

**DeCarbCH Newsletter March 2022**



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**Datum** 2022-03-09 15:01



# DeCarbCH Newsletter

## March 2022

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Dear DeCarbCH Partners,

This is the 4th Newsletter of SWEET DeCarbCH.

The focus is on [Work Package WP03 Technologies](#), design, and operation of thermal grids for future energy planning.

We present an exclusive interview with Dr. Tobias Sommer from HSLU.

In addition, we report on current research activities in field of thermal grids in several new articles.

A highlight is the **DeCarbCH Networking Conference** on April 25 and 26, 2022 in Sursee. See the [program](#) and [register here](#).

The next **Lunch Talks** will take place on March 15 and April 4:

- Florian Ruesch (OST-SPF) will speak about [Solar Energy for Networks and Industry](#).
- Dr. Jonathan Chambers (UNIGE) will present [Perspectives on Thermal Grid Modelling under Uncertainty](#).

Take a look at the contents and register online.

We hope to see you then.

If you missed the past Lunch Talks, you can view them here:

- [Pinch Analysis](#)
- [Socio-Economic Challenges](#)
- [Industrial Heat Pumps](#)
- [Thermal Networks](#)
- [Long-term Thermal Energy Storages](#)
- [Temperature Reduction in District Heating](#)

Don't forget to follow us on [LinkedIn](#), [Twitter](#), and check out our [YouTube](#) channel.

We hope to see you at the Lunch Talks and meet you at the DeCarbCH Networking Conference on April 25 and 26, 2022 in Sursee.

All the best!

[The DeCarbCH management team](#)

**This Newsletter offers the following content:**

1. [Interview with Dr. Tobias Sommer from the Lucerne University of Applied Sciences and Arts \(HSLU\)](#)
  2. [Integration of storage and renewables in thermal grids at OST](#)
  3. [CAS Thermische Netze](#)
  4. [Development of thermal networks in Switzerland](#)
  5. [District Thermal Systems \(DTS\): State of the Art and Scenarios](#)
  6. [How can we represent thermal networks correctly?](#)
  7. [Ehub Optimization Tool](#)
  8. [Modelling and optimal control of a borehole thermal energy storage](#)
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  10. [YouTube Videos of Lunch Talks](#)
  11. [SWEET DeCarbCH Networking Conference, April 25/26, 2022](#)
  12. [Lunch Talk on Solar Energy for Networks and Industry](#)
  13. [Lunch Talk on Perspectives on Thermal Grid Modelling under Uncertainty](#)
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# Interview with Dr. Tobias Sommer from the Lucerne University of Applied Sciences and Arts (HSLU)

Tobias is leading the WP03: Technologies, design, and operation of thermal grids for future energy planning

**HSLU** Lucerne University of Applied Sciences and Arts



Dr. Tobias Sommer, Prof. Stefan Mennel, Dr. Willy Villasmil

**Question: Could you describe the topic of your WP?**

**Answer Tobias Sommer:** Our WP concerns the design and optimization of future thermal grids in Switzerland. Thermal grids will meet about 30% of the building's heating demand by 2050 for the net-zero CO2 target. Currently, it is less than 10%. So we expect a dramatic increase in thermal networks in the future. Additionally, for the decarbonization of the building sector, new thermal networks should be based on renewables and excess heat, which are variable in space and time and available at relatively low temperatures. In WP03, we develop guidelines and tools to design and optimize future thermal networks for heating and cooling.

**Question: What are the main objectives?**

**T. Sommer:** We develop tools that enable relevant stakeholders to design and optimize future thermal networks suitable for heating and cooling for future thermal grids. In addition, we want to develop and understand new thermal grid concepts and their underlying control algorithms to form a base for future energy planning.

**Question: What are the main research questions?**

**T. Sommer:** The main research question is: How should future thermal grids based on renewables be designed to become as reliable, flexible, and cost-effective as the electrical grid? We know this is a very wide research question. But we also have a large team with broad expertise. In Task 3, just to provide a specific example, we are looking into options for using thermochemical liquids as fluid carriers to transport thermal energy more efficiently. In Task 4, we use detailed modeling to reveal hydrothermal challenges that must be considered during operation but are generally ignored in energy planning.

**Question: What are the main expected outcomes of your WP?**

**T. Sommer:** The most relevant phenomena of the detailed modeling mentioned above will be included in energy planning tools that are easier and straightforward to handle. Additionally, we will identify typical settings of network agents for Switzerland and create the most efficient networks for these settings, including storage technologies. These publicly available reports will be helpful for decision makers.

**Question: Have there been any changes or adaptations in WP03 since DeCarbCH started in April 2021?**

**T. Sommer:** Topic-wise, no. People-wise, yes. For example, Binod Koirala (Empa) replaced Andrew Bollinger (Empa) in Task 5 regarding the EHub Tool. Luca Baldini switched from Empa to ZHAW but is keeping his topic. The biggest change in person is perhaps me (Tobias Sommer) leaving HSLU by 30 April. But I am very happy that Dr. Willy Villasmil is taking over my position and that Stefan Mennel will remain PI for WP03. They will form a great team.

*(Interview continues)*

[read more](#)

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**NEWS from WP03: Technologies, design,  
and operation of thermal grids for future  
energy planning**





Weiterbildung

## CAS Thermische Netze

Certificate of Advanced Studies

*Certificate of Advanced Studies  
CAS Thermal Networks at  
Lucerne University of Applied  
Sciences and Arts (HSLU)*

**Two new projects about the integration of storage and renewables in thermal grids at OST**

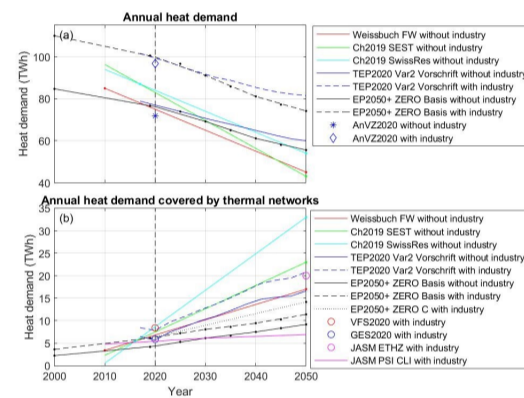
The SPF Institute for Solar Technology started two new projects integrating large heat storage and renewable energies in district heating networks.

[read more](#)

This CAS provides an overview of the basics of thermal networks, both from a technical and non-technical point of view.

It enables project managers to evaluate suitable conceptual approaches for the grid-bound supply of heat and cold to buildings and regions.

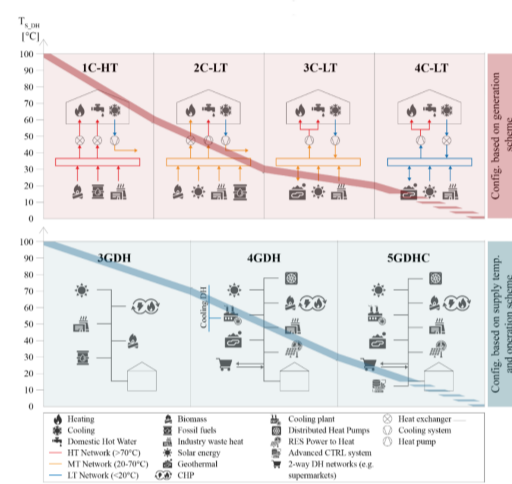
[Details and registration](#)



### Development of thermal networks in Switzerland: An overview

The heat demand will decrease by about 30% from 2020 to 2050, the heat delivered by thermal networks will increase by a factor of 3, and thermal networks will cover 30% of the future (2050) heating demand in Switzerland.

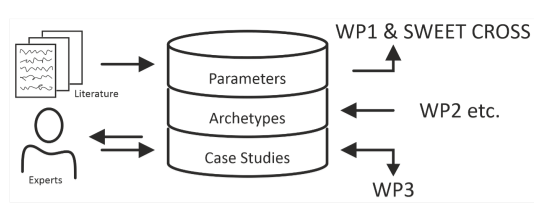
[read more](#)



### District Thermal Systems (DTS): State of the Art and Promising Evolutive Scenarios - A focus on Italy and Switzerland

This paper reviews different classifications of District Thermal Systems (DTS) and analyses the European framework of DTS

[read more](#)

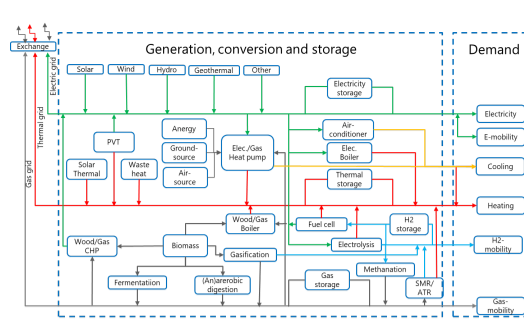


## How can we represent thermal networks correctly?

Matthias Berger (Leader Task 3.1) and Luca Brauchli describe the progress and work-flow within Task 3.1 of Work Package WPO3

For the creation of scenarios as well as the modeling and optimization of energy systems (inside and outside of SWEET DeCarbCH), thermal networks are a key component of the energy transition.

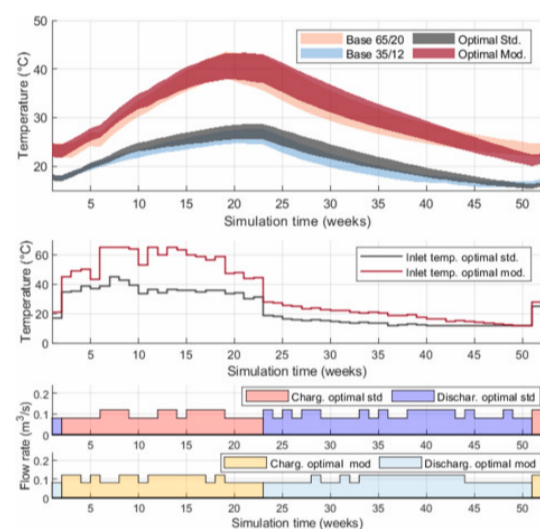
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## Ehub Optimization Tool

The Ehub optimization tool has been developed by the [Urban Energy System Laboratory of Empa](#) to assess the performance (e.g., sustainability, financial) of multi-energy systems and identify optimal solutions for their design and operation.

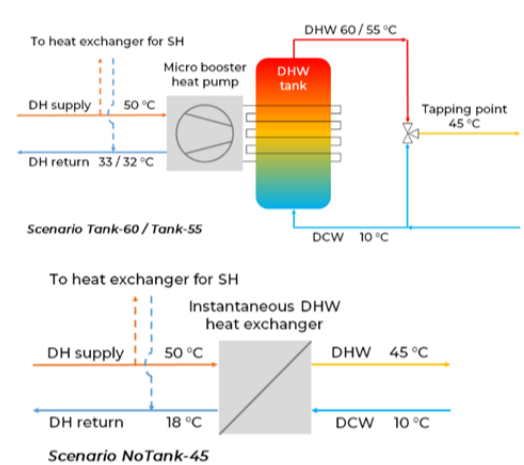
[read more](#)



## Publication on modelling and optimal control of a borehole thermal energy storage (BTES)

An optimization framework was employed to determine the best operating conditions for a heat pump-driven BTES

[read more](#)



## Publication on the impact of Legionella regulation in 4th generation district heating systems

This paper presents an analysis of district heating substation energy use and cost in the case of a Swiss single-family household

[read more](#)

FURTHER NEWS



The Lunch Talks on

- [Pinch Analysis](#)
- [Socio-Economic Challenges](#)
- [Industrial Heat Pumps](#)
- [Thermal Networks](#)
- [Long-term Thermal Energy Storages](#)
- [Temperature Reduction in District Heating](#)

are available on [YouTube](#) and the presentation slides on our [DeCarbCH Website](#).

**25/26 April 2022**

*SWEET DeCarbCH Networking Conference 2022*

*25/26 April 2022 - Seminarzentrum Campus Sursee*

[More details](#) and [registration](#)

All the News on the Website

## EVENTS

### - Lunch Talk - Solar Energy for Networks and Industry

This Lunch Talk is taking place online on 15/3/2022.

[REGISTER](#)

### - Lunch Talk - Perspectives on Thermal Grid Modelling under Uncertainty

This Lunch Talk will be held online on 5/4/2022.

[REGISTER](#)

Any question can be sent to [info@sweet-decarb.ch](mailto:info@sweet-decarb.ch)



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*DeCarbCH has received funding from the SFOE in their SWEET programme.*

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