MODEL H08-2000

Very versatile calender specially designed for bonding / laminating / full-coating of a wide range of substrates (woven and or knitted textiles, non-woven textiles, foams and other non-textile materials) by using any thermoplastic polymer (in granules form) or reactive (in appropriate tins).
The polymer, melted by means of an appropriate extruder / fuser, is applied directly to one substrate by means of an engraved cylinder / flat cylinder (coating). In case of bonding process, the second material can be added and bonded to the first, and potentially cooled in exit thanks to an apposite cylinder connected to a chiller unit.

APPLICATIONS DEPENDING ON THE INSTALLED OPTIONS:

- Bonding / laminating by hot-melt.
- Full-coating by hot-melt.

CENTRAL MACHINE BODY

Ergonomic, solid and robust structure composed of iron shoulders machined with numerical control machine, where the following devices are installed:

COUNTERPRESSION CYLINDER FOR ENGRAVED CYLINDER OR COATING CYLINDER (*Ref. 9 of the enclosed drawing*)

Silicon pressing cylinder Ø 340 mm (13,39"), installed on self-aligning supports in order to grant a perfect contact with the engraved cylinder (*ref. 8*) or the coating cylinder (*ref. 6*). The rotation of this cylinder is granted by motor managed by inverters and speed reducer with gears.

UPPER PRESSING CYLINDER (*Ref. 11 of the attached drawing*)

- Pressing cylinder Ø 260 mm (10,24"), chromed and heated by armoured electric resistors, immersed in diathermic oil.
- The working temperature is electronically controlled and is adjustable by ambient temperature up to + 230 °C.
- This cylinder works in absence of air (Monti Antonio S.p.A. system) in order to avoid oil oxidation and ensuring long duration of resistances.
- The rotation of this cylinder is ensured by a motor managed by inverter and speed reducer with gears. Pressing of the cylinder is ensured by two pneumatic pistons fed by compressed air adjustable up to 6 Kg/linear cm. In each piston (one for side) a mechanical stop that allows to precisely control the distance of the cylinder (*ref. 11*) related to cylinder (*ref. 9*).
  The precision of the mechanical stop is millesimal (with opening adjustable up to 20 mm). The regulation is managed by mechanical stop through a brushless motor and allows management of distance with machine in movement (without line stop).

UPPER MATERIAL ENTRY (*Ref. 14 of the attached drawing*)

Shaft Monti connection Ø 34 mm with blocking cones for axial unwinding with disk brake pneumatically adjusted, maximum diameter 400 mm.

MECHANIC SPEED

The machine is equipped with motors which allow a mechanic speed 2-40 Mt/min (standard machine).
For different needs the machine can be studied and dimensioned for speeds from 5-60 Mt/min (option).

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MOTORIZATIONS

- The main movements are produced by asynchronous motors, three phase, servo ventilated which transmit movements to the cylinder with a reducer.
- The motor of the counterpression cylinder (*ref. 9*) has "master" function. All other motors have "slave" function.
- The speed of all motors is synchronized and any variation registered by the "master" effects automatically on all "slaves".
- The control of all motors is run by vector inverters, with plc.

ELECTRIC CABIN

The cabinet is in metal material and includes all control activations and electronic components.

TEMPERATURE CONTROL

- The temperature of all oil heating cylinders is guaranteed by means of an algorithm of "PID" type with feelers with thermal resistance (PT 100), which transfer measurements to PLC.
- The same process is used for the doctor blade heating.

AUTOMATION

- It is controlled by a PLC, complete with digital inputs and outputs, control of analogical inputs for the temperature control, control on ETHERNET base of the movable operator panel (front and rear) and of the other electronical devices.
- Front fix operator panel: colours LCD touch-screen with TFT, screen 12".

TECHNICAL DATA

- Adjustable working width up to mm 1800 (70.87")
- Working speed adjustable from 2 to 40 m/min (from 5 to 60 m/min option).
- Installed power of complete machine: it depends on the requested options.
- Average electric consumption of the complete machine: it depends on the requested options.
- Compressed air pressure: 6÷8 Bar.
- Machine produced according to CE rules.
- Customs tariff: 84 51 80 80.

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OPTIONAL

ENGRAVED CYLINDER MODULE (*Ref. 7 – 8 of the attached drawing*)

Frame realized with thick carbon steel plate and worked with numerical control machine. It is equipped with a fix base where a self-propelled frame is hooked. The moving of this last one is ensured by two hydraulic cylinders and a dedicated oleodynamic control unit in order to allow the engraved cylinder to lean against the counter-pression cylinder. The distance between engraved cylinder and counter-pression cylinder is controlled by a specific mechanical brake with brushless motor and millesimal precision. It is also equipped with lower wheels that allow an easy movement. The blocking to the central body happens by 4 oleodynamic cylinders in an automatic and precise way.

- Engraved cylinder (*ref. 8*) Ø 350 mm (13,78") for polymers distribution. This cylinder is chrome plated in order to support the friction with the doctor blade and it is heated by electric armoured resistances, which are immersed in diathermic oil bath.
- The working temperature, electronically controlled is adjustable from room temperature up to 230°C.
- This cylinder works in absence of air (Monti Antonio S.p.A. system) so that to grant no oil oxidation and a long life to the heating elements.
- This cylinder is motorized with motor managed by inverters and gear speed reducer; it is equipped with quick release head for easy replacement
- Doctor blade (*ref. 7*) for the distribution of the melted polymer, complete with heated aluminium plate (Monti Antonio S.p.a. system), isolated and coated with a special anti-sticking Teflon.
- Complete with movable lateral seals for adjustment of the distribution width.

FULL-COATING MODULE (*Ref. 5 – 6 of the attached drawing*)

Frame realized with thick carbon steel plate and worked with numerical control machine. It is equipped with a fix base where a self-propelled frame is hooked. The moving of this last one is ensured by two hydraulic cylinders and a dedicated oleodynamic control unit in order to allow the full-coating cylinder to lean against the counter-pression cylinder. The distance between full-coating cylinder and counter-pression cylinder is controlled by a specific mechanical brake with brushless motor and millesimal precision. It is also equipped with lower wheels that allow an easy movement. The blocking to the central body happens by 4 oleodynamic cylinders in an automatic and precise way.

- Full-coating cylinder (*ref. 6*), Ø 260 mm (10,24") made out of chrome-plated steel, motorized.
- The working temperature, electronically controlled is adjustable from room temperature up to 230°C.
- This cylinder works in absence of air (Monti Antonio S.p.A. system) so that to grant no oil oxidation and a long life to the heating elements.
- Dispenser cylinder (*ref. 5*), Ø 260 mm (10,24") made of chrome-plated steel, motorized.
- The heating of this cylinder is by means of diathermic oil, heated with an external control unit (included).
- The distance between full-coating cylinder and dispenser cylinder is controlled by a specific mechanical brake with brushless motor and millesimal precision for the grammage management. Moreover, the use of brushless motors allows grammage variation also when the machine is in motion.
- The movement of the dispenser cylinder is given by two oleodynamic cylinders managed by a dedicated control unit.
- The roller movement is granted by pistons fed with compressed air with adjustable pressure paired with electric-mechanic actuators with centesimal settings.
- The dispenser cylinder can be misaligned, in order to be able to have a perfect polymer dosage.
- Complete with movable lateral limiters for adjustment of the distribution width.

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RAILS

Structure composed of carbon steel for machine housing. In the underlying part there is a free roller conveyor for materials passage. Also, on this structure is housed a self-propelled platform for modules exchange, built in a tubular steel structure (*ref. 28*).

FRONT FEEDER FOR Ø 800 MM ROLLS, DOUBLE AXLE, BOTH MOTORIZED AND CONTROLLED BY A DANCING ROLLER (OPTION): CONTROL BOTH WITH LOADING CELL AND WITH DANCING ROLLER

- It is realized with two solid and stable oppose shoulders made out of high thick steel plates inside of which are installed the pneumatic expansion shafts for the fixation of the material rolls (*ref. 1 and 2 of the attached drawing*) which will be treated during the bonding/lamination processes.
- The lower material unwinding (*ref. 1 of the attached drawing*) is motorized (brushless motor and gear reducer) and synchronized to the main machine thanks to the dancing roller (*ref. 4 of the attached drawing*). If the loading cell is added (option) it makes possible also the control of elastic and delicate materials.
- The upper material unwinding (*ref. 2 of the attached drawing*) is motorized (brushless motor and gear reducer) and synchronized to the main machine thanks to the dancing roller (*ref. 4 of the attached drawing*). If the loading cell is added (option) it makes possible also the control of elastic and delicate materials.

RECOVERY OF MEMBRANE PROTECTION ON FRONT FEEDER

Small motorized axial winder (*ref. 3 of the attached drawing*) for the recovery of the membrane protection/carrier. It is characterized of a shaft with cones for the card-board cores fixation.

SMALL WINDER ON MACHINE BODY (*Ref. 26 the attached drawing*)

This small windier is used both for winding protection/support films and for winding small quantities of treated materials in exit (sampling) for rolls and sampling.

SINGLE SEPARATE WINDER FOR ROLLS Ø 800 MM, SINGLE MOT. AXLE AND CONTROLLED BY DANCING ROLLER (Ref. 21 of the attached drawing) (OPTION): CONTROLLED BOTH WITH LOADING CELL AND DANCING ROLLER

It is equipped with an independent motor, synchronized to the main one through a dancing roller (*ref. 23*) and it is characterized by an axial winder complete with pneumatic expansion shaft (*ref. 22*).
If added, the loading cell (option) makes possible also the control of elastic and delicate materials.

SECOND SINGLE SEPARATE WINDER FOR ROLLS Ø 800 MM, SINGLE MOT. AXLE AND CONTROLLED BY DANCING ROLLER (Ref. 21 of the attached drawing)

Second axial winder in exit.
It is equipped with an independent motor, synchronized with the main one through a dancing roller (*rif. 23*) and is characterized by an axial winding complete with pneumatic expansion shaft.
If added, the loading cell (option) makes possible also the control of elastic and delicate materials.

PRESSING GROUP WITH OPENING ROLLER WITH ELASTIC CORDS Ø 120 MM, MOT. (*Ref. 13 of the attached drawing*)

It is composed of:

- Silicon coated cylinder, prearranged for cooling (cylinder Ø 215 mm (8,46")).
- Opening roller with elastic cords, motorized (*ref.12*).

INFRARED HEATER (*Ref. 10 of the attached drawing*)

IR heating with very low thermal inertia, consumption of 7' kW with self-adjusting system for temperature control.

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UV LAMP FOR HOT-MELT DEPOSIT CONTROL
Specific lamp to verify points deposited on the material to bond, with a specific light it is possible to verify that the deposited glue on the holes of the engraved roll is transferred on the bonding roll.

UPPER OPENING/ALIGNING ROLLER WITH SLATS, INCLUDING SCROLL ROLLER AND MANUAL BRAKE (*Ref. 18 of the attached drawing*)
Motorised roller with slats to spread materials and eliminate eventual pleats as well as align them thanks to high precision optical reading.
Thanks to its motorisation, this slats roller can be used for controlling the tension of the material in entry.
Device complete with scroll roller (*Ref. 17*) and manual brake (*Ref. 16*).

OPENING ROLLER WITH ELASTIC CORDS Ø 170 MM, MOTORIZED (FOR MEMBRANES AND FILMS) (*Ref. 25 of the attached drawing*)
Motorized spreader roller to spread materials and eliminate eventual pleats. Thanks to its motorization this spreader roller can be also used for the tension control of the material in entry (*ref. 1*).
This roller is suitable for membranes, films and textiles in general.

LOWER OPENING/ALIGNING ROLLER WITH SLATS, MOTORIZED (*Ref. 29 of the attached drawing*)
Motorised roller with slats to spread the materials and eliminate eventual pleats as well as align them thanks to high precision optical reading.
Thanks to its motorisation, this slats roller can be used for controlling tension of the material in entry.
This roller is suitable to textiles in general.

OPENING ROLLER WITH ELASTIC CORDS Ø 120 MM, FREE (FOR FILM ENTRY)
Opening roller with elastic cords Ø 120 mm, free that allow the spread of the material in entry, before bonding.

BANANA ROLLER FOR FILM (Ref. 15 of the attached drawing)
Bow roller with hand wheel for tangency adjustment on the material prior the process; ideal to spread films and foils.

COOLING CYLINDER WITHOUT CHILLER (Ø 400 MM) MOTORIZED (*Ref. 27 of the attached drawing*)
Cooling cylinder Ø 400 mm (15,75"), chrome-plated, motorised, mirror finished.
This cylinder is equipped with two rotating heads for water circulation.

CHILLER UNIT FOR COOLING CYLINDER Ø 400 MM (15,75")

COOLING CYLINDER WITHOUT CHILLER (Ø 600 MM) MOTORIZED (*Ref. 27 of the attached drawing*)
Cooling cylinder Ø 600 mm (23,62"), chrome-plated, motorised, mirror finished.
This cylinder is equipped with two rotating heads for water circulation.

CHILLER UNIT FOR COOLING CYLINDER Ø 600 MM (23,62")

CHILLER UNIT FOR SILICONE CYLINDER (*Ref. 29 of the attached drawing*)

SELVEDGES CUTTERS, COMPLETE WITH TOWING ROLLER (*Ref. 19 of the attached drawing*)

- N°2 cutters in machine exit, complete with towing roller for selvedges and positioned before winding (one for side of the material).
- Working width manually adjustable.

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ADDITIONAL ENGRAVED CYLINDER

Engraved cylinder Ø 350 mm (13,78") for polymer distribution. This cylinder is chrome plated in order to support the friction with the doctor blade and it is heated by electric armoured resistances, which are immersed in diathermic oil bath.

THERMOPLASTIC EXTRUDER - 60 Kg/h.

- Device for extruding thermoplastic polymers having a capacity of 60 Kg/h. It is equipped with two heated tubes and pertaining heads (duly isolated) to keep the polymers melted until the distribution device.
- Installed power: 40 kW.

PUR FUSER, N°1 – 200 Kg.

- Drum melter of 200 litres for fusing reactive polymers and having a capacity of 50/60 Kg/h. It is equipped with two heated tubes and pertaining heads (duly isolated) to keep the polymers melted until the distribution device
- Installed power: 30 kW.

ADDITIONAL DOCTOR BLADE, COMPLETE

DEVICE FOR CORONA TREATMENT

Corona treatment by means of a high frequency electric discharge on the material to be treated make the material surface more receptive to receiving adhesives, glues and coatings.

COOLING OF THE ELECTRIC/ELECTRONIC CONTROL PANEL

The cooling of the cabinet is by means air conditioning which grants perfect temperature and humidity control.

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