

IEA SHC Task 68

Efficient Solar District Heating Systems

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About the new IEA SHC Task 68

The **IEA SHC Task 68** provides an international platform for research and industry to work together on the opportunities, challenges and benefits related to solar district heating systems under the leadership of Austria. The task is divided into **4 subtasks**:

Subtask A: Concepts

Subtask B: Data preparation & utilization

Subtask C: Business models

Subtask D: Use Cases and Dissemination

Why solar district heating systems?

For a better future and less CO₂ emissions.

Heat is the largest energy end-use, accounting for 50% of global final energy consumption in 2019 and contributing to **40% of global carbon dioxide (CO₂) emissions**. Regarding the heat supply of buildings, district heating plays an important role and is well-established in many countries. In order to decarbonize the district heating sector, **solar thermal technologies** provide a very efficient option. This has been proven in Denmark in particular, which has achieved a high degree of **decarbonisation** through large-scale solar systems in combination with seasonal heat storages.

What are the challenges?

Efficiently providing the heat at the desired temperatures.

Currently operated **solar district heating (SDH)** systems, typically installed with flat-plate collectors, provide a valuable option to decrease carbon emissions. However, their efficiency is best at a certain temperature level and if higher temperatures are needed, the efficiency is reduced.

In the new **IEA SHC Task 68** – "*Efficient Solar District Heating Systems*" it should be investigated how to further increase the efficiency of SDH systems by considering modern collector technologies, combining solar with other technologies as well as benefit from digitalization measures.

Duration

April 2022 - March 2025

How to support SDH systems?

By increasing efficiency & digitalization, lowering costs and supporting dissemination.

The new task has **4 main goals** to improve solar district heating systems:



1. Efficiently providing the heat at the desired temperature level of district heating grids either directly through solar technologies or indirectly through a combination with other technologies (e.g. heat pumps) focusing on the system aspect.



2. Increasing the degree of digitalization of SDH systems in order to achieve a more efficient integration into district heating systems and a more efficient processing and use of data for evaluation, advanced controls and automatic fault detection.



3. Reducing costs of solar thermal plants to increase their economic attractiveness and competitiveness, and developing new financing and business models.



4. Disseminating the knowledge and results about the potential, areas of application, different solar technologies and their efficient combination with other technologies.

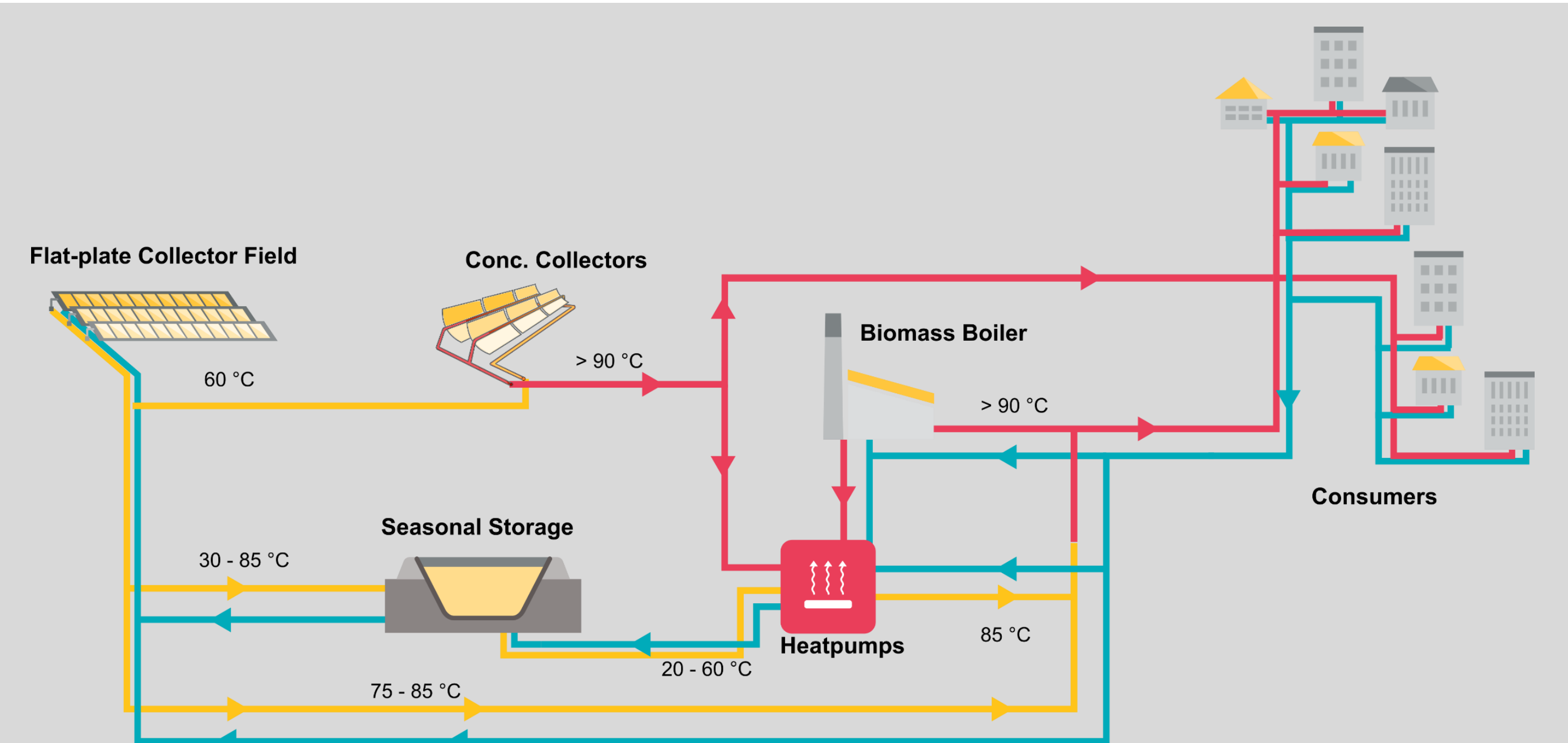


Fig.: Possible concept for future solar district heating systems efficiently providing the heat at the desired temperature



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Participating Countries

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Switzerland

Turkey