

Mechatronic department

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**SMART PU – Mobile Column Hydraulic
wireless machine management**

tuorpuur

SMART PU MCH MACHINE MANAGEMENT



A wireless mobile column lift machine is a “distributed automation” complex system.

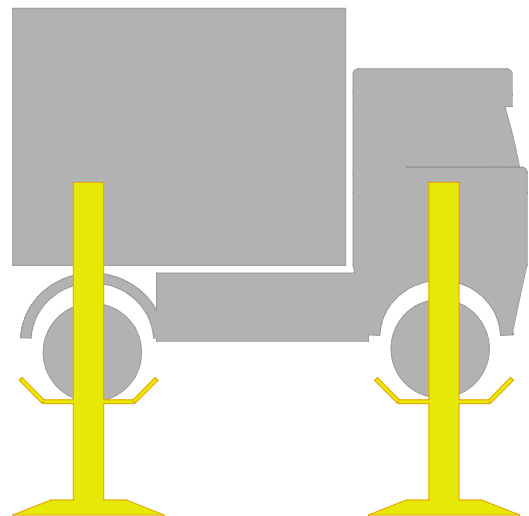
One machine consist of 2 – 4 – 6 - 8 autonomous and independent lifting devices (columns) that can be freely moved in a plan. Each Column is battery operated and includes:

- Frame
- Battery
- Battery charger
- Lifting cylinder
- DC Hydraulic power pack
- One or more electronic controllers
- A communication system (radio, wired)
- HMI (such as operator panel)
- Sensors
- Cable Harness
- Wi-Fi

Using our patented SMART POWER UNIT technology Hydronit offers a “one-stop-shop” solution for mobile column machine.

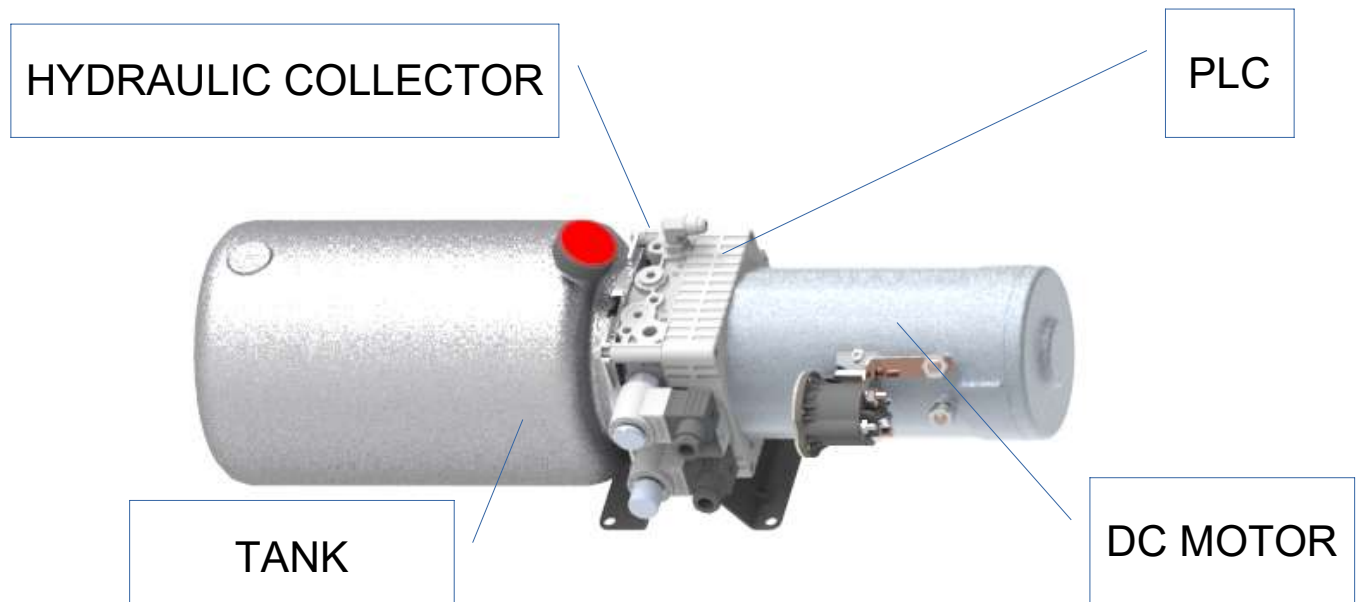
The Offer is including:

- SMART POWER UNIT
 - Hydraulic power pack
 - Embedded SIL 2 programmable PLC
 - Embedded Sensors (see data sheet)
 - WiFi – CAN – Ethernet
- 4,3” touchscreen – Ethernet
- IDE (programming environment)



One SMART POWER UNIT is able to fully manage one column from both hydraulic and electric point of view. It allows a consistent reduction of the TCO of the machine reducing assembly time since several sensors are embedded. It Integrates a wide number of I/O which can direct-drive valves both on-off or proportional.

The Smart Power Unit is programmable by CoDeSys



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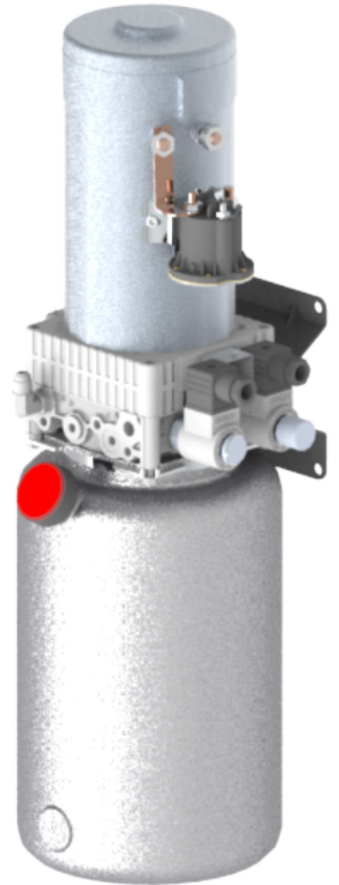


A Smart Power Unit is equipped with all the hydraulic, electric and electronic features required to fully manage a complete complex machine (see full data sheet).
 The electronic and mechanic architecture is developed in order to meet SIL 2 (safety integrity level) as per EN61508 for or PI c as per EN13849
 The smart Power Unit is ready to operate 48VDC, with the related cable harness downsizing (and cost saving)
 The smart power unit is programmable with



In a Mobile column lifting machine, one SMART PU can manage the complete machine , with the following features:

- Columns connected via embeded WI-FI
- drive the complete hydraulics thanks to electric motor, pump and embedded valves. The hydraulic scheme correspond with the strictly necessary circuit to lift and lower the vertical mast. The basic circuit allow three speeds and lifting and three speed lowering.
- The same electronic controller can manage proportinal valves (see our optional proposal for a seamless flow control).
- Detects load, thanks to embedded pressure sensor
- Detect actual temperature of the fluid (optional)
- Drive extra solenoids/electric load such as "lock light" and "safety lock", as well as management of the battery charger
- Up to 12 sensors/buttons for the machine operation, such as UP/DOWN and Emergency switches, end strokes proximity switches , machine ground pressure, wheel forks status, battery status and so on



The Embedded Electronic controller allow also the following features:

- preventive maintenance and data logging (for future rental options)
- connection with a smartphone (for example machine control through app)



HMI:

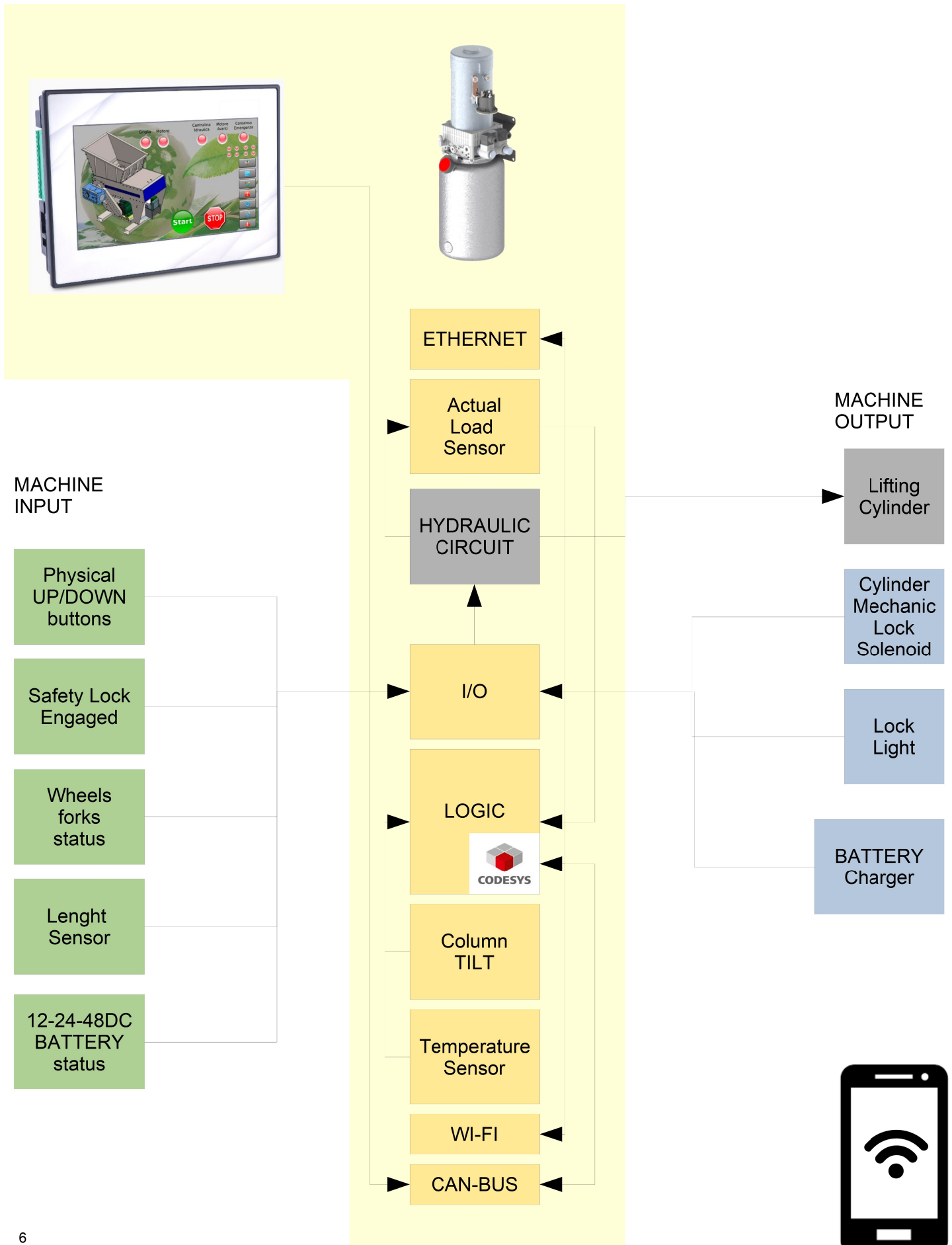
The Smart-Power-Unit range is completed by our 7" touchscreen display wich can be connected to the PLC through a CAN BUS line.
 Our Touchscreen is programmable through a proprietary IDE based on QT which is open-source



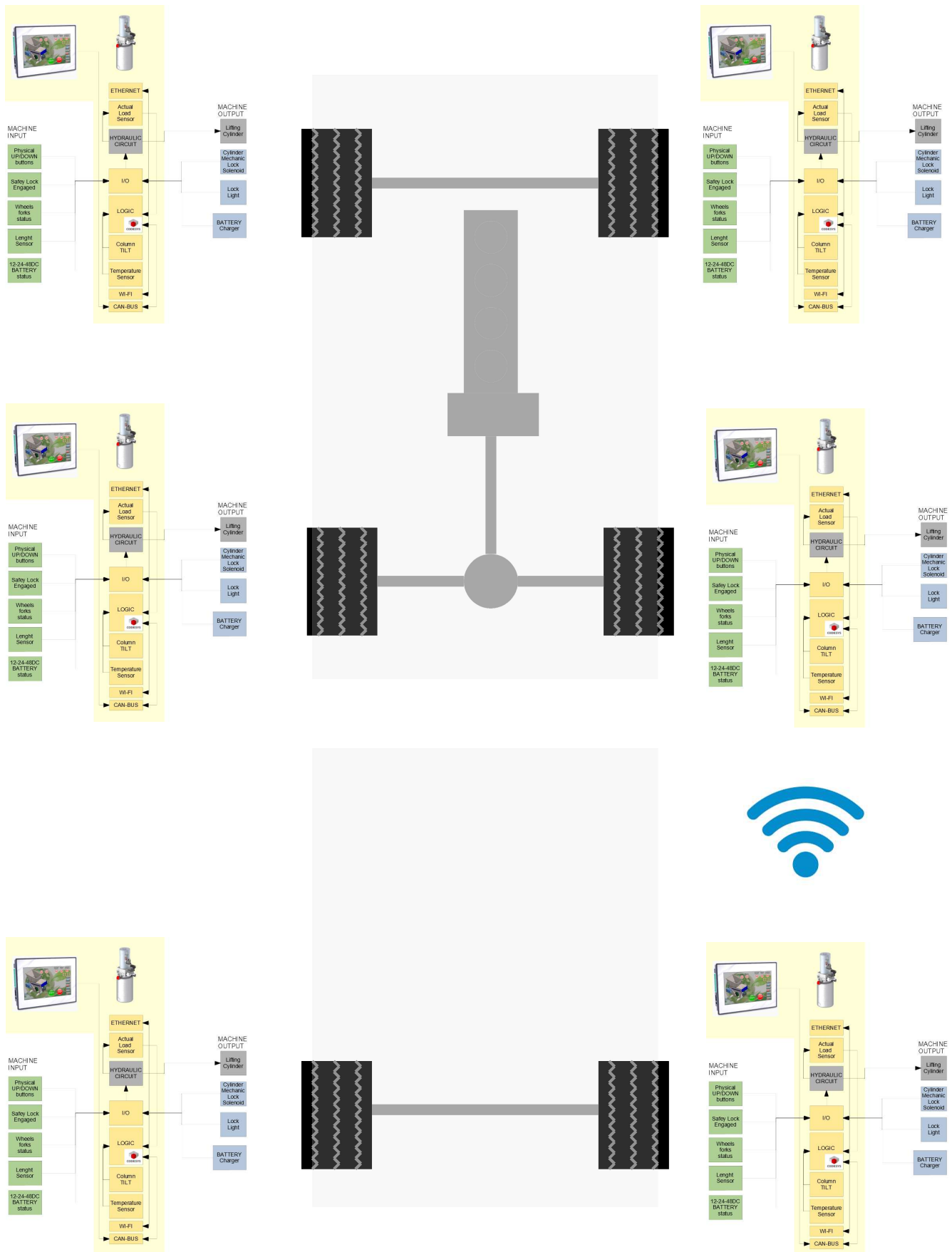
Hydronit®

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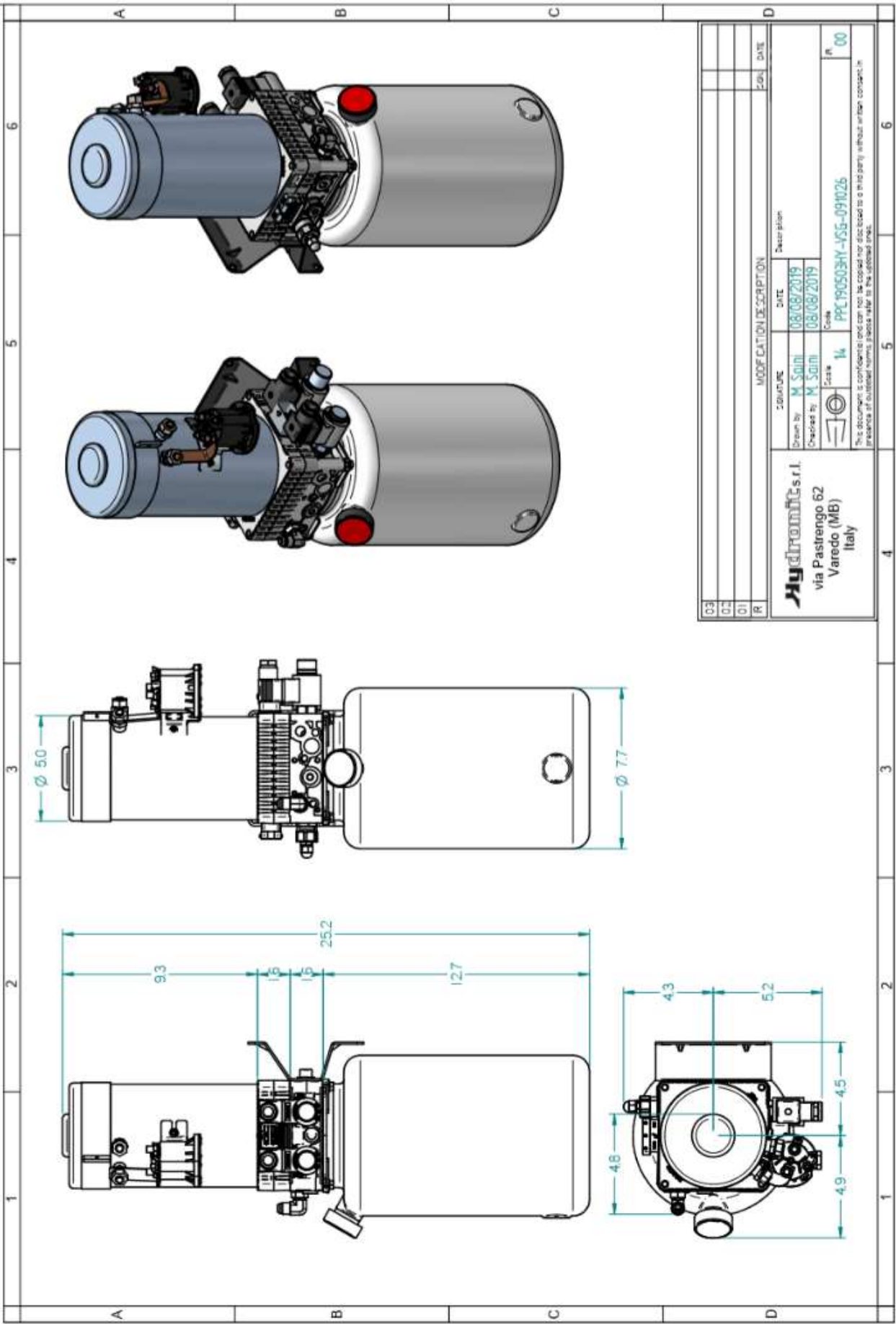
SMART PU MCH BLOCK UNIT



SMART PU MCH SYSTEM SCHEME



SMART PU MCH OVERALL DIMENSIONS



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