

Hermes Machine V2.0

High Pressure Foaming Machine combined with two hot presses

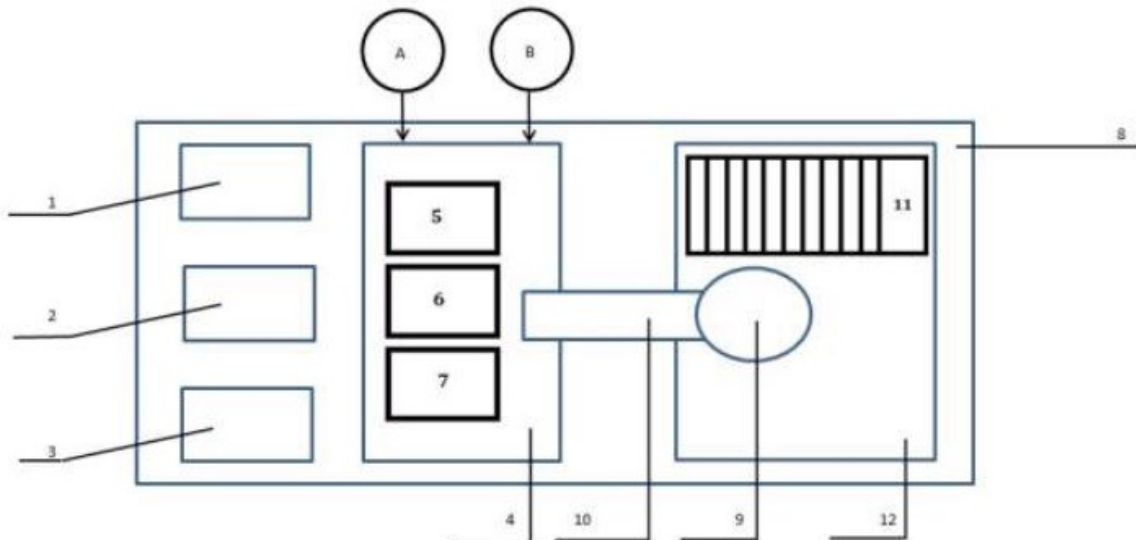


The Machine V2.0 series of high pressure metering units provides the ideal solution for every PU application. Reliability, ease of operation and attractive price-performance ratio are the key points of this new series of machine.

Particular attention has been paid to the incorporation of up-to-date design and technology during the development of our Machine V2.0:

- ☒ Reliability of all elements;
- ☒ Reduced maintenance operations;
- ☒ Easy access to all elements;
- ☒ Compact overall dimensions;
- ☒ No need for solvent or other head cleaning agents;
- ☒ Simple, user friendly setting of machine and working parameters;
- ☒ Reduction in materials consumption and elimination of contaminated waste;
- ☒ Maximum flexibility

Schematic diagram of the machine and description



Description of the elements of the attached diagram of the machine:

1. Power Supply – 2 unit
2. Management block – 2 unit
3. Driving mechanism – 2 unit
4. Zone for the preparation of raw material
5. Buffer vessels – 2 unit
6. Heat exchange system – 2 unit
7. Pumping pressurizing group – 2 unit
8. Chassis (mount) of machine – 2 unit
9. Dosing (pouring) head – 2 unit
10. Manipulator – 2 unit
11. Minimum one piece molding presses – 2 unit
12. Zone for forming of panels – 2 unit
13. Water chiller – 2 unit
14. Air compressor – 1 unit
15. drones with camera – 2 unit
- 16. AUXILIARY EQUIPMENT**

A - Raw material component 1

B - Raw material, component 2

- Design concept for the control system, adopted for this brand new series of high pressure machine, is based on PLC interfaced with an operator panel through which all machine variables and working parameters are set and displayed.
- The standard configuration for this series of high pressure machine is equipped with fixed output RHL axial rotary piston pumps driven by a three-phase electric motor with variable speed inverter
- The installation of optional modulating nozzles will, in addition to providing automatic self-adjustment of pouring pressures, also permit the recycle of chemical components through the mixing head at a preset lower output, thus avoiding sudden pressure peaks.

Note: all output data assumes raw material viscosity between 50cps and 2000cps at 20 °C.

- Management can be mechanically or electrically.

Examples: Two engines that operate at different speeds. The first (main) rotates at a speed needed for the proportional high pressure pump to provide the flow and pressure in operation mode (pouring), the second (auxiliary) rotates at a reduced speed above the minimum operating speed of the proportional high pressure pump, by which gives the minimum flow rate and pressure in recirculation mode.

- Presser

The dimensions of our press are optimized compared to alternative solutions. Just for comparison, a standard press with overall dimensions 1700x3000x1800 and working dimensions 1500x2500mm with four daylight openings weighs 5000 kg and has an installed capacity of 20 kW, has a total working area (performance) of 15 sq. m. At the same working area of 15 sq. m., our press has dimensions of 2000x2300x800 mm, weight of less than 2000 kg and an installed capacity of 4 kW. This means that with three times smaller volume, two and a half times less weight of the apparatus and five times less power, we achieve the same performance as the standard presses.

This Machine V2.0 high pressure machine is composed of the following main elements:

1. POLYOL METERING LINE

1.a Tank

- ☐ 10 l Vertical jacketed cylindrical tank with removable lid pressurized according to PED European Standard (working pressure 4 bar), complete with Armaflex insulation;
- ☐ heating by means of electric heaters inside the tank jacket and on/off solenoid valve for cooling by cold water;
- ☐☐ PT 100 probe for temperature control;
- ☐ slow-speed agitator driven by a motor reducer;
- ☐ visual level indicator;
- ☐ pressurization system with dry air complete with pressure regulation valve and manometer;
- ☐ safety relief valve for maximum tank pressure;
- ☐ outlet relief valve for dry air during filling;
- ☐ connection piping to the metering pump;

1.b Metering Pump

- ☐ Fixed output axial piston pump equipped with safety pressure relief valve on the feed line with by-pass on the return line;
- ☐ Pump horizontally mounted and coupled with a dedicated AC motor (one motor for each pump);
- ☐ Pump output variation through motor speed variation with inverter controlled by PLC;
- ☐ Double seal pump and relative lubricating circuit;
- ☐ Cartridge filter on the suction side of the pump;
- ☐ Digital pressure gauge, double contact type, on delivery side of the metering pump to control the mixing pressure;
- ☐ Digital pressure gauge, single contact type, to control minimum feeding pressure to the suction side of the metering pump;

2. ISOCYANATE METERING LINE

2.a Tank

- ☐ 10 l vertical, jacketed cylindrical tank with removable lid pressurized according to PED European Standard (working pressure 4 bar), complete with Armaflex insulation;
- ☐ heating by means of electric heaters inside the tank jacket and on/off solenoid valve for cooling by cold water;
- ☐ PT 100 temperature probe for temperature control;
- ☐ Slow-speed agitator driven by a motor reducer;
- ☐ visual level;
- ☐ pressurization system with dry air complete with pressure regulation valve and manometer;
- ☐ safety relief valve for maximum tank pressure;
- ☐ outlet relief valve for dry air during filling;
- ☐ connection piping to the metering pump;

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3. HYDRAULIC UNIT

- ☐ **17.5 kW** hydraulic unit for opening/closing of the cleaning and dispense pistons of the self-cleaning head, positioned on the machine frame and including:
 - ☐ oil reservoir, 80 liter capacity;
 - ☐ Hydraulic solenoid valves;
 - ☐ Heat exchanger for cooling with central water refrigeration;
 - ☐ Oil electric-distributors;
 - ☐ Hydraulic accumulator, 6 litre capacity;
 - ☐ Filter on the suction side of the pump;
 - ☐ Manometer to measure working pressure;
 - ☐ Pressure gauge with contact for switching off the hydraulic unit once the working pressure is reached;

4. CONTROL PANEL

The MAKE BULGARIA design concept for the control system adopted for this brand new Make Machine

V2.0 series of high pressure machine is innovative and is based on PLC for reliability and world wide service and parts availability.

MAIN FUNCTIONS

- ☐ Timers: set and display the status of the machine handling and controlling timers;
- ☐ Meters: set and display the status of the machine handling and controlling meters;
- ☐ Cycle mode selection: Working - Isocyanate calibration - Polyol calibration - High pressure recycle
- ☐ Pouring mode selection: Time mode - Start/Stop from external unit (optional);
- ☐ Head cleaning mode selection: ON/OFF (in case of nozzle extension provided with air cleaning);
- ☐ Head lubricating mode selection: ON/OFF;
- ☐ Set up of automatic loading levels (optional);
- ☐ Set up of either of PID temperature control point values on working temperature;

The control panel also handles a series of settings, depending on the optional equipment fitted.

OVER NIGHT CYCLE

When enabled, this cycle maintains the materials at the right temperature and flowing through the machine piping circuit.

ALARMS

Full control and operation of all machine functions is by a PLC which, in case of anomalies, gives an acoustic warning with a clear text message display identifying the related problem and possible solution.

All functions controlled by the PLC are constantly monitored through pre-set minimum and maximum alarm set point values.

5. FRAMEWORK

This brand new series of high pressure machine has a compact framework design which simplifies access to all elements needing service and minimizes maintenance operations.

6. HEAD SUPPORT BOOM – OPTIONAL on REQUEST

Standard boom, length about 1.9m, to support the mixing head and allow a working radius of 120° and a vertical movement of 500mm.

7. MIXING HEAD PU-3 10/14

PU-3 10/14 self cleaning, laminar flowmixing head.

The head is supplied with:

- ☐ Proximity (one for each plunger) switch
- ☐ Nozzles at variable pressure
- ☐ oil electric distributor
- ☐ head positioning: **horizontal**

8. ACCESSORIES

- Pneumatic piston loading pumps
- Loading levels for both tanks
- Chiller "4", 12000 unit type
- Assembling, commissioning and training

9. ASSEMBLING, COMMISSIONING AND TRAINING

Technician for 30 days for the assembling and start-up.

10. Hot press STRUCTURE

Welded beam structure composed by Fe 430 thick beams.

11. HEATING PLATENS

Assembled solid steel plates predisposed for heating plant which uses water as heating liquid.

Maximum temperature of the heating medium: 50/60° C.

Maximum pressure of the heating liquid: 2 bar.

Resistance guarantee: up to 4 kg/cm².

12. HYDRAULIC INSTALLATION

Oil control unit composed by nr. 2 motor-pumps (high-low pressure).

The group includes a motor, high capacity pump/low pressure for fast approaching, low capacity pump/high pressure to slow the pressure delivery, automatic circuit breaker valve for pump exchange, safety max, pressure valve, stop pressure valve.

13. ELECTRIC INSTALLATION

With free-standing electrical control cabinet with all necessary instruments, including timer with different position, manometer, start-stop buttons: selecting switches for semi or fully automatic press function, one emergency switch, main indicator switch lamp.

Possibility to control full line from this control cabinet.

14. HEATING PLANT

Heating power 9 kW

50°C heating platen max.temperature.

The installation is complete of: circulation pump, open expansion tank, piping from the boiler to the presser, air leaking valves, control board, control and safety instruments.

The boiler structure made of high quality steel suitable to the thermic use and covered by glass wool insulation and a zinc sheet.

On the electrical circuit of the pump there is a safety lock which avoids damages.

The expansion tank and the whole piping made of heating specific products.

The control board is realized separately or together with the main control panel.

All the components are according to the European rules.

The wires from the press to the control cabinet are contained in a special raceway to protect them.

On the boiler there is a thermostat for a double safety function.

15. AUXILIARY EQUIPMENT

- UV Printer – 2 unit –

The Mimaki JFX500-2131 - The new **JFX500-2131** from Mimaki smashes all established records for a grand format flatbed UV LED printer, with production speeds of up to 60sqm/h, delivering unbelievably high quality, right down to 2 point text on a massive 210 x 310 cm print area.

Key Features: [?] Amazing print speeds up to 60sqm/h with CMYK and 45sqm/h with white ink printing [?] Maximum print size of 2.1 x 3.1 m [?] Intelligent Microstepping System (IMS) for accurate prints, even 2pt characters can be legibly printed [?] Variable dot printing with a minimum size of 7 picolitre [?] Mimaki Advance Pass System reduces bandings [?] Mimaki Circulation Technology prevents pigment sedimentation of white ink [?] Reliable nozzle recovery function [?] Vacuum unit and high performance Rasterlink RIP software included as standard

-Thermoforming vacuum machine – 2 unit –

Formech 686 – Featuring a power table, Formech's 686 makes light work of the most demanding applications. Pre-stretch provides a more uniform material thickness for deep moulds whilst auto-level signals to the user the material is ready to form. Rapid response quartz heaters with 6 independently controllable zones provides accurate heat control for consistent, high definition results. Intuitive colour touch screen interface and 20 nameable presets provide ultimate user convenience and ease of use.

Key Features: *PLC Control with 5 "Colour Touch Screen Control * 20 Programme Memory * Quartz Heaters with Variable Standby * 6 Independently Controllable Heating Zones * Power Table * Prestretch * Auto-level * Vacuum Gauge * Dry Rotary Vane Pump 16 m3/HR

16. CONNECTION TO UTILITIES

The utilities that the customer has to place at disposal and to supply for the installation and the operation of the unit are:

Adequate material handling & lifting equipment

Electric power supply according to technical descriptions of the different items

Compressed air supply as above

Water supply as above

Raw materials (polyol and isocyanate)

Bucket for polyol & isocyanate

10 Kg scale (1 g division)

Carafe 3 kg capacity for polyol & isocyanate

Polythene bags

17. CARTRIDGE MOLDS 80 pcs.

– ordered separately with the desired sizes

18. DOCUMENTATION PROVIDED WITH THE ORDER PLACED

All required manuals, as below specified, will be issued in English, printed on CD, and delivered with the goods.

19. EXCLUDED

All documents for Local Authorities which are not in compliance with what we have supplied according to CEI 64/2 standards and which may be requested for obtaining special permissions.

All works to be done in the building for positioning the plant.

Machines for unloading and emplacement of the machines/devices