

ENGINEERING  
TOMORROW

*Danfoss*

Case Story

## Modern energy solutions in a **demanding** hospital complex

Dr W. Biegański Regional Specialist Hospital in Grudziądz is a modern complex of specialized facilities with different functions in the field of healthcare. Throughout the entire process of development of the hospital, there was a great emphasis placed on the latest solutions and technologies, not only in medicine but also in terms of comfort and energy savings. The result of this search was the installation of district heating substations, heating control components, heating and cooling fixtures and components for industrial automation by Danfoss.

## Various specialist areas, different needs – one solution

The history of the hospital dates back to the mid-80s up until its completion in 2014, when the building for inpatient and outpatient care was opened, including two hybrid operating rooms and a department of Cardiothoracic Surgery and Vascular Surgery "O". The hospital complex comprises numerous facilities with different areas of specialization. To provide the highest level of comfort and good conditions for everyone, the investor was looking for heating technologies that would address the needs of buildings with different areas of specialization and occupancy, both old and new. It turned out to be a significant challenge.

"We were looking for solutions that would provide the highest level of comfort to patients and easy operation for technical services staff due to their various functions. Danfoss offered innovative solutions that fulfilled our needs – they improved both safety and ease of use and ensured the continuity of heating and hot water supplies on very favorable terms. The whole system is energy efficient and easy to use" – explained Mirosław



Nowicki, Head of the Department of Energy and Equipment Supervision in the Regional Specialist Hospital in Grudziądz.

In 2012, a high-performance heat distribution system was built for selected buildings on the hospital site. On the basis of a decision taken by the technical services staff of the hospital,

several facilities were equipped with district heating substations. The investor decided to install single and dual-function heating substations from Danfoss. Single-function substations have been installed for central heating and air conditioning systems, dual-function for central heating, air conditioning systems and domestic hot water.



**Danfoss offered innovative solutions that (...) improved the safety and comfort of use and ensured the continuity of heating and hot water supplies on very favorable terms. The whole system is energy efficient and easy to use**

– Mirosław Nowicki  
Head of Energy and Equipment Supervision II in the Regional Specialist Hospital in Grudziądz.



**District heating system fixtures**



**DSE large heating substation in building "O"**



**Brazed heat exchangers HEX**



**Heating controls**

## Case Story

DSP Red Frame substations are based on the construction of the so-called red frame, which is the flagship solution of Danfoss. The design of the DSP substation is based on the core heating components, such as brazed HEX exchangers, heating controls based on ECL 310 controller and heating fixtures by Danfoss.

On the basis of a decision taken by the technical services staff of the hospital, the entire hospital complex was equipped with 4 heating substations using DSP technology.

The substations were delivered, connected to the receiving installations and commissioned by Danfoss partner Grupa Firm Instalacyjnych GFI in Bydgoszcz.

The cooperation between the hospital and the Danfoss partner company was continued with the building of a high-power substation of 2.25 MW in the newly created hospital building intended for outpatient and inpatient care. A modern, 3-function substation that provides central heating, air conditioning and domestic hot water

was built and commissioned in this building.

*“We are currently using 5 substations with different capacities. The largest one with a capacity of 2.25 MW is located in the building for outpatient and inpatient care. It was specially designed for the most modern building of our hospital, which also features hybrid rooms. These technologies are very important in ensuring continuous heat and domestic hot water supply”*  
– Mirosław Nowicki.

## Remote control of the system – ECL Portal

Following the installation of heating substations with the latest ECL 310 controllers, the investor decided to connect these solutions to the Internet platform ECL Portal. The platform enables remote control of the substation and connected receiving

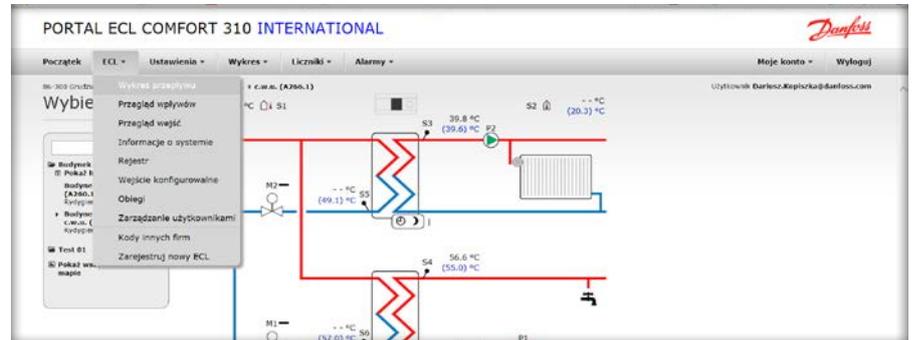
installations, as well as the optimization of the entire system to the needs of the hospital.

*“This system allows remote control and regulation of heating circuits. A suitable application used in the controllers allows*

*fluid parameter determination of the outside temperature, regardless of rapid changes in temperature. This is especially important during transition periods and sharp drops in external temperature, which is of major importance for the capacity of boilers”*  
– Mirosław Nowicki.



**ECL 310**



**ECL Portal**

## Reliable system with reliable components

The goal of efficiency and energy savings is also complemented by other Danfoss solutions operating in the hospital complex. AB-QM valves are responsible for the even distribution of the medium, which ensures optimum

operation of the heating and cooling systems under varying operating conditions. Thermostatic sensor heads installed on the radiators maintain the desired temperature. Multifunctional MTCV valves are responsible for

thermal balancing of the circulation system and protection against Legionella. Hot water is available at all times, as required. These devices are important components of the entire system.



**Thermostatic sensor head RA 2920**



**MTCV valve**



**AB-QM valve**



**ASV-BD valve**



**Solenoid valve EV220B**



**Pressure switch RT200**

### Solenoid valves that shut off automatically – for plumbing and fire safety systems

In building “O”, the investor decided to install automatic solenoid valves (priority valves) – type Danfoss EV220B. Controlled by pressure switch installed on the hydrant system these valves, immediately cut off the domestic water supply in the event of fire to ensure adequate water pressure in the hydrant system.

“The building is supplied with water from two sources. In the event of fire or a pressure drop in the hydrant system, the pressure switch sends a signal to quickly close the solenoid valves to ensure adequate water pressure in the hydrant system” – Mirosław Nowicki.

“As we use modern solutions proposed by Danfoss, we are considering further modernization of the energy system, e.g. the construction of ground source pumps for heating and cooling, redevelopment of the boiler room and the entire system of heat transmission and its use. We care about selecting durable, reliable and cost-effective

products, such as those offered by Danfoss” – Mirosław Nowicki.

For such a diverse hospital complex, it is very important to ensure continuity in the supply of heating and domestic hot water and even distribution of heat and cold, regardless of the load of the object, as well as the remote control option. Danfoss solutions ideally fit in with the idea of modern heating and cooling concepts and contribute to reducing operational costs.

#### Danfoss products in the hospital complex

- 5 heating substations
- district heating components
- hydronic balancing and control valves
- radiator thermostats
- industrial automation components

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– Mirosław Nowicki  
Head of the Department of Energy and Equipment Supervision II in the Regional Specialist Hospital in Grudziądz.

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