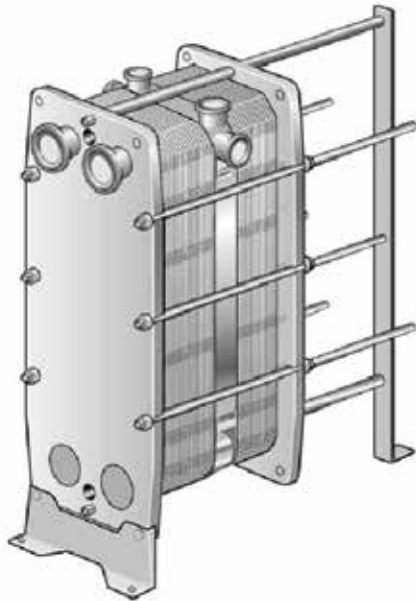




**œno concept**  
Epernay - Champagne - France



WINE-MAKING PROCESS DESIGNER & INTEGRATOR



# Plate heat exchanger

Cold stabilisation  
of wines

## Double-walled plate heat exchanger

A well-tested model offering the solution for chilling and reheating of peripheral process elements.

Plate heat exchangers combine optimal heat transfer with increased protection against mixing of fluids.

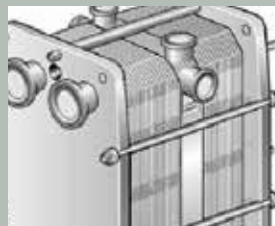
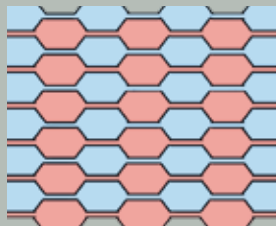


Plate heat exchanger

Time and energy saving



REMUAGE  
RIDDLING



STORAGE  
STORAGE



PRESSURAGE  
WINEPRESS



VINIFICATION  
WINERY

# Plate heat exchanger

Cold stabilisation of wines.



## SINGLE PLATE HEAT EXCHANGER



- Sturdy and stable stainless steel frame fixed on braked wheels.
- Wine temperature control with alcohol thermometer.
- 2 wine flows control with flowmeter allowing to adjust the wine flow to be treated depending on the filtered wine flow.
- 2 viewfinders, 4 in/out butterfly wine valves and 4 small valves 1/4 purge rotation.
- Stainless steel 316 pipes with adapted nominal diameter, outlet connection as required, possibly Macon, DIN, SMS.
- The plate heat exchanger size is adapted given the desired performance and nominal flow.
- The frame and the struts of the exchanger are made of stainless steel 304, plates are made of stainless steel 316.
- The working pressure is limited to 6 bars.

## PLATE HEAT EXCHANGER EQUIPPED WITH THK METER

- The unit control includes a THK meter : a device that measures the level of wine tartaric stability.
- Before racking and filtering of a batch for stabilisation, the measure of a sample allows to control if the stability level of this batch is enough.
- This unit includes 4 digital displays of temperature connected to the temperature probes, which are placed in the inlet and outlet of the plate heat exchanger.
- Reading the different wine temperatures is rapid, accurate and allows to control the efficiency of the exchange.



## WINE COOLING UNIT

This unit is personalised given the cellars needs : in terms of flow, performance, automatism and regulation.

### An automatic regulation

- Pumping of the wine to be treated thanks to a centrifugal pump with an integrated frequency variator.
- The flow of this pump is automatically interlocked to the filtration flow measured by electromagnetic flowmeters.

### OPTIONAL

Complementary cooling of the wine to be treated with a 2<sup>nd</sup> storey on the plate heat exchanger, with circulating glycoled water.

The glycoled water flow is automatically regulated, thanks to a motorized valve depending on the wine to be treated flow and outlet temperatures.

The second storey of the plate heat exchanger is composed of secured plates with drainable leakage chambers that prevents all risks of glycoled water migration into the wine.



# Plate heat exchanger

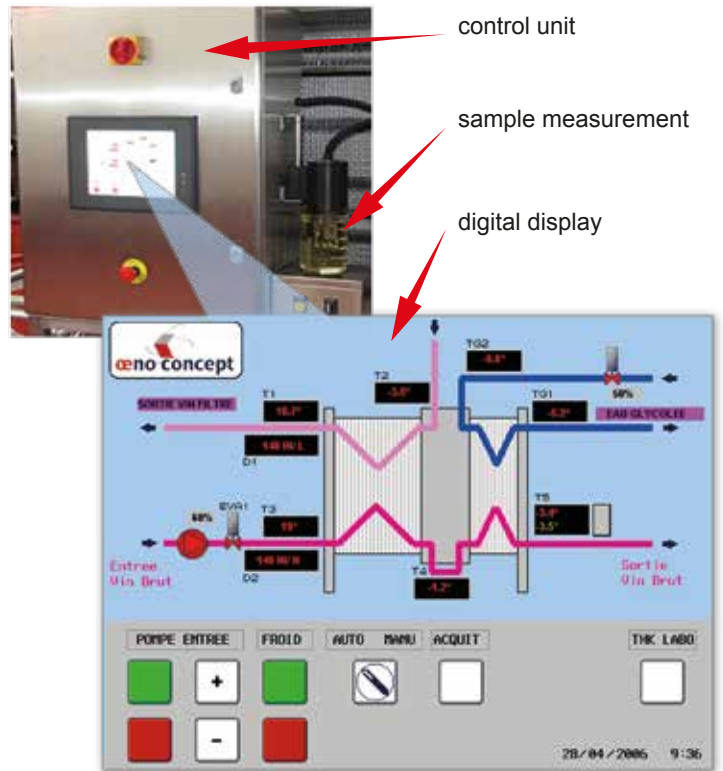
Cold stabilisation of wines.



## THE THK METER

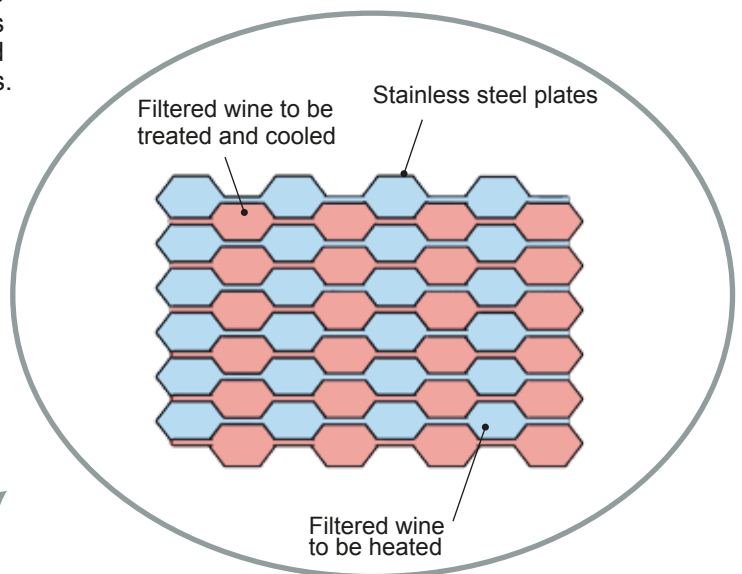
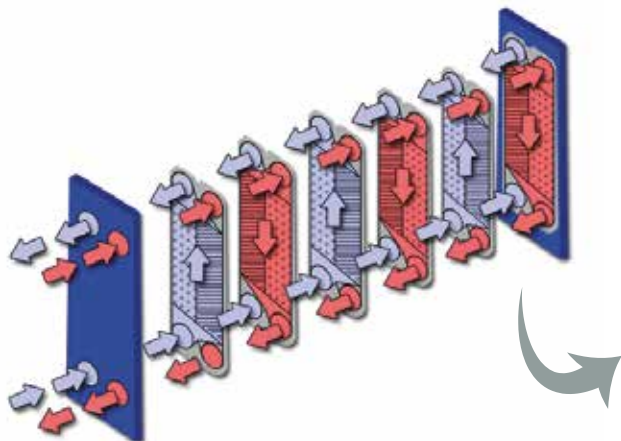
- ▶ A touchscreen control unit displays :
  - wine and glycoled water flows,
  - in and out flows temperatures,
  - instant flow for each wine flow,
  - the operational status of the centrifugal pump,
  - the operational status of the motorised valve of glycoled water.
- ▶ The operator can program the outlet temperature of the wine to be treated and the alarm temperature.
- ▶ After starting up the automatic mode, the centrifugal pump flow balance itself to the filtered wine flow. The glycoled water flow is automatically regulated. The operator is then free of any control or settings.
- ▶ The control unit manages in real time the different parameters of control and programmed alarm levels.

View of the THK meter integrated in the control unit with sample measurement



## OPERATING PRINCIPLE

- ▶ Tens of corrugated stainless steel plates are stacked to form channels in which the two wine flows circulate without ever communicating.
- ▶ The plates are fitted with a gasket, which seals the channel.
- ▶ The important surface in contact with the wine as well as the small thickness of the plates provide the exchanger with a very good efficiency of heat exchange between the flows.
- ▶ The exchange surface, depending on the number of plates, determine for a given flow the performance of heat exchange.
- ▶ An optimum exchange is effective when the two wine flows are identical or very similar.

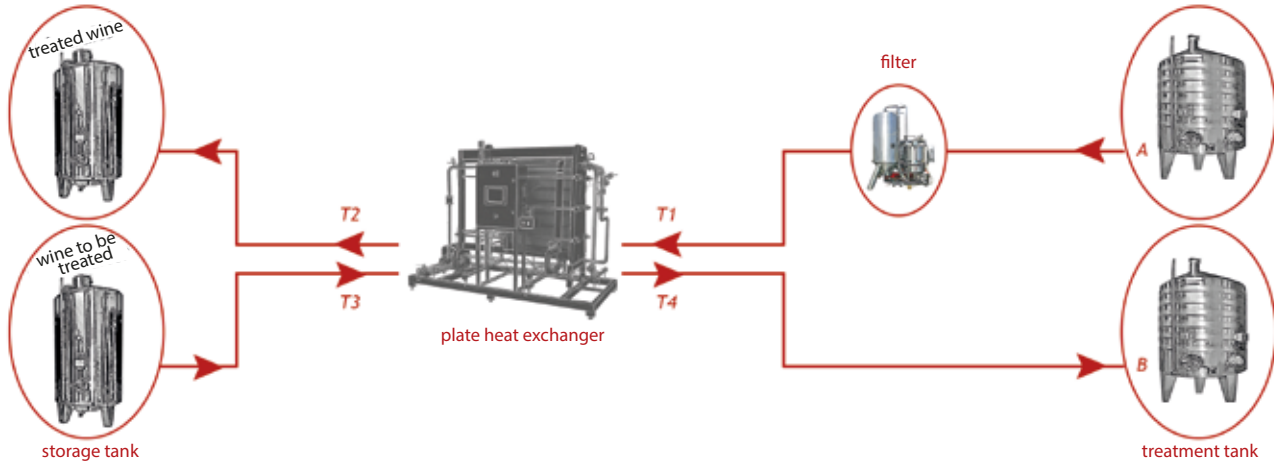




# Plate heat exchanger

Cold stabilisation of wines.

## COLD STABILISATION OF WINES



### Utilization

Cold stabilisation of wines with at least two treatment tanks.

Filling of tank B at the same time and same flow as racking and filtering of tank A.

## COMPARISON

### WITHOUT plate heat exchanger

The filtered and stabilised wine is stored at negative temperature : you have to wait several days for the wine to reheat or reheat the tank before racking, which causes higher energy spending.

It takes a lot of time and energy to lower the temperature of the wine to be treated from +16°C to -4°C in the treatment tank.

#### Example

In a 200 hL tank equipped with an exchange surface of 18m<sup>2</sup>, 24 to 36 hour will be needed to cool the wine from +16°C to -4°C and 560 electrical kW will be absorbed during the functioning of the cooling unit to allow this cooling down.

### WITH plate heat exchanger

The table below mentions, at different performances of the exchangers, the temperatures of the two in and out flows of wines, as well as the necessary electrical power to cool the wine to be treated up to -4°C.

Performance	T1	T2	T3	T4	absorbed kW
70%	-3	10.3	16	+ 2.7	187 kW
80%	-3	12.2	16	+ 0.8	134 kW
90%	-3	14.1	16	- 1.1	81 kW

- Energy savings are very important.
- Cooling-down time in the treatment tank of the wine pre-cooled by the plate heat exchanger is highly reduced.
- Treatment time is much shorter thanks to the plate heat exchanger, while obtaining the same level of stability of wines.
- Insofar as the wine is at a negative temperature or equal to 0°C, while filling the stabulation tank and cooling-down, the treated wine start to stabilize itself in contact with crystals.
- The treated and filtered wine can be bottled quickly thanks to its temperature close to the storage temperature.