ENGINEERING
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Danfoss

3 years
payback time after implementing automatic balancing and thermostatic radiator valves.

Case story | Hydronic Balancing & Control

Housing association in Sweden **saves more than 20%** on the energy bill

Energy efficiency and indoor comfort are top of mind among building owners today. Also in Sweden, where the housing association "Bostadsbolaget AB" in Mjölby took action when they were confronted with a rising energy bill due to insufficient heat distribution in a 10-storey residential building.

Energy consultants from Danfoss were called in to review the existing solution and to propose a new cost and energy efficient solution. After the analysis, the housing association decided to implement an automatic balancing solution for the heating system and to install new thermostatic valves on all radiators. With the new solution implemented, the housing association now saves more than 20% on the energy bill every year.

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Automatic balancing saves energy and improves indoor comfort

It all started with the residents on the 10th floor complaining about insufficient heating. When the energy consultant from Danfoss went through the building, it became evident that the heating system was not properly balanced. This resulted in poor living comfort for some residents and that energy was wasted throughout the heating system.

"We proposed to use our simple tool to balance the existing two-pipe radiator system and to replace the existing radiator valves with lockable, thermostatic valves. In this way we achieved savings of more than 20% on the energy bill and a pay-back time of only three years on the total retrofit", says Pär-Anders Liljeblach, Energy Consultant at Danfoss Sweden.

Apart from the energy savings, the housing association was pleased to be able to provide an improved indoor comfort to the residents. Since the completion of commissioning of the valves, no complaints from the residents have been received.

Balancing valves ASV-M on the supply pipe and the ASV-PV on return pipe

We are very pleased with the solution, and we plan to use the energy renovation method in several other buildings.

Marcus Nejdel
Energy Manager
Bostadsbolaget in Mjölby AB

The tool used to analyze and configure the heating system is called Optimal 2, which is a smart and simple tool to balance existing two-pipe radiator systems. With Optimal 2, you can design a two-pipe radiator heating system in a cost-efficient way. You can use the tool to select and size the required balancing valves and thermostatic radiator valves. Optimal 2 is also used for commissioning to achieve optimum heat distribution under any load conditions.

Facts about the solution installed

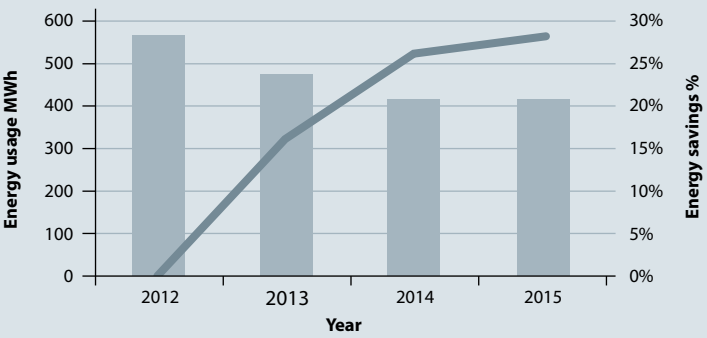
- Radiator thermostats RA 2970
- Danfoss radiator valves RA-N with locking function
- Balancing valves ASV-M on the supply pipe and the ASV-PV on return pipe

Facts about Bostadsbolaget AB and the building in case

Bostadsbolaget AB is a public housing association with around 2500 apartments and more than 250 commercial buildings. One of the properties owned by Bostadsbolaget AB is the 10-storey building in Mjölby. The building consists of 25 apartments with a total floor space of 1876 m^2.

Investment type: ASV-PV + ASV-M, RA-N + RA 2970
Investment cost: 32,000 €
Average yearly energy saving: 129 MWh
Energy price*: 88 €/MWh
Pay back time: 2,81 years

* local energy price including service fee



About Optimal 2

Optimal 2 is a tool to improve the hydronic balance in an existing two-pipe heating system. The tool is used to:

- Measure and adjust pressure of flow
- Get the most out of thermostats
- Improve installation conditions (built-in sensors, remote sensors, etc.)
- Ensure correct system temperatures in supply and return
- Optimize pump head with only one measurement

Optimal 2 is based on the combination of two Danfoss products, i.e. automatic balancing valves (ASV) and thermostatic radiator valves (RA-N).

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