



**College
Antoine Courriere**
Cuxac Cabardès,
France

Photo Credit: College Antoine Courriere

- Project Type:** Eco-Responsible Renovation
- Location:** Cuxac Cabardès, France
- Products used:** TA-Smart, Expansion Vessel CU
& Compresso Connect
- Installer:** Serclim Carcassonne

The Project

The college Antoine Corriere project is an eco-responsible renovation project of a high school in the south of France. These renovation projects are part of a funding program of 4bn€ for state-owned buildings. One of the requirements to access the provisions is to put in place systems capable of measuring, managing, and controlling energy consumption within the building. In this project, the central heating room supplies seven buildings. The renovation focused on the primary side and entailed:

1. New boilers' construction is divided into a gas boiler of 500kW and a wood boiler of 250kW.
2. Adjustment of the distribution up to the heat exchangers.

The Hydronic Challenge

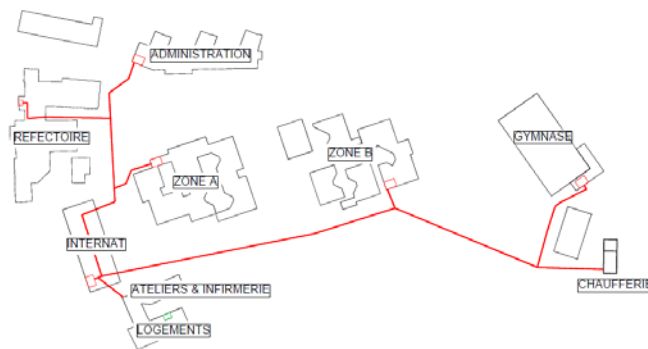
All seven buildings have different applications, which therefore requires different load profiles. The piping network is extensive, and the pressure losses are significant. Therefore, balancing the circuit is fundamental to ensure that the proper amount of energy is conveyed to the required spaces at any time. Most of them have three floors. The dormitory, for instance, is pumping higher loads mornings and evenings, while classrooms are more utilized during the day. Also, the sport hall and the restaurant require higher peak loads.

The customer aims to reduce energy consumption. Given the high variability of the load profiles, they wanted to know the energy distribution throughout the system. This data would enable the facility management team to adjust heat distribution control, reduce energy consumption, and lower the carbon footprint while guaranteeing comfort.

Aware of the impact of water quality and pressurisation, the customer wanted to prevent any equipment failures and preserve the installation's life. The reliability of the equipment is also vital for the customer since comfort and well-being are critical in educational buildings. Therefore, the perspective of having a unique supplier limits the discussion related to accountability and liability.

The Solution

TA-Smart was installed to measure the energy consumed by subcircuits at each heat exchanger; the secondary temperature probe was mounted on the supply of the primary circuit. TA-Smart was set to function on flow control mode, depending on the supply temperature of the secondary side.



1. Design and hydronic calculation:

While the designer dimensioned the piping network, the IMI Hydronic representative calculated the valve sizing, pressurisation, and water quality equipment using HySelect, helping the consultant ensure his calculation was correct and providing them peace of mind.

2. Delivery and installation:

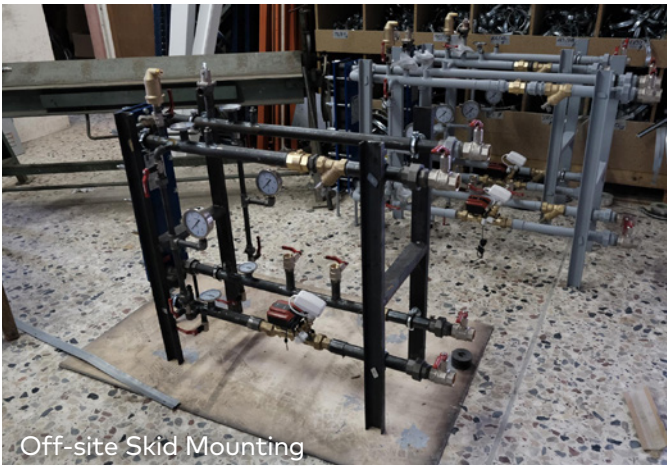
Despite the raw material shortages, IMI Hydronic delivered the product on time to the customers.

"The documentation is exhaustive, and the packaging is appropriate, as the valve is well protected from any potential shocks," said the installer.



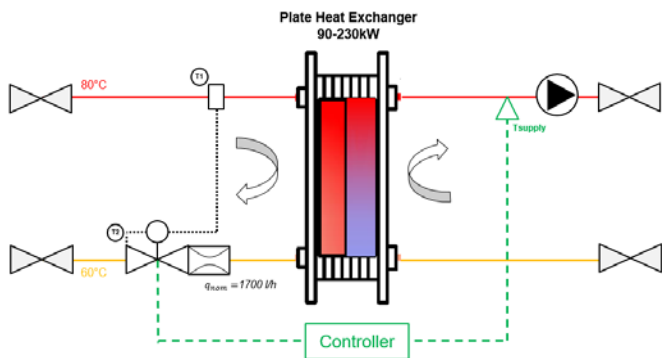
Once the product was received, it was mounted on the skids, i.e., prefabricated units for heat exchangers connected to the piping network on-site. The high flow capacity of TA-Smart enabled the customer to reduce

its costs by picking a valve one dimension smaller than the pipe size.



3. Commissioning:

The commissioning of the installation has been done in cooperation with the system integrator and the commissioning company. A hybrid configuration was chosen for reliability and troubleshooting purposes (0-10V control, feedback via Modbus RTU).



Functioning Principle

- Control:** All the valves have been set to flow control mode, with an EQM characteristic considering the non-linearity of the heat exchanger characteristic.

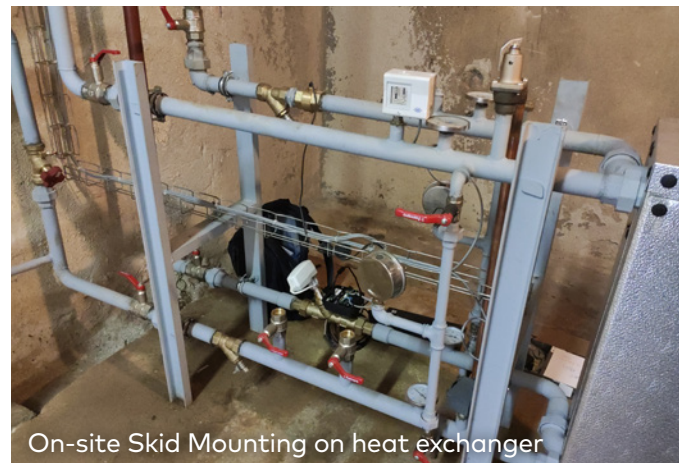
The flow is controlled through a 0-10V signal, defined by the secondary side's supply temperature. All the parametrisations have been done via the mobile application HyTune.

"It is so great that we can set up everything with the mobile app not requiring any additional material."

Commission engineer.



- Measure:** The key hydronic parameters are measured by TA-Smart and communicated via Modbus RTU to the BMS.



4. Operation:

The TA-Smart valves control the flows and regularly feed data back to the BMS. The valve closest to the pump needs to absorb up to 3 bars of differential pressure but still controls with great accuracy even at low flow regimes.

Products Used

- TA-Smart**
- Expansion Vessel CU & Compresso Connect**

