

Popularize district heating with high shares of renewable energies

Subject:	Popularize district heating with high shares of renewable energies
Description:	Extension of guideline on district heating by a new specific chapter on solar district heating
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Document download:	www.solar-district-heating.eu/en/knowledge-database/

Summary description of the instrument

Region: Styria (Austria)

Partners involved: AEE INTEC, Land Steiermark, SOLID

An existing and well-known guideline of Land Steiermark on optimization, extension and modernization of district heating grids was extended by a chapter on solar district heating in order to make SDH more popular among district heating operators and planners.

Initial situation

Solar thermal is well known in Austria for single-family houses and residential complexes. There are some larger solar plants for district heating in cities and villages, but most of the over 5 million installed square meters of solar thermal collectors are used in small plants with collector area smaller than 30 m².

Since 2010, there is a funding scheme from national climate funds which facilitated the construction of 57 solar district heating plants all over Austria, but the share of solar thermal in Austrian district heating is still far below 1 %.



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Fig. 1: Fernheizwerk Graz solar plant, part of Austria's biggest solar district heating plant

For improving existing district heating networks, a “guideline to modernization” was published by the office of the Styrian government some years ago. This guideline focuses on biomass-based district heating networks. It describes possibilities for optimization of operations of the heat transfer station on customer side, of the heat distribution grid (e.g. heat losses, electricity for pumping), of heating plant hydraulics, of boilers and of the entire system. Furthermore, advice is included for new projects and extension and renovation of existing projects.



Fig. 2: Cover of existing guideline for optimization of district heating grids



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Objectives

The objective is to raise the awareness among relevant stakeholders like district heating operators and planners about the technical and economic feasibility of solar district heating plants. Also, district heating operators should be encouraged to develop solar thermal plants for their district heating system in the short or medium term.

Measures and actions

The guideline concerning the modernization of existing district heating networks was amended: An extension chapter dealing with the integration of solar thermal energy for existing biomass plants was created by the author of the guideline, Mr. Lettner. This extension was paid by the office of the Styrian Government and AEE INTEC and SOLID supported this initiative with their expert knowledge. The extension chapter contains 18 pages and describes interactions between solar thermal plants and other parts of district heating systems, success factors, examples of systems and existing reference plants.



Fig. 3: New chapter for integration of solar thermal



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Barriers and opportunities

Many district heating plants in Austria have started their operation 15 years ago or more and face needs for re-investment. This can be both a barrier and an opportunity for solar district heating. The re-investment can be a barrier for the construction of a solar district heating plant, as funds are limited and might not be sufficient for both re-investment and a new solar district heating plant. While e.g. an up-to-date control system is a “must-have” due to unavailability of spare parts, a solar thermal plant is in most cases a “nice-to-have” investment. Thus, the solar plant is not the highest priority.

On the other hand, re-investment can also be an opportunity for solar district heating. With re-investment, the optimization of the whole district heating can be regarded comprehensively and solar district heating can be included in this process of optimization, engineering, search for private and public funding opportunities and permissions. Thus, this guideline can help planners to include solar thermal district heating in this process and facilitate the investment decision.

Results

The guideline was recently finished and it is expected that the awareness of solar thermal integration will raise among district heating operators in coming years.

The guideline (in German) is available in the knowledge database for solar district heating:

<https://www.solar-district-heating.eu/en/knowledge-database/>

Lessons learned

The guideline was edited by an external expert and was discussed by all Styrian project partners. This took some time to accomplish, as there were e.g. different approaches regarding syntax and other issues.

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