SUCCESS STORY FLOATING OFFICE ROTTERDAM (NL)

Riding the tide of climate change.

Sustainable building rethought.

One of the biggest challenges facing the construction industry is to create climate-resistant solutions with maximum energy efficiency. An outstanding example is the Floating Office (FOR) in Rotterdam, designed and realised by the Powerhouse Company. The building was built on 15 concrete blocks that allow it to float on the Meuse River and uses the river's water for heating and cooling. The FOR aims to reflect the values of its primary tenant, the Global Center of Adaptation (GCA), an organisation that promotes environmentally friendly technologies and encourages a climate-centred approach to planning and investment phases. HVAC systems account for a large portion of the building's energy consumption, which is why Powerhouse chose to work with Belimo. Together with Powerhouse and the Roodenburg Groep, responsible for the installation, we managed to ensure optimum room comfort throughout the building at all times with the help of demand-controlled use of energy. In doing so, we helped make FOR the world's first carbon-neutral floating office.

BUILDING TYPE
Office building incl. restaurant

PROJECT
New building

TRADES
Heating, ventilation, cooling

PRODUCTS
Belimo Energy Valves, 6-way valves, VAV, sensors

BELIMO

A joint tribute to sustainability.

The FOR is a three-storey building with a total floor area of 3,607 m² and accommodates office space, a restaurant, and a public pool area. The goal was to create a building adapted to the effects of climate change. Therefore, all materials used in the construction of the FOR are fully recyclable and can be disassembled for reuse at any time. The roof of the building is covered with a total of 800 m² of solar panels and a low-maintenance succulent species that not only decompose carbon dioxide and other greenhouse gases but also acts as a habitat for birds and insects, further reducing the ecological footprint of the building.

The FOR is an example of the architecture of tomorrow.

Energy production from the depths.

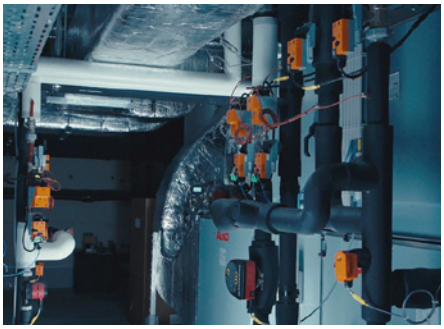
To respond to the fluctuating water level of the river, the FOR was built on 15 interconnected concrete floats. However, these are used not only as a foundation but also to assist in heating and cooling the building. A thermoactive component system (TABS) is used in the FOR. The Floating Office floats are filled with air to create buoyancy. There are plastic pipes in the concrete where the glycol-water mixture flows through and is used for heating or cooling. The energy for heating and cooling is taken from the water of the river below. Here, the water is heated to 35°C for heating applications and regulated to 12°C for cooling applications. A heating or cooling group supplies the air handling units installed in the building, which provide an optimal room climate year round. The combined use of underfloor heating and radiant heating/cooling ceilings allows the room temperature to be raised and lowered individually.

Efficient monitoring and control.

Belimo valves and sensors monitor and control the room temperature, relative humidity and CO_2 content in the FOR, ensuring optimum room comfort at all times throughout the building. Energy for heating, ventilation and cooling is supplied on demand and adapts to the

"With the customer-specific products from Belimo, the installation time, typically four to five days per floor, was reduced to half a day each."

Dick van der Sar,
M&R Project Manager, Roodenburg

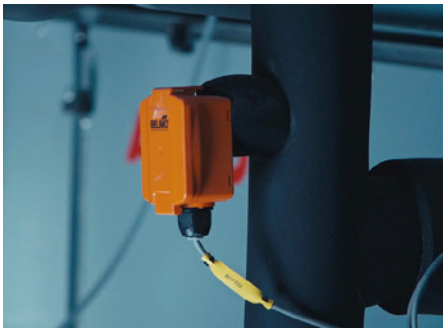


Belimo valves ensure transparent and energy-efficient use of heating and cooling energy.

number of people present in the building, enabling high energy efficiency without compromising indoor comfort. The Belimo field devices are connected to the building management system via BACnet, enabling simple and transparent recording, reading and control of the energy consumed.

Electronic pressure-independent 6-way valves (EPIV) control the flow of the individual climate zones on the floors of the building. The pressure-independent valves immediately compensate for pressure fluctuations in the system and stabilise the flow across the consumer. As more detailed metering is often required in environmentally friendly buildings today, Belimo Energy Valves are installed in the cooled and warm water pipes in all parts of the building that consume more than five percent of the total energy, making it possible to monitor different areas separately. The Belimo Energy Valve™ measures the water supply temperature, the flow rate and the water return temperature, therefore directly controlling the power of the heating and cooling system. The FOR uses the Belimo Energy Valve™ with the thermal energy meter in the circuits of heat pumps, in all AHUs and underfloor heating manifolds.

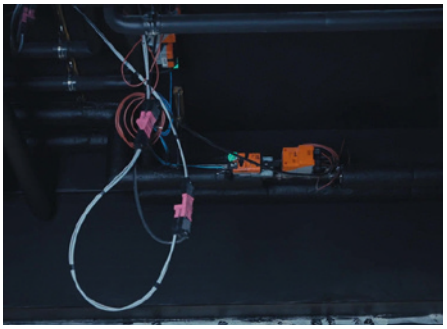
To create and maintain an optimal room climate for all enclosed spaces, the FOR was equipped with VAV systems. This ensures demand-based ventilation of all zones in the building.



Belimo sensors ensure demand-controlled use of heating and cooling energy.

A fraction of the installation time.

Belimo provided customised field devices for the FOR to enable quick and easy installation. The pre-assembled and tested field devices with customised WAGO connectors cut the installation time to half a day for a whole floor instead of the previously estimated four to five days. "It's wonderful to be able to help with the planning and get the best out of the building in the process", says Richard Daamen, Managing Director at the Belimo location in the Netherlands. "We can further develop our creativity and work on new ideas with the end customer. Together we are more intelligent", he adds.



Belimo's field devices were equipped with customised connector solutions ex works, reducing installation time by more than eight times.

All inclusive.

Belimo is the global market leader in the development, production, and sales of field devices for the energy-efficient control of heating, ventilation and air-conditioning systems. The focus of our core business is on damper actuators, control valves, sensors and meters.

Always focusing on customer value, we deliver more than only products. We offer you the complete product range for the regulation and control of HVAC systems from a single source. At the same time, we rely on tested Swiss quality with a five-year warranty. Our worldwide representatives in over 80 countries guarantee short delivery times and comprehensive support through the entire product life. Belimo does indeed include everything.

The “small” Belimo devices have a big impact on comfort, energy efficiency, safety, installation and maintenance.

In short: Small devices, big impact.

- 5-year warranty
- On site around the globe
- Complete product range
- Tested quality
- Short delivery times
- Comprehensive support

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