Press release

Municipal heat transition: Getting Europe ready for cooler heating

Germany is debating the best way to supply heat. In countries such as France, Belgium, Denmark, Austria and Norway, the phasing out of new oil and gas heating systems is also on the political agenda. An ifeu study examines how the concept of low-temperature heating systems can make it easier for municipalities to switch to clean and renewable local heating. In this way, they can set a course towards climate neutrality without overburdening citizens.

The small town of Steinheim an der Murr near Stuttgart shows how it can be done: To switch from old oil and gas heating systems to heat pumps and district heating, the town first supports the homeowners with energy advice. In order to build a district heating system with a low flow temperature level.

"The expansion of low-temperature heat, as in Steinheim, is the right first step to implement the transition to clean heat in municipalities," explains Martin Pehnt, study director and managing director of ifeu. The combination of lowering the temperature in individual buildings and the subsequent expansion of the district heating supply, which is also fed by large heat pumps, is a new way in cities and municipalities to leave the world of oil and gas-based heating, he says.

Cooler heating: Down to 55 degrees

Older heating systems in Europe often operate at temperatures of 70 degrees and more. This is the flow temperature. These high temperatures are not necessary with modern heating systems. "Low temperature" systems operate at less than 55 degrees even on the coldest days of the year. It is often sufficient to just replace radiators that are too small. Hydraulic balancing of the heating system, insulation of parts of the building envelope or replacement of old windows and doors also help to reduce the flow temperature.

"The low temperature level makes the use of heat pumps, solar collectors and district heating more attractive and cost-effective," says Pehnt. Once the switch to low flow temperatures in the houses has been made, the operation of district heating systems also becomes significantly cheaper: low-temperature district heating lose less heat and thus directly save energy costs.

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A suburban structure typical in Europe

What makes the neighbourhood in Steinheim so attractive as a model: "It is not actually predestined for the expansion of district heating because of the oil and gas boilers that predominate there and its relatively thin development," says Pehnt. However, the consulting energy agency Energieagentur Kreis Ludwigsburg had the idea early on to offer a low-cost supply of district heating largely based on renewables - and it was well received.

For it is precisely the experience with the enormous energy price increases for gas as a result of the Ukraine war that has made the advantages of renewables clear to many people. And the low-temperature district heating relieves citizens of the cost and effort of renovating their buildings individually.

First consult, then expand district heating

However, to ensure that all connected buildings are also "low-temperature-ready", energy consultations and renovation roadmaps are first drawn up. For this purpose, a room-by-room heating load calculation is also prepared. If necessary, the owners can increase the heating surfaces or better insulate the building envelope in the coming years. It may be sufficient to check which rooms are often used and whether the radiators there are sufficient to heat the room.

Because not all buildings are ready for cooler heating right from the start, local heating is initially operated at 64 degrees and only reduced to 58 degrees around 2030. The success: on average, the heat losses and thus the energy costs in the district heating system are reduced by 30 percent compared to 90-degree systems.

Also important for success: professional planning and a municipal company as operator of the district heating that does not focus on profit maximisation.

Role model for Europe

"The experiences from Steinheim, for example, can be a role model for municipalities throughout Germany and Europe," explains Pehnt. "The success factors for the heat transition in municipalities apply to municipalities all over Europe and also to very many settlements in Germany."

The study "Towards low flow temperatures: Making buildings ready for heat pumps and modern district heat" was prepared by ifeu together with the NGO "The Regulatory Assistance Project" (RAP). It was funded by the European Climate Foundation and in the process also investigates the transferability of the concept of low-temperature readiness to other European member states and the inclusion of the flow temperature in funding programmes, information activities and legal instruments.

The study is available for **download** at https://www.ifeu.de/en/project/towards-low-flow-temperatures/.

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