

## TECHNICAL DESCRIPTION INDUSTRIAL CHOCOLATE ENROBING MACHINE “SWITCH” WITH REMOVABLE CHOCOLATE TANK

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### General

The basic machine consists of an entire exterior frame that incorporates the grill conveyor, the chocolate bath, the distribution tray and the rotation applications.

The chocolate tank is autonomous and needs to be installed underneath the basic machine. On its removable chassis the chocolate pump, the agitator and the heating are installed.

For one basic machine several chocolate tanks can be delivered when one wants to work with different types of chocolate per tank or when one wants to work non stop with one type of chocolate. In the latter case, a second tank will be installed while the first tank gets cleaned.

Thanks to a 3 phased plug and a light aluminium cover, the tank that is not used, can be kept warm outside of the basic machine.

This type of enrobing machine is extremely suitable:

- to function as regular enrobing machine with bottom and/or complete enrobing.
- to function as conveyor belt to transport products that need not be enrobed, if the chocolate chassis is removed (to avoid ‘pollution’ of its content).
- to easily clean the chocolate tank (when you compare it with a traditional machine).
- to work continuously if a second tank is installed during the maintenance activities of the first tank.
- to ‘switch’ easily between different types of chocolate, when one purchases a tank for each type and that each tank is kept warm.

### Mechanical construction of fixed basic machine

1. Frame, chocolate tank, chocolate bath, dust cover, ... made out of stainless steel.
2. Upper side machine 4 polycarbonate foldaway sides, within stainless steel frame, which can be opened by means of gas springs.
3. Bottom side machine, pearled stainless steel doors, two at the removable side, three at the back side and one on each side of the machine, with toggle switches.
4. All stainless steel used in the machine is type 304. Dairy couplings, taps, ... are type 316.
5. The whole construction will be pearled.
6. Approximate length machine : 2.000 mm (or **2.100 mm when option detailer**).
7. Approximate covered length machine : 2.000 mm (or **2.100 mm when detailer with optional heating hood**).
8. Approximate width machine : width grill + 600 mm.
9. Approximate height entrance part : +/- 930 mm (or on demand).
10. Approximate height exit part : +/- 930 mm (or on demand).
11. The basic frame sits on adjustable stainless steel machine feet  $\varnothing$  80mm .

### Grill conveyor basic machine

12. Width grill conveyor : 400 to 1.500 mm.
13. Two connected grill conveyors to avoid pollution of the second grill conveyor.
14. Approximate length first grill conveyor : 1.100 mm.
15. Approximate length second grill conveyor : 900 mm.



16. *Second grill conveyor is removable, even though maintenance is possible through chocolate tray on castors.*
17. *Diameter standard knife: 20 mm.*
18. *Knife in synthetic fibre.*
19. *Standard pitch grill 5.7 to 6.0 mm (depending on diameter knife).*
20. *In case of small or difficult products, a small plate or shaft is placed between the first and second grill conveyor, or one grill conveyor is possible as well.*
21. *Mechanical tensioning system to tighten the grill conveyor(s).*
22. *Optional upper grill or upper cylinder, to cover light products only at the bottom side.*
23. *Entrance grill conveyor is optional (absolutely necessary for crumbly products) or exit grill conveyor (for example for decorative applications).*
24. *Approximate length entrance part (entrance grill conveyor) : 0 mm.*
25. *Approximate length exit part (exit grill conveyor) : 0 mm.*

#### Mechanical construction of removable chocolate tank

26. *Chocolate tank and underlying frame in stainless steel.*
27. *All stainless steel used in the machine is type 304. Dairy couplings, taps, ... are type 316.*
28. *This frame complete with tank (also referred to as chassis) will be pearled.*
29. *The complete chassis can be removed on stainless steel castors with brake.*
30. *The removable tank can be disconnected mechanically from the basic machine by means of a dairy coupling. This coupling is situated underneath the 3-way valve (see further) of the basic machine.*
31. *The chocolate pump with motor reductor, the motor reductor of the mixing arm and the heating element with circulation pump for the water (thermoflu) is the minimum of things fixed on the chassis. So, these parts are removed as well when the chocolate tank is removed.*
32. *Content chocolate tank : from 30 to 355 litres depending on the width of the belt.*
33. *For real chocolate: The chocolate tank has a double jacket and is heated underneath and on the sides of the tank. It is not insulated (because it would slow down the cooling process of real chocolate). – For compound chocolate: the chocolate tank has a double jacket and is heated underneath and on the sides. It also is insulated and washable (Veka-material on the side is optional).*
34. *Including anodized aluminium cover 2.0 mm to keep warm and protect content of chocolate tank when removed.*
35. *Double jacketed chocolate tank supplied with a small tap with flow meter and*
36. *several bleeding nipples to fill up the water circuit of the machine and/or to bleed the water circuit of the machine*
37. *Chocolate tank equipped with mixing arm.*
38. *Single jacket filling pipe for chocolate 1 ¼” with mouth at the top of the machine. This filling pipe can not be double jacket but this is not necessary as the upper part of the machine is heated.*
39. *Extra mouth 2” at the bottom side to drain and/or fill the machine.*
40. *On this mouth a heated double jacket stainless steel draining pipe with butterfly valve is installed. Through this pipe, also drain water from cleaning can be removed.*



41. *Optionally a single jacket emptying pipe for chocolate 1 ¼” at the top of the machine should you want to install a second pump to be able to work continuous (real chocolate).*

#### Chocolate pump and level detection

42. *Double jacket, heated, cast iron pump to distribute chocolate (towards the curtain tank and/or to fill the chocolate bath).*
43. *When working with real chocolate, optional a second cog wheel chocolate pump or return pump. The first distribution pump (in the “real chocolate” option) will be replaced by a lobepump because a cog wheel pump will warm up the chocolate which might be a problem for real chocolate.*
44. *The return pump can always be operated manually.*
45. *Optionally, the second pump (the return pump) can be replaced by a lobepump.*
46. *Stainless steel, double jacket or electrical heated (heating wire 20W with mechanical thermostat) piping.*
47. *With butterfly valves left and right of the pump(s) to execute simple cleaning activities.*
48. *Machine is equipped with adjustable level detection without contact, that will determine the minimal chocolate level. When this detection should be broken, there is always an alarm through a vibrating limit switch (security detection).*
49. *When working with real chocolate, the feeding pump (of the tempering machine) will activate when reaching the programmed normal minimal level. Through a tensionless contact a command to the return pump (of the kettle) can be built in, in case the alarm level (vibrating limit switch) is reached. This connexion is done by the customer.*
50. *When working with compound chocolate, a built in tensionless contact is can be used to ensure that a command is sent to the feeding pump (of the melting kettle) when the normal minimal level is reached. This connexion is done by the customer. Through a tensionless contact, a command can be sent to an alarm or sound signal when the alarm level (vibrating limit switch) is reached. This connexion is done by the customer.*

#### Filter chocolate

51. *Optional low pressure filter at the suction side of the chocolate pump to obtain a 100% clean flow of chocolate to the distribution tray and chocolate bath.*
52. *Optional low pressure filter at the suction side of the return pump, when optional 2<sup>nd</sup> pump, to have clean chocolate returning to the melting kettle.*
53. *This filter unit consists of a double jacket heated ‘box’ with lid, with inside the removable filter.*
54. *The pattern of the holes of the sieve needs to be specified at confirmation.*
55. *The filter can be installed externally (when frequently cleaning is necessary) or internally (when modest waste).*
56. *It is also possible to install 2 low pressure filters in a bypass position to ensure a continuing production (by adjusting the 3 way tap): while one filter is cleaned the 2<sup>nd</sup> filter takes over. This can only be installed externally.*

#### Chocolate curtain or decoration lines

57. *Distribution or curtain tray are fed by through a single jacket subdivided distribution pipe to insure a smooth distribution of the chocolate over the entire width of the belt.*



58. *With internal distribution stencil in the curtain tray to equally distribute the chocolate over the width of the grill conveyor.*
59. *With double chocolate curtain.*
60. *Width of both chocolate curtains can be regulated by means of adjustable curtain plates.*
61. *The distribution tray is adjustable in height.*
62. *Basic machine of standard enrobing machine is equipped with stainless steel 3-way tap, to either enrobe the product from one side with chocolate ( only the bottom ) or to completely enrobe the product. For one-sided enrobing the chocolate bath underneath is fed while for complete enrobing the curtain distribution tray on top is fed.*
63. *The 3-way tap is installed at the **backside** of the machine.*
64. *Optionally, for compound chocolate, the machine can feed both the chocolate bath and the chocolate tray simultaneously, by means of a 3-way tap (and a double overflow in the distribution tray). This would allow to have a chocolate bottom and line decoration on top of the product.*

#### Chocolate bath on the basic machine

65. *Decentral filling of the chocolate tray to enhance the equal distribution of the chocolate al along the width of the belt.*
66. *Stainless steel cylinder in chocolate bath, adaptable by means of frequency regulator of the brand Lenze.*
67. *Valves to control chocolate bath, operated by locked, indexed rotary switches at the **outside at the front** of the machine.*
68. *Draining valve to empty (and regulate) chocolate bath, operated by locked, indexed rotary switches at the **outside at the front** of the machine.*
69. *Perfect regulation of the chocolate bath per product by means of the speed of the cylinder in the bath, position of the valves and regulation of the draining valve.*

#### Rotation, vibration, blowing and detailer

70. *At the end of the first grill conveyor, the excess chocolate will be vibrated or (optional) blown away.*
71. *The position of the vibrated shaft, rotation, blower, ... are standard design. Please specify, if you desire other positions.*
72. *Rotation system, which can be controlled manually, between the first and second grill conveyor in the enrobing machine.*
73. *A rotation plate must avoid products falling in the chocolate tank after rotating.*
74. *With adjustable vibration (by vibration motor and special shaft) on the grill belt, by means of a frequency regulation.*
75. *Optional blower LIGHT/POWER, adjustable by means of frequency regulation.*
76. *The height of the blow mouth can be adjusted and/or aligned towards a certain angle.*
77. *Optional decoration for real or compound chocolate.*
78. *Optionally heated detailer with separate motor Minimotor (1200r/min) and speed regulation.*

#### Electrical execution basic machine and removable chocolate tank

79. *Central electric panel at the front upper side of the machine.*
80. *The chassis can be removed at the service side or at the back side of the back side. (Please specify)*



81. *The removable chocolate tank is connected electrically with the basic machine through 3 phased and multipolar plugs.*
82. *Thanks to the 3-phased plug, the chocolate tank can be held warm separately.*
83. *Through connectors or multipolar plugs the agitator, the chocolate pump, the temperature sensors and the control of the chocolate tank can be connected/disconnected to/from the basic machine.*
84. *Separate stainless control cabinet attached on the removable frame with on/off switch for pump and heating. Digital thermostat to keep the chocolate warm when the tank is at a different location.*
85. *At the service side, the grill conveyor moves from left to right (or different on request).*
86. *Electrical execution 400V 3ph+0 50 Hz or 200V-230V 3ph 50/60Hz.*
87. **Motors 3ph 400V 50Hz or 3ph 200V - 230V 50/60Hz.**
  - a. *Motor for drive grill conveyor basic machine: Lenze 0,75 kW (frequency controlled Lenze and IE2 for a lower energy consumption.)*
  - b. *Motor for agitator/oscillator removable frame : Lenze 0,55 kW (speed can't be adjusted)*
  - c. *Motor for bath cylinder basic machine: Groschopp 0,27 kW (frequency controlled Lenze)*
  - d. *Motor for distribution pump removable frame: Lenze 0,75 kW (frequency controlled Lenze and IE2 for a lower energy consumption.)*
  - e. *Motor for optional 2nd pump on the removable chassis: 0.75kW Lenze (frequency controlled Lenze and IE2 for a lower energy consumption.)*
  - f. *Motor vibration basic machine: Groschopp 0,27 kW (frequency controlled Lenze)*
  - g. *Motor optional blow unit on the removable chassis: 0.75kW S&P **Light** / 1.1 kW S&P **Power** (frequency controlled Lenze and IE2 for a lower energy consumption.)*
  - h. *Motor optional detailer: 0.063 kW Minimotor (frequency controlled Lenze)*
  - i. *Motor optional decoration: 0.27 Kw Groschopp (frequency controlled Lenze)*
88. *Speed of the whole grill conveyor can be controlled from 1.0 to 4.0 meters per minute by means of frequency regulator Siemens/Lenze (reach 20 – 70 Hz). The nominal speed amounts to 2.0 m/min with 50 Hz. Different speed on demand.*
89. *Both entrance and exit grill conveyor turn at the same speed as the grill conveyors within the machine by means of sprocket wheel transmission, if this option has been chosen (up to 500mm with the same motor).*

## Heating

90. *Three digital thermostats Omron with double screen ( for temperature of the water, upper space and chocolate) for demanded and actual temperatures.*
91. *Thermostats for upper space and for chocolate with day and night position, manually adjustable.*
92. *With mechanical safety thermostat for the temperature of the water.*



93. *Warming up of chocolate by means of a run through heating unit (thermoflu) 1ph 230V or 115V or 100V (with a built-in circulation pump) with an electrical resistance (casted in an aluminium housing) of 3.600 Watt and telltale.*
94. *When using real chocolate, there will be a separate heating for the chocolate tank and piping underneath the machine. This means that a second flow-through heating element (thermoflu) will be installed, also 1ph 230V or 115V or 100V (with built-in circulation pump) and equipped with an electrical resistance (cast aluminium casing) and telltale.*
95. *With this second thermoflu an extra mechanical thermostat and bleed tray for this second water circuit, will be delivered.*
96. *Most of the piping and curves underneath the machine have a double jacket and are heated by the thermoflu.*
97. *All piping/curves/taps underneath the machine, that have no double jacket will be heated with heating wire 20 W which is regulated by a mechanical thermostat.*
98. *Heating upper space by 6 ceramic heating lamps, each 250 Watt 230V or 115V or 100V. Meant for the single jacket chocolate feeding/drain pipe, plus the single jacket distribution pipe to the curtain tray.*
99. *All ceramic heating elements have a stainless steel protection hood that has a pearled exterior.*
100. *The entrance and exit-side of the machine are equipped with a heated plate with a downward slope to the chocolate tank. The plate is heated by a flat resistance of 600W, with mechanical thermostat.*
101. *Optionally for real chocolate: heat exchanger and fitted with a connexion for cooling water, in order to accelerate cooling at the transition from night to the day position (3-way valve guided by chocolate thermostat).*

#### CE-documentation

102. *In English, available after delivery of the machine and agreement regarding the functionalities :*
  - *CE/EEC/ARAB declarations.*
  - *Brief technical description.*
  - *Safety and inspection rules.*
  - *User manual.*
  - *Electrical drawing.*
  - *Spare part list of all electrical parts.*
  - *Optionally additional documentation available.*