IEA TCP on District Heating & Cooling

Smart Energy Systems Conference 2020

Program Cooperation Scoping Heating and Cooling:

Developing a New Focus Area

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What is the IEA District Heating & Cooling TCP?

- IEA-DHC was established in 1983
- Established as a **cost-shared** TCP that carries out research projects chosen by competitive bidding; Also initiated **task-sharing** in 2011
- **Reports** are produced for all projects and are available at the website: www.iea-dhc.org
- Current **members** are: Austria, Belgium, Canada, China, Denmark, Finland, France, Germany, Italy, Korea, Norway, Sweden, UK, IDEA as sponsor (USA)

Current costs sharing and task sharing projects

cost sharing projects Annex XII (2017-20)

- Effects of Loads on **Asset Management** of the 4th Generation District Heating Networks
- MEMPHIS - Methodology to evaluate and **map the potential of waste heat** from industry, service sector and sewage water by using internationally available open data
- Integrated Cost-effective Large-scale **Thermal Energy Storage** for Smart District Heating and Cooling
- Stepwise **transition strategy** and impact assessment for future district heating systems.
- Plus: **District Cooling** Guidelines

Current task sharing initiatives

- TS2 Practical realisation of **low temperature district heating** systems
- TS3 **Hybrid Energy Networks** – District heating and cooling networks in an integrated energy system.
- TS4 **Digitisation** of DHC
- TS5 Integration of **Renewable** Energy Sources in DHC
- *TS6 **Pipeline Lifetime** Prediction (project to be defined)*

Annex XIII (2020-23): 7 projects about to start soon!

Research and innovation priorities: Decarbonisation and temperature reduction

Aim: decarbonize existing DH systems, reduce the temperature levels, increase flexibility

1.1. Cost-effective system transformation – pathways towards low-carbon energy solutions, innovative low-carbon and low-temperature technology combinations

1.2. Flexibility and thermal storage – balance between different H&C sources and demand profiles, considering different time-scales (from hours to seasonal variations)

1.3. Demand side – e.g. improved substations that enable the return temperature to be minimised while remaining cost-effective

Research and innovation priorities: Improving the business case and prosumers

Local political and market frameworks, laws and regulations as well as market prices influence the economic viability.

2.1. Improve economic viability of DHC - cost-reduction strategies (piping, design, construction and installation, integrating multiple heat sources, maintenance

2.2. Bringing together the investment world and the DHC world - making low-carbon DHC fundable at a large scale; identification of barriers, risk management

2.3. Market development to allow the integration of prosumers- synergies with electricity markets; development of realistic market regulations that allow DHC to thrive.

Research and innovation priorities: Digitalisation

How can the tools and methods of digitalisation help to make DHC a backbone of a sustainable energy future?

3.1. Improving planning, operation and maintenance - digital twins; overall system solutions

3.2. Collection, management and application of data - market surveys; smart tariffs; data security and privacy

3.3. Smart controls and Internet of Things - data gathering; integration of sensors into DHC elements; automated, self-regulating subsystems

Further information

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