ENGINEERING
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Case story | VLT® HVAC Drive FC 102

# Three departments. One solution.
## - Eye clinic Tubingen

**40%**

**lower electricity consumption by centrifugal pumps and radial fans of the ventilation system**

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**Eye clinic Tubingen - New building for research, academic departments and clinic. Three departments. One solution.**

**The Project:**
After more than 100 years, the old eye hospital of the University of Tübingen, a listed building dating from 1909, outgrew its capacity. The building no longer provided enough space for the medical care of patients and the nine departments of the clinic.

The solution: a new building, which offered space for clinic, research and academic departments. This combination, however, came with specific demands for the building technology.

The planning of the new eye clinic had to answer to one crucial question: How can the new building be operated with minimal energy consumption? The biggest challenge was the demands of the users - six operating rooms, a hospital with 77 beds and a research institute. Each department had different needs for heating and air-conditioning.

**"Particularly in public buildings, energy planning must meet the highest standards."**

- Christian Saier, Project Manager Johnson Controls

**The Challenge:**
The new eye clinic has a head start when it comes to environmentally friendly operation: a biomass power plant provides energy and the clinic is connected to the hot-water network of the university via the adjacent ENT building.

The challenge is to distribute the heat evenly throughout the building. "The clinic requires pleasant room temperatures for patients, it has to meet the medical requirements in the operating room, and the research institute needs cool rooms for preserving samples", says Christian Saier from Johnson Controls.

It's the same with the air-conditioning, as each of the three departments has its own system. But there's more: in the operating room the air-conditioning has to run continuously, in order to minimize the risk of contamination.

**"Three departments in one building. It's great that Danfoss offers the right products for each of them."**

- Christian Saier, Project Manager Johnson Controls

*The energy-efficient Danfoss RAW thermostatic valve is used in the hospital rooms.*

**The Solution:**
How can the system meet the requirements of all departments as well as being as energy-efficient as possible? By using the right components. Johnson Controls already used Danfoss products for hydronic balancing – the even distribution of water and heat throughout the building. The pressure-independent AB-QM balancing and regulating valve allows precise control of the water flow and reduces energy consumption.

Danfoss frequency converters save energy, too. They regulate both the centrifugal pumps of the water network and the radial fans of the ventilation system, reducing energy consumption by up to 40 per cent. Also, their high electromagnetic compatibility is important in hospital and research facilities with sensitive diagnostic and analysis devices.

**"Our experiences with the AB-QM regulating valve have been very positive. Their reliability is just what we need in the eye clinic."**

-Christian Saier, Project Manager Johnson Controls

**The Result:**
"Since the clinic opened in October 2016, we received only positive feedback on the building technology", says Saier. The three-year planning time and the careful selection of the products have paid off and ensure high precision of the system. "In health care, the technology needs to be extremely reliable. That's why Danfoss is the partner of choice."

*AB-QM balancing and regulating valve allows precise control of the water flow and reduces energy consumption.*

*With frequency converters, the fans of the clinics' air-handling system can be operated up to 40 per cent more efficiently.*

**"We're not only convinced by Danfoss products, but also by the technical support. It's available round the clock."**

-Christian Saier, Project Manager Johnson Controls.

*The control valve AB-QM and Danfoss drives enable energy-efficient operation of the system, at the same time, the technology ensures pleasant temperatures in patient's rooms and laboratories.*

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*The reliablity of Danfoss' products was crucial for the project. Video case study*

**NICE TO KNOW**
The eye clinic is connected to the neighbouring ENT hospital, but the building technology of the two hospitals operates independently. Also, the new building incorporates the research institute for eye diseases. Here, scientists work on innovative therapies in close collaboration with the clinic.

**Facts and Figures**
**Area:** 8.020 m²
**Number of beds:** 77
**Opened:** October 2016
**Architects:** Arcass Freie Architekten BDA
**Measurement and control technology:** Johnson Controls

*Vastly different requirements of users when it comes to heating and air conditioning, Danfoss drives enable energy-efficient operation of the system and Danfoss technology ensures pleasant temperatures in patient's room and laboratories.*

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