TECHNICAL DATA SHEET

SK1RTM

RTM piston units

► DESCRIPTION

RTM piston flow and pressure controlled unit is a system based on a piston actuated by brushless motor driven by a servo controller. It is used for dispense of thermosetting resins in RTM (Resin Transfer Moulding) and SQ-RTM processes.

► TECHNICAL CHARACTERISTICS

- Material : steel
- Mounted on a stand 1.000mm x 600mm stand with stainless steel platform
- Piston position: horizontal or vertical
- Operating pressure: 0 to 30 bars (optional 100 bars)
- Vacuum level: 1 mbars
- Use temperature 0 to 170 °C (optional 300°C)
- Capacity: 0.5 to 25 l
- Resin flow 5 to 2500 CC/min

► STANDARD PISTON UNITS

Reference for order	Piston volume	Max. working pressure	Max. working temperature
SK1RTM3L30B175	3 L	30 Bar	170°C
SK1RTM5L30B175	5 L	30 Bar	170°C
SK1RTM10L30B175	10 L	30 Bar	170°C
SK1RTM25L30B175	25 L	30 Bar	170°C

► UNIT ELEMENTS

1. Piston

Actuation of the piston is by a screw jack, driven by a brushless motor through a gear box, controlled by the servo controller. Software is included in the servo controller. The software controls the filling, injection and position of the piston. Flow is controlled by the controller and encoder directly integrated in the brushless motor.

The injection system is closed with a cap with a seal.

The body of the piston can be heated with a heating belt controlled by a probe and an electronic regulator. For process control 5 temperature thermocouple plugs and 2 pressure sensors are linked with monitoring software to record the following parameters.

- injection pressure
- injection flow
- injected volume
- temperature of piston body
- temperature injection line
- vacuum

Data base storage and possible transfer of a report onto a memory stick or printing to an external printer is possible (no printer is supplied).

The system is driven by a PC panel integrated in the control box (see photos) this panel is a PC with a tactile surface to actuate the machine and to save all data. Data recording processed in the machine using Schneider Vigeo Citec software for real time application. PLC is new generation Schneider M230/250 series.
The system is electrically connected in the control box. This control box includes safety connection to 240 Volts or 400 V supply. In the electric cabinet there is the servo controller and with the pressure controller, heating regulators and static relays and the flow digital display. Rapid connections for the injection line, pressure sensor, heaters of piston body and probe. The electric cabinet is mounted on the frame.

2. Injection line

The connection between injection piston and mould is realized by a replaceable injection tube. The injection tube can be heated.

Tube types:

- one is directly connected from the cap (and pressure sensor) it is recommended for high pressures (up to 100 bars) ,
- disposable inner lining tube in silicon (pressure max is 10 bars at 80°C), inner tube is changed after each injection.

It is possible for very high pressure injection to place metallic inner tube with appropriate fittings.

The flexible connection is both thermal and electrically insulated.

3. Vacuum pump

It is possible to connect piston to a vacuum pump. A 16 cubic meter/Hour pump double stage can be supplied and placed on the stand. For control of vacuum, a sensor (PIRANI gauge) is placed in vacuum circuit, connected to a digital display. The value on front display is in mbars and a 0/10 V is available for recording data.

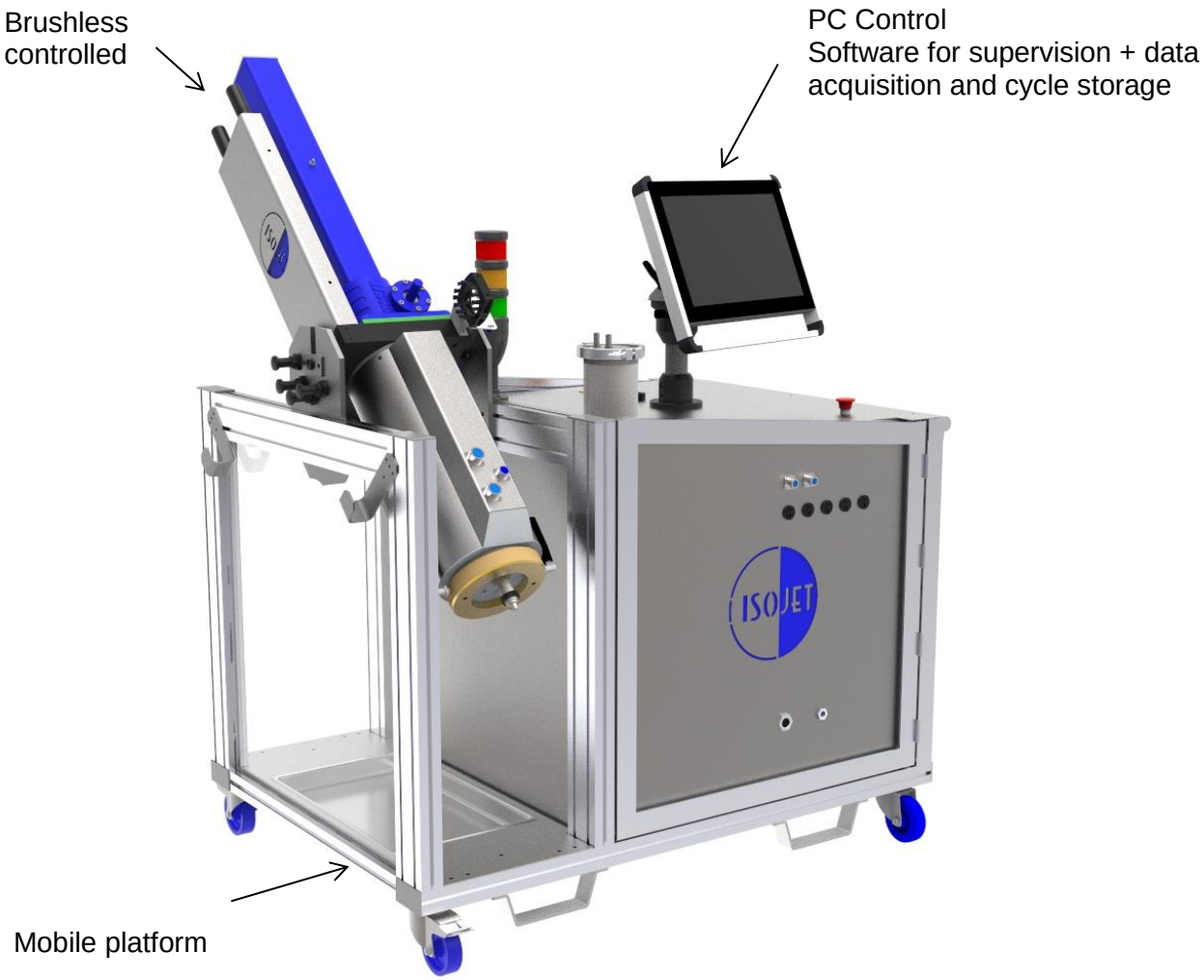
NOTA = level vacuum in piston is 0.5 mbar

4. Unit cleaning

The injection system can be cleaned with solvent (MEK for example), it can be also cleaned with a hot solvent (NMP). The piston can be extracted for a complete cleaning of the internal parts of injection system and of the piston. The cap, line, connection of pressure sensor has to be cleaned if the resin polymerize rapidly between two injections. In case of inner tube in flexible injection line, the tube can be removed and discarded.

5. Stirring system and probe on the cylinder cap (Option)

The system is used to stir resin inside of the piston and to record temperature of resin in the piston prior to inject. This cap needs to be removed before the injection.



Picture 2: RTM Unit with PLC (This presentation of the equipment can be adapted to customer specification).

Piston injection 0,5 to 30 liters,0 to 30 bars

External channels 5 temperatures 2 pressures

Picture 3: RTM Unit with PLC back side

► **NOTE**

Please contact us to get further information, as well as to make an equipment design according to your technical specification.
Standard warranty period: 12 months.

► INFORMATION PAGE OF PROCESS