

Case story | Flat stations

EvoFlat leads to huge energy savings in housing association

Sonderborg, Denmark

**30%****energy savings
per apartment by
modernization of
the heating and hot
water supply.**www.district-heating.danfoss.com

A recently installed EvoFlat heating and hot water system in 324 apartments belonging to SAB, a co-operative housing association in the southern Danish town of Sønderborg, has led to average annual energy savings of an estimated 30% per apartment.

The result has mainly been achieved by installing a two-pipe system with Danfoss flat stations – EvoFlat – for district heating. In the original one-pipe system, installed in 1964, water was heated in central substations placed in a boiler room under the block of apartments. Today, water is heated locally in each of the flat stations and residents can see exactly how much energy they spend.

Awareness of consumption contributes to savings

Prior to the modernization, none of the residents in the housing association were aware of their individual consumption. Today, each apartment has a meter for heat and domestic hot water consumption connected to the flat station and this has resulted in considerably higher awareness of consumption among the residents. Djafar Gazrani, who lives with his wife and two children in a 90m² apartment explains:

‘There is no doubt that we now focus more on the consumption of heat and hot water than before the renovation. Thanks to the

meter connected to our flat station we can see exactly how much energy we use. This means that we always keep an eye on the thermostats placed on each radiator and we take care not to let cold and hot water run more than necessary.’

Meeting demand for individual metering

Håndværkergården, a plumbing department within SAB, is responsible for installing the new heating and hot water system and according to Project Manager Henning Christensen, alternative system solutions have been considered. In this project, however, EvoFlat turned out to be the best solution due to the demand for individual metering and payment of the energy consumption.

‘Now the heat is delivered through the two-pipe system to the customers with district heating delivered directly from the district heating plant to the housing association buildings. In this way, we eliminate the maintenance costs of a central substation, hot water boilers, water treatment and a central circulation pump system, resulting in big savings in terms of heat loss from the decommissioned hot water distribution line and also from the hot water circulation line – plus electricity savings,’ Henning Christensen says.

The electricity savings amount to €3,220 a year after the removal of the circulation pumps in each of the three blocks of apartments.



Lower return temperature, lower expenses

A major advantage of the two-pipe system is its contribution in reducing the temperature of the district heating water returning from the customers to the local Sønderborg District Heating Company. In wintertime, the received temperature is around 80°C, and the return temperature is less than 40°C. Before the modernization the return temperature was 65°C.

The low return temperature means that the district heating company needs to send a lower amount of heat into the district heating system than before, consequently giving lower energy bills to the customers. At the same time, Sønderborg District Heating Company lives up to obligations imposed by the Danish parliament regarding the reduction of Denmark's CO₂ emissions both at customer level and in pipeline systems.



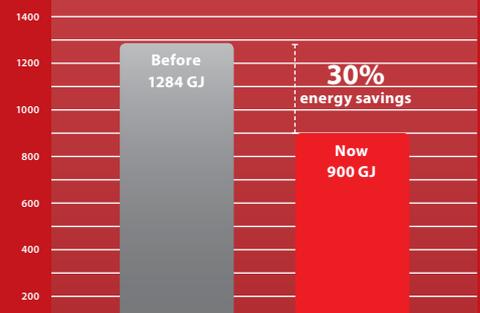
Overview of the installation

- Installation of a two-pipe district heating system
- Installation of a EvoFlat system with flat stations in each of the 324 apartments

About EvoFlat

- A EvoFlat solution consists of flat stations in individual apartments in a multifamily house, supplied by a central source of heating, e.g. a boiler.
- EvoFlat is based on a decentralized principle, in which domestic hot water and heating is produced as near as possible to the point of consumption. This provides significant reductions in energy use.

Energy savings



Average annual energy consumption for heating and domestic hot water per building block (135 apartments).

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