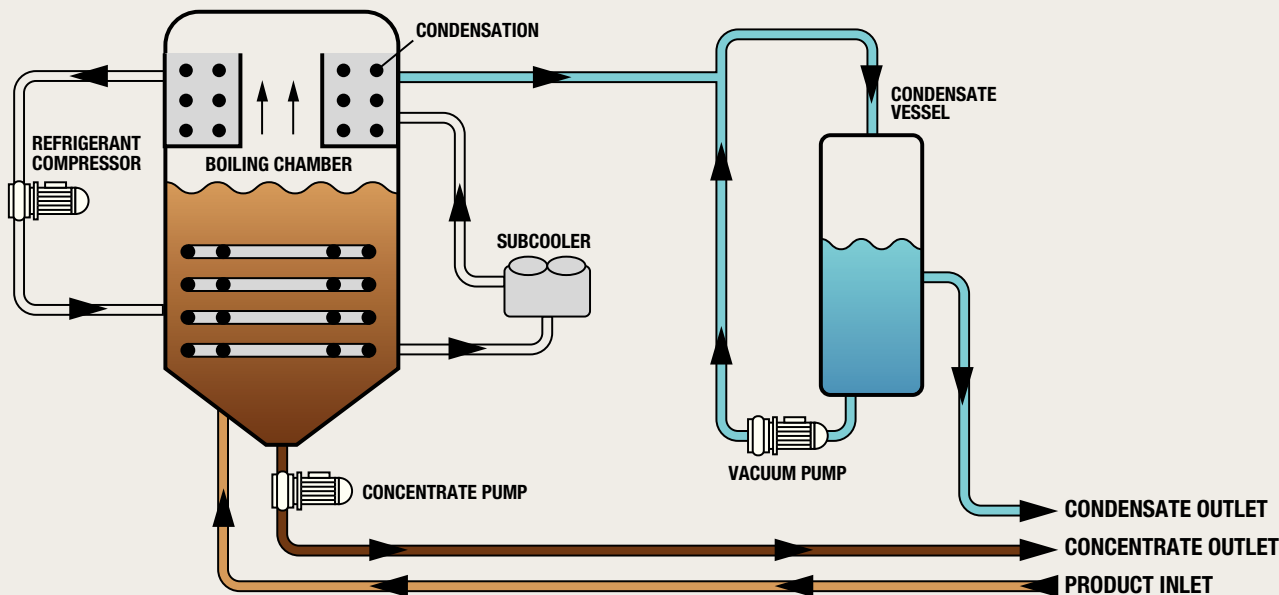
ECO VS-HP *DATA SHEET*



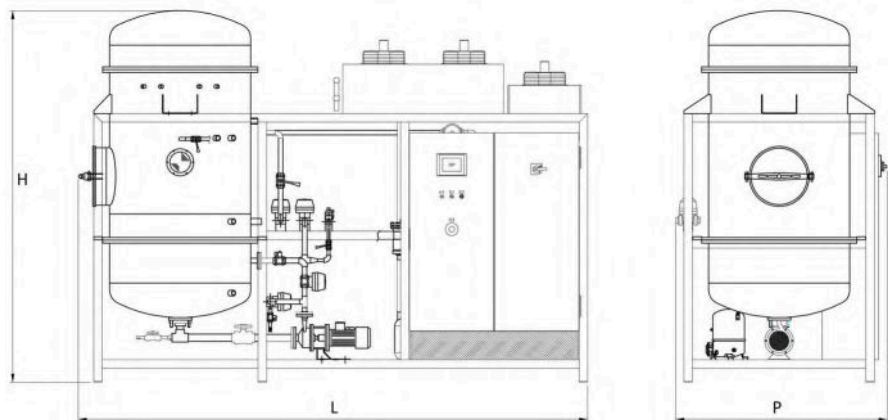
Plant start-up begins with the application of vacuum to the system thanks to a generation vacuum circuit. The wastewater is taken from a storage tank through the opening of a pneumatic valve installed on the load line. To achieving "work level" threshold, the load valve closes and begins the distillation process: the fluid is heated to a temperature of 33 – 35 °C by submerged heat exchanger.

The vapor formed in the process is directly condensed in the upper part of the boiling chamber due to the contact with the surface of a condensation exchanger. The condensate, typically named as distillate, is automatically collected in a service tank where it is further cooled and discharged. 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.



- Heat pump system powered with electrical energy.
- High efficiency submerged heat exchanger.
- 24/7 total automated functioning.
- Low temperature process (about 35°C).
- Easy and fast installation.
- High durability refrigerate compressor.
- Total controllable from color touch panel.



Vacuum evaporator to treat water-based solution from 10 to 750 L/h. Recommended for medium quantitative of wastewater.

Designed for working 24/7 in automatic. Removable submerged heat exchanger. Incorporated superior condenser. Automated functioning with PLC and touch panel having LCD display. Standard execution in 1.4401/1.4404 (AISI316/316L). Special alloys on request.

Main application

ECO VS HP mainly designed for:

- exhaust baths
- eluates from resin regeneration
- exhausted oily emulsions
- vibratory finishing wastewater, exhausted washing
- die-casting (release agents, glycols, lubricants)
- wastewater from surface treatment
- food & beverage (electropolished plants)

		250 VS	500 VS	750 VS	1000 VS	1500 VS	2000 VS	3000 VS
Power and Consumption		UM						
Distillate* production	L/h	10	21	31	42	63	83	125
*Nominal capacity referred to water	L/24h	250	500	750	1000	1500	2000	3000
Installed power	kW	5,2	6,5	6,9	8,9	14,5	17,1	25,5
Voltage		400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50
Compressed air	Bar	7	7	7	7	7	7	7
Approximate Measurements								
Length	mm	2150	2150	2300	2900	2900	3000	3400
Width	mm	850	870	890	1250	1250	1400	1550
Height	mm	1850	2250	2250	2550	2550	2400	2750
Weight	kg	500	650	850	1000	1000	1100	1550
Working level	L	50	70	100	150	200	220	380
Main Connection								
Wastewater inlet	Ø pollici	1	1	1	1	1	1	1
Distillate outlet	Ø pollici	1/2	1/2	1/2	1	1	1	1
Concentrate outlet (with pump)	Ø pollici	1	1	1	1	1	1	1
Compressed air	mm	Ø 8mm	Ø 8mm	Ø 8mm	Ø 8mm	Ø 8mm	Ø 8mm	Ø 8mm
Cleaning inlet water (boiler)	Ø pollici	1/2	1/2	1/2	1/2	1/2	1/2	1/2
Cleaning inlet water (sight glass)	Ø pollici	1/2	1/2	1/2	1/2	1/2	1/2	1/2
Antifoam inlet	Ø pollici	1/2	1/2	1/2	1/2	1/2	1/2	1/2
Service water inlet	Ø pollici	1/2	1/2	1/2	1/2	1/2	1/2	1/2

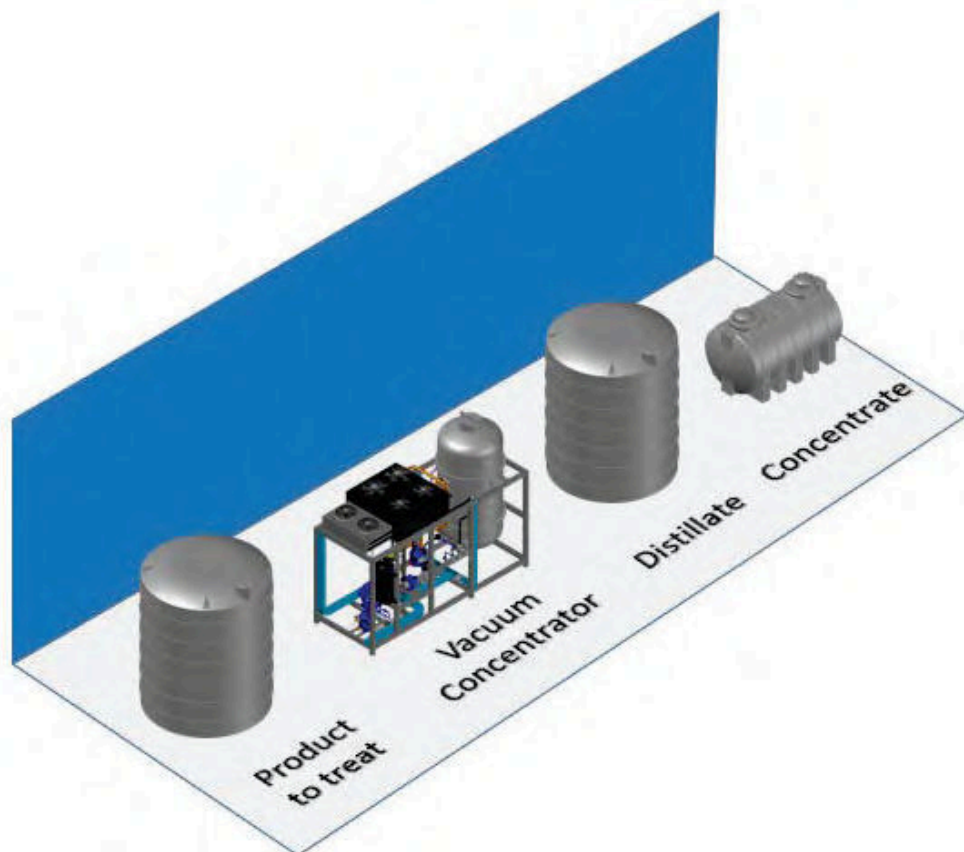


HEAT PUMP VACUUM EVAPORATOR

ECO VS-HP CONSTRUCTION MATERIALS



Boiling vessel	AISI316 / 316L certificate. Double flanged structure for an easy disassembly and maintenance.	Heat exchanger - product heating	AISI316 / 316L certificate. In case of maintenance, the heat exchanger is easily removable..
Recirculation circuit	PVC / AISI 316	Densimeter	Magnetic floater - design Eco-Techno
Recirculation circuit valve	PVC / AISI 316	Level sensors	AISI 316
Sight glass with lamp	design Eco-Techno	Antifoam circuit and valves	PVC / AISI 316
Backsplash demister system	PP – design Eco-Techno	Cleaning circuit and valves	PVC / AISI 316
Condensation exchanger	AISI 316L certificate– design Eco-Techno	Heat pump circuit (not in contact with the product)	Copper– Aluminum - 1.4401/1.4404 (flanged)
Vapor condensation circuit	PP / 1.4401/1.4404 / PTFE/FPM	Refrigerant gas (not in contact with the product)	Freon R407C
Distillate tank	AISI 316 – design Eco-Techno	Piping	PVDF/PVC seals PTFE/FPM
Distillate tank exchanger	AISI 316L – design Eco-Techno	Valves	PVC / AISI 316 flanged
Vacuum circuit	1.4401/1.4404 / PVC/FPM (flanged)	Distillate booster pump – if applicable	AISI 316 (flanged)
Vacuum pump	AISI 316	PLC and operator panel	Siemens (A+B on request)
Vacuum circuit valves	PVC / AISI 316 flanged	Cabling junction	PVC
Product inlet valve	PVC / AISI 316 flanged	Cables	Flame retardant
Concentrate outlet piping	PVC / AISI 316	Support frame	AISI 304
Concentrate pump	AISI 316 flanged	Screws	AISI 316



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:	15 - 20 ° C
T concentrate outlet:	35 - 40 ° C

OPERATING CONDITIONS

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

** In case of installation in warm areas, the plant can be equipped with condensation exchangers working with water or air/water. In case of installation in outdoor areas with risk of frost, it is possible to require a complete insulated version.*

INSTALLATION AREA

Minimum recommended project area:	In order to ensure the ordinary maintenance operations, consider a meter for each side minimum. Guarantee an appropriate air exchange based on the dimension of the installed subcooler.
--	---

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.
- Low temperature process = low contact temperature thanks to a very high vacuum level and to the heat pump technology (distillate outlet about at 20°C, boiling point about at 35-40°C).
- 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



ECO-TECHNO srl - Via del Lavoro, 42 - 20874 Busnago (MB) - Italia - Phone +39 039 6095958 - Fax +39 039 6820584

www.eco-techno.it - e-mail: info@eco-techno.it

This brochure shows models, outfitting versions and configuration possibilities (standard and optional) of vacuum evaporation systems for industrial applications, manufactured and distributed by ECO-TECHNO. The content is intended for general information purpose only. The details it contains shall not be deemed a contractually binding document, since ECO-TECHNO may make constructive and outfitting modifications anytime and during the period between publication of this catalogue, the manufacturing of the equipment and the publication of an update catalogue.