

Vacuum cooling system for 15 pallets

<i>Height:</i>	2.900mm
<i>Width:</i>	1.800mm
<i>Width (net):</i>	1.400mm
<i>Length:</i>	12.720mm
<i>Weight (empty):</i>	18.500kg
<i>Frame:</i>	700mm (attached to bottom)
<i>Doors:</i>	Side doors open electronically
<i>Lights in boiler:</i>	2x 100 Watt

Cycle data:

<i>Vacuuming:</i>	8 min
<i>Cooling:</i>	20 min
<i>After-cooling time:</i>	1 min
<i>Ventilate:</i>	30 sec
<i>1 cycle without transport:</i>	29min 30 sec
<i>Opening doors:</i>	30 sec
<i>Transport:</i>	2 min
<i>Closing doors:</i>	30 sec
<i>Time / cycle:</i>	32 min 30 sec
<i>Required capacity:</i>	553 kW
<i>Installed capacity:</i>	575 kW

<i>Product:</i>	Lettuce
<i>Pallets / layer:</i>	15 pieces
<i>Product weight / pallet:</i>	500kg (net)
<i>Pallet dimensions:</i>	1.200x800x2.500mm (LxWxH)
<i>Initial temperature:</i>	22°C
<i>End temperature:</i>	2°C
<i>Max. surrounding temp:</i>	27°C
<i>Min. surrounding temp:</i>	0°C

Pallet transport system

<i>System:</i>	Metal structure with steel plates on chain conveyers
<i>Service:</i>	Automatic (chain conveyer driven by electromotors)
<i>Execution:</i>	Put the pallets on the steel plates with a forklift.
<i>Installed capacity:</i>	6x 40 kW

The system is equipped with two steel frames (12.450x1.250mm) where the pallets are set upon. The steel frames are fed into the container at the same. The transport system is not suitable for driving on with a forklift.

Vacuum system

<i>Pump set:</i>	
<i>Vacuum pumps:</i>	3 pieces
<i>Capacity:</i>	630 m ³ /hour
<i>Motor capacity:</i>	15 kW
<i>Manufacturer:</i>	Busch
<i>Type:</i>	RA0630B
<i>Including:</i>	Oil separator

An automatic tank valve (non-steamed) and an automatic vacuum valve are mounted in the vacuum pipelines.

A pressure gauge (control accuracy 0.5°C) with analogue output is connected to the PLC. The PLC controls the entire system completely automatically.

Refrigeration equipment

A central cooling system is delivered and installed. The cooling capacity is 575 kW, reached at -2°C / +40°C. The system consists, generally described, of three compressors, an air-cooled condenser, a liquefier and steam condensers (in the vacuum container).

At the beginning of the vacuum cycle, the suction pressure is high and the compressors will have a higher capacity. The electric motors of the compressors are equipped for this purpose. The liquefier is also equipped to handle this additional power.

The following components are installed:

Compressors:

Three semi-hermetic screw compressors:

<i>Manufacturer:</i>	Bitzer
<i>Type:</i>	HSK 7491-90
<i>Capacity:</i>	191.8 kW / compressor
<i>Evaporation temperature:</i>	-2°C
<i>Condensing temperature:</i>	+40°C
<i>Rpm:</i>	2.900 rpm
<i>Capacity drop:</i>	62.9 kW
<i>Capacity regulation:</i>	0-50-75-100%

Equipped with:

- Suction shutter
- Suction filter
- Pressure valve
- Recoil valve
- Compressed gas protection thermostat
- Manual shutoff, filter and magnet valve in oil pipe
- Combined high and low pressure gauge
- One high and one low pressure manometer
- Oil stream protection

Accessories of the compressors and fittings:

- Central suction pressure valve
- Heat exchanger in the suction line
- Suction pressure transmitter with manual shutoff
- Four electrical control valves
- Two pressure sensors (evaporator and condenser pressure) for capacity control of the compressors and liquefier

Oil separator with oil collector

The oil from the compressors, which enters the circulating refrigerant, is removed by an oil separator.

Includes:

- Oil separator
- Oil tank
- Display
- Low pressure protection
- Switch valve and spring safety valve
- Heater
- Oil cooler

The above accessories are installed on the frame.

Condensor

<i>Manufacturer:</i>	Helpman
<i>Type:</i>	HTC 091-244-852/610V
<i>Capacity:</i>	790 kW
<i>Temperature difference:</i>	15°C
<i>Condensation temperature:</i>	40°C
<i>Fans:</i>	8 pieces 3.600 W
<i>Rpm:</i>	890 rpm
<i>Sound:</i>	66 dB(A) at 10m
<i>Length:</i>	6.200mm
<i>Width:</i>	2.436mm
<i>Height:</i>	1.256
<i>Production weight:</i>	2.432kg

The condenser contains 10 fans, controlled by the PLC.

Electronics

- Main switch
- Main relais
- Support relais
- Safety container and fuses
- Selection switch
- Alert lights

Electrical capacity

<i>Component:</i>	<i>Pieces:</i>	<i>kW/p:</i>	<i>Total kW:</i>
<i>Compressors:</i>	3	65	195
<i>Condensor fans:</i>	10	3,6	36
<i>Vacuum pumps:</i>	3	22	66
<i>Motor:</i>	3	4	12
<i>Control equipment:</i>			3

<i>Total:</i>		312 kW
<i>Apparent power:</i>		312 kW
<i>Max apparent power:</i>		
<i>Max electrical usage:</i>		577 A.
<i>Abscherung:</i>		630 A.