

Cooling water supply	from mains	from chiller	capacity
1 st zone :		X	17
2 nd zone :		X	21.4
3 rd zone :		X	21.4

Cooling water Conditions	inlet temp. °C	outlet temp. °C	inlet pressure bar
1 st zone :	5	9	3
2 nd zone :	5	9	3
3 rd zone :	5	9	3

COOLING ZONE

Nozzle number	179
Nozzle type	empty cone jet cod. 302.686.51 -90°
Nozzle material	plastic material

WATER COLLECTING TANKS

Side channel material	stainless steel
Material of water collecting tank	stainless steel
material of water collecting basins	stainless steel
Material of internal piping	PVC

FOR BETTER UNDERSTANDING OF DATA AND INSTALLED INSTRUMENTS SEE ATTACHED SCHEMATICS AND DRAWINGS AS WELL AS SPARE PART LIST.

3 PLANT DESCRIPTION

The plant described in this manual is a belt cooling conveyor.

The product is supply in liquid form in a pastillator feeder and put it out in drop form. Those drop are solidified with water sprayed under the belt through nozzles line.

The machine consists of :

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1. COOLER COMPLETE WITH STEEL BELT
2. WATER COOLING SYSTEM (Water circuit)
3. FEEDING SYSTEM (Pastillator)
4. RELEASE AGENT SYSTEM
5. PRODUCT DISCHARGING SCRAPER
6. CONNECTIONS AND CONTROL PANEL
7. SAFETY DEVICES
8. PNEUMATIC CIRCUIT

The plant described in this manual is a cooler / pastillator.

All safety switches installed are difficult to sabotage except in the case of shearing of the fixing screws that they need a special key for screws off. That key is stored in plastic envelope near to junction box and need to be delivered to electrical maintenance department.

3.1 COOLER EQUIPPED WITH BERNENDORF STEEL BELT

The cooler basically is a steel belt conveyor chilled by water sprayed by nozzle ramps installed under the top belt strand.

The machine consists of :

- tension terminal (located in the feeding area)
- middle part
- driving terminal (located in the discharge area)

The steel belt is endless welded and bent on end drums mounted in terminals.

Shaft supports are mounted on terminal frames.

Two tension screws (one per side) mounted in the tension terminal stretch the steel belt at the proper tension by directly acting on supports.

The belt driving group is installed in the driving terminal.

The following components are located in the intermediate part of the cooler :

- piping for water supply to nozzles, where temperature, pressure and flow indicators can be installed
- nozzle ramps
- longitudinal water collecting basins
- transversal water collecting basins
- side channels for leakage collection
- anything else included in cooling system
- covering hood

The top strand of the steel belt runs on sliding supports, while the lower strand lays on rubber disc roller/s.

Shaft supports are mounted on terminal frames.

Two cup spring packs (one per side) mounted in the tension terminal stretch the steel belt at the proper tension by directly acting on supports.

The product is removed from the belt trough blade that work tangentially at the belt.

Cleaning belt is ensured by scrapers , built with a special blades mounted on a support fixed to the structure of slide. A pushing special system keep the blades in contact to the belt.

Periodically the edge of blades need to be grinded for having a perfect cleaning of belt.

Belt cleaning devices are installed in cooler terminals.

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REMOVING SAFETY DEVICES AND GUARDS MOUNTED ON THE COOLER IS STRICTLY FORBIDDEN, TO AVOID THAT MOVING COMPONENTS CAUSE ANY ACCIDENT.

3.2 COOLING SYSTEM (see P&ID)

The product heat is dissipated by water from mains, which is fed to flanges of cooling zones. The cooling water is filtered by suitable double filters upstream the nozzles and then is sprayed through distribution piping against the inside steel belt surface; finally it is reclaimed by longitudinal basins to transversal collecting tanks provided with flanges. The cooling water return can be recycled into the factory circuit by channels or pumps.

3.3 PASTILLATOR

A "ROLL DROP" model pastillator is mounted on the tension terminal. It basically consists of a toothed jacketed rim mounted in a special protecting case.

Rotor teeth match with a special comb, composed by more segments (like rotor rim), intended to feed the product into the spaces among teeth.

The rotor height must be adjusted in order that teeth tips are 5-8 mm high over the belt surface without touching it, while the peripheral speed of rotor and steel belt must be equal.

Rotor journals are supported by needle bearings bolted on the structure.

The liquid product is fed from a small pool machined in the comb, as long as the useful belt width and provided with side walls, to grant the pool tightness against the rotor surface.

The comb also provides the pool bottom.

The position of each comb segment may be individually adjusted by means of a pair of ring nuts and a pair of screws, which allow to remove or press the segment against the rotor rim.

The aforementioned group is mounted on a vertical journal fixed aside the cooler structure; by this way it is possible to slew rotor and comb over the belt from the transversal position to the longitudinal one, thus changing from the cleaning arrangement to the operation arrangement.

The whole equipment is installed on two vertical slides mounted aside the cooler structure. A pair of pneumatic cylinders, twinned by a suitable beam, allows to lift or lower the equipment over the steel belt; a limit switch detects its position and inhibit the slew motion unless the equipment has not been previously lifted.

Comb and rotor jacket are heated by hot water fed and drained by rotary joints. The medium temperature is kept at the required value by a suitable temperature element connected with the controller.(NOT IN SBS SCOPE)

The body jacket is connected with the hot water circuit.

A temperature controller piloted by a suitable element keeps the water temperature constant, thus controlling the jacket temperature.

3.4 RELEASE AGENT SYSTEM

Release agent is a liquid used to avoid the product stick on the belt.

This product acts on the surface tensions and help the system, at the same time, to solidify your material and separate him to the belt.

The system is provided to special atomizers fixed under the tension terminal feeded by a mix of compressed air and release agent .

Release agent is sprayed through the atomizers against the belt surface.

The start and stop of the system is controlled by pushbutton in control panel that supply a solenoid valve that open the compressed air flow.

If during production the operator observe that drop are not perfectly separated from belt surface can act on an EXTRA SPAY pushbutton fixed on control panel and in discharging side.

3.5 PRODUCT DISCHARGING SCRAPER

At the driving terminal of the belt, the solidified drops (pastilles) are discharged from the chilled belt and are conveyed to storage (conveyor not in SBS scope of supply).

The steel belt is continuously cleaned by a scraper, consisting of a blade mounted on a blade holder hinged on the terminal structure.

A pneumatic loading system keeps the blade pressed against the steel belt. The blade keen must be periodically sharpened to clean perfectly the steel belt.

The scraper pressure can be adjusted from outside reducing the pressure.

3.6 TECHNICAL SERVICE

In case of problems apply for

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