The need for efficiency

Efficiency is not only key to achieving the transition to sustainable heating and cooling but also critical for district heating to remain competitive and attractive to end users.

In traditional district heating countries, revenue from energy sales per end user will decrease by 1 to 1.5% per year due to energy renovations and an overall reduction of energy consumption. Also, the energy transition involves substantial costs as does running an energy efficient heat supply based primarily on renewable energy sources and waste heat. Finally, district heating faces a huge challenge in remaining competitive compared to other heat sources, e.g. individual heat pumps and geothermal heat, which may seem like the obvious choice to end users when it comes to low energy houses.

These developments all call for district heating utilities to focus continuously on improving the efficiency of the entire value chain from production to end users. Improved efficiency will enable them to reduce operational costs while at the same time unlocking opportunities for additional growth by being able to offer a larger variety of services.

Improving efficiency

There is a need for a new and improved production mix so that heat can be produced more efficiently and at a lower cost. For example, implementing heat storage – on a day-to-day basis as well as seasonal storage – would allow utilities to avoid expensive peak load production. Bringing the system more into balance and having fewer fluctuations will lead to a more optimal production.

Another area that holds significant potential is better utilisation of the capacity of the existing system. As district heating's share of the heat supply must grow, there will be a need to connect new urban areas and more buildings to the existing district heating networks. These are either buildings that are not yet connected to the network or new buildings arising in existing district heating areas as the result of urban densification.

Greater efficiency and better utilisation of the capacity in the existing network rather than expanding and upgrading pipelines represents considerable savings for district heating utilities because it allows them to defer or completely avoid investments in assets that tie up capital for many years to come.

Keeping district heating hot

In order for district heating to remain attractive to end users, utilities will need to offer a lower connection price as well as other products and services than raw KWh alone.

This could, for example, be the introduction of new billing schemes based on other parameters than the overall energy consumption. It could also be consulting services or maybe we will even reach a point where district heating utilities take responsibility for the substations, sell comfort and provide the specific service of maintaining 21 degrees in end users' living rooms.

Efficiency benchmarks

The overall efficiency in district heating utilities varies a great deal from country to country, typically as a result of the framework conditions to which district heating has been subjected.

In countries like Denmark, there has been a continuous focus on efficiency and energy savings throughout the years. This has been expressed through specific commitments to continuously making improvements to a degree where utility companies have been obligated to get their customers to reduce their energy consumption, subsequently buying less energy.

In other countries, improving efficiency has not been a focal point, which leaves vast untapped potential. A number of indications suggest that in the future, we will see national benchmarking models whereby utility companies are benchmarked specifically on their operational efficiency.

In Denmark, the Ib Larsen Committee proposed in late 2015 that the district heating sector must make optimisations worth DKK 500 million by 2020 through a so-called regulatory benchmark. This benchmark will include the approx. 200 largest companies, which represent 95% of heat sales. Further benchmarks worth several billion DKK are already being discussed for the years after 2020.

Source: efkm.dk/nyheder/fjernvarmeselskaber-spare-halv-milliard-aaret