



KnolvalTM *Clima*

The Cloud-based solution
for optimal air-conditioning
of industrial buildings

Benefits in warehouses and factories

- It improves people's well-being and the comfort of the air-conditioned environments
- It ensures that the goods in the warehouse are stored correctly, with regular reports for the most demanding customers
- The environments can be remotely monitored with a click
- It reduces energy costs and CO₂ emissions

Activate KnolvalTM in 3 simple steps

- 1 purchase and installation of the product
- 2 initial configuration with the KnolvalTM software
- 3 subscription to the annual management fee

For information contact knolval@enersem.eu

CASE STUDY Cimberio S.p.A. manufacturing plant

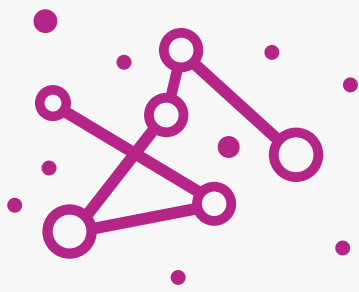
ACHIEVEMENTS

- **Optimization** of the heat generators and pumps
- **Increase** in the heat recovery from the air compressors
- **Reduction** of heat losses over the entire network



+ 75%
HEAT
RECOVERY

- 90%
PUMP ENERGY
CONSUMPTION



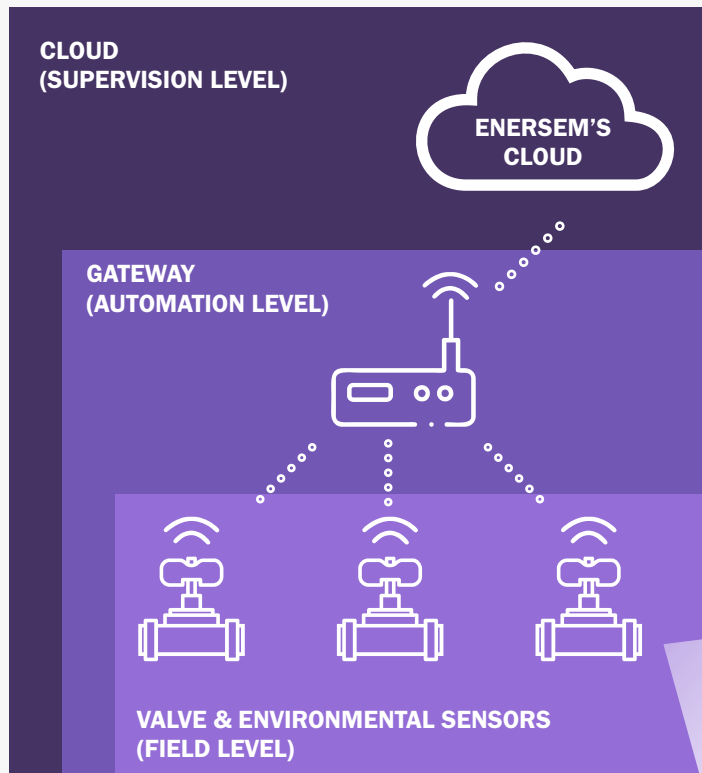
Knolval™

THE CLOUD-BASED SMART SYSTEM FOR EFFICIENT AIR-CONDITIONING

What is Knolval™?

It is an integrated system of smart valves for monitoring energy consumption, hydronic regulation and many other even more specific functions.

What's included?



Cloud (Supervision level): Cloud service with energy analysis and optimization interfaces by ENERSEM.

Gateway (Automation level): Gateway for the centralization of data and service continuity.

Valve & environmental sensors (Field level): electronic balancing valve and actuator, flow meter, pressure and temperature sensors, thermostat, air quality sensors.

The various components of the device are shown in the figure

- 1 - motorized ball valve with actuator
- 2 - flow meter
- 3a - supply temperature sensor
- 3b - return temperature sensor
- 4 - electronic board with Wi-Fi module
- 5 - thermostat and air quality sensors



Characteristics



Complete

The system comes equipped with all the sensors and components to regulate, monitor and remotely manage the system.



Versatile and autonomous

No other systems (PLC, BMS or WMS) are required for it to operate. The system is suitable for a wide variety of applications and systems.



Compact and easy to install

The valve is easily installed on the existing system's piping, and the Cloud configuration can speed up and standardize the installation.



Automatic adjustment

With its cloud-based strategies for predictive optimization, the system automatically adapts to the operating conditions.



Automatic updating

ENERSEM regularly releases system updates, improving its functions over time.

Knolval™ *Clima* modules and features

Clima Start

- Automatic balancing of the system: control of the flow rate of the circulating fluid provides the best level of comfort in the air-conditioned environments
- Remote configuration and management
- Scheduling of the set points for each environment
- Alarms and analysis of malfunctions, inefficiencies and failures

Modules for more specific needs can also be added

Comfort plus

- Regulation of the terminal units with predictive artificial intelligence algorithms, to quickly and efficiently reach and maintain the ideal comfort level, even under conditions of high variability in heating or cooling demand.

Energy plus

- Optimal regulation of the circulation pumps and generators (chillers, boilers and heat pumps): switching on, off and predictive setpoint variation, in order to maximize the efficiency of the generator and the pumps.
- Optimization of the heat recovery systems (i.e. the heat recovery circuits for the air compressors).

Business Intelligence

- Visualization, analysis and storage of performance data.
- Reports on the temperature, humidity and air quality conditions of the air-conditioned environments.
- Air conditioning energy use reports.

With their bubble-net feeding method, humpback whales - knolval in the Scandinavian languages - are a magnificent example of cooperative intelligence.



Knolval™ is the result of the cooperative intelligence of Enersem, a spin-off of the Politecnico di Milano University, and Cimberio, a world leader in the production of brass valves and components.



Enersem S.r.l.
www.enersem.eu
knolval@enersem.eu
Registered office: Piazza Leonardo Da Vinci 32 - 20133 Milano
Operational Headquarters: Via Giovanni Durando 39 - 20158 Milano

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