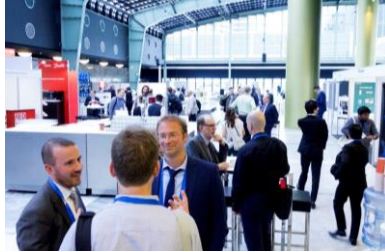


IEA Technology Collaboration Programme on Heat Pumping Technologies (HPT TCP)

Dr Caroline Haglund Stignor, Heat Pump Centre



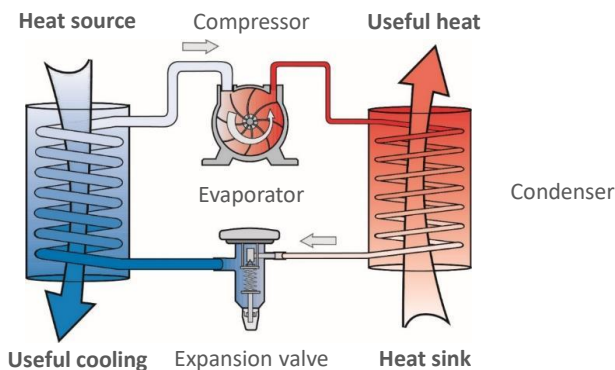
Research, Development, Demonstration, and Deployment of Heat Pumping Technologies

The HPT TCP is part of a network of autonomous collaborative partnerships focused on a wide range of energy technologies known as Technology Collaboration Programmes or TCPs. The TCPs are organized under the auspices of the International Energy Agency (IEA), but the TCPs are functionally and legally autonomous. Views, findings, and publications of the HPT TCP do not necessarily represent the views or policies of the IEA Secretariat or its individual member countries.



What are Heat Pumping Technologies?

The vapor compression cycle



...and other cycles

- Absorption heat pump
- Thermo-acoustic heat pump
- Electro-magnetic heat pump
- Mechanical vapor recompression



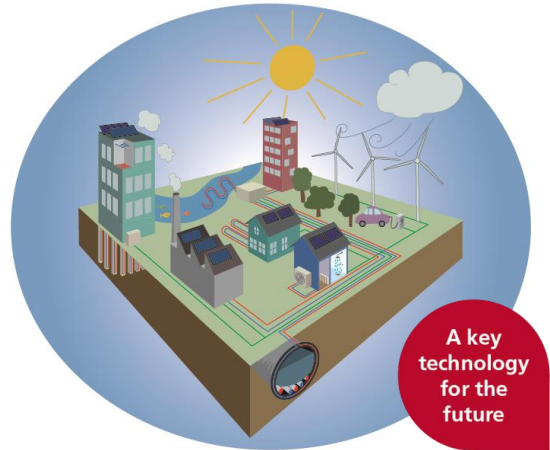
Heat Pumping Technologies

Includes:

- Heating and cooling
- Air conditioning
- Refrigeration

Covers applications in:

- Residential and commercial buildings
- Industries
- Thermal grids in cities and communities
- Other applications



A key
technology
for the
future

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About Heat Pumping Technologies TCP

- A Technology Collaboration Programme (TCP) within **the IEA** since **1978**
- An international framework of **cooperation** and **networking** for different HPT actors
- A forum to exchange **knowledge** and **experience**
- A contributor to **technology improvements** by RDD&D projects



20 Member Countries

Austria	Denmark	Italy	Spain
Belgium	Finland	Japan	Sweden
Canada	France	Netherlands	Switzerland
China	Germany	Norway	United Kingdom
Czech Republic	Ireland	South Korea	United States

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HPT TCP Organization and Management

Executive Committee



National teams



National experts meeting



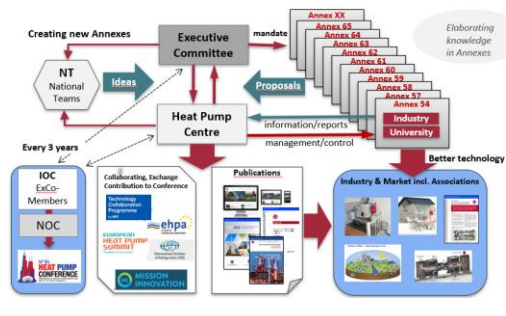
Heat Pump Centre



Annexes



- **Executive Committee:** The board of HPT TCP - one vote per member country
- **National Teams:** Organizations representing national HPT activities. A forum for discussion networking and creation of new ideas. Meet at joint National Experts meetings.
- **The Heat Pump Centre:** The central program office and communication center of HPT TCP
- **Projects/Annexes:** Elaborating new knowledge through collaborative RDD&D work



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Communication and dialogues

Information dissemination and communication

- Publications (e.g. project reports)
- HPT Magazine and Newsletter (digital)
- Website: www.heatpumpingtechnologies.org
- Social media: LinkedIn, X (Twitter) (@heatpumpingtech) and WeChat

IEA Heat Pump Conference

- Organized every 3rd year
- Next one will be in May 2026 in Vienna, Austria

And

- National Experts meetings
- Workshops and webinars
- Support to IEA publications
- Outreach activities



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The IEA Heat Pump Conference

Every third year the IEA Heat Pump Conference is arranged. The purpose is to increase the awareness around heat pumping technologies but also to establish a meeting place for different actors working in the field of heat pumping technologies. It is also an opportunity to strengthen the collaboration with other TCPs.



The next conference will be in Vienna, Austria, May 26-29, 2026.



Call for abstracts will open on November 15, 2024

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Status of Heat Pumping Technologies

Offers already a lot, but more efforts needed for further developments

This is a **proven efficient and clean technology, available** on the market

- upgrades renewable energy & reduces CO₂ emissions
- is an excellent flexibility provider to **balance the grid** to handle **intermittent production**
- contributes to improved **energy security and resilience**
- Heat pumping technology gets more attention from **policy and public**

...but there is still a **need for RDD&D** to

- sharpen the technologies and **widen the operating range**
- adopt solutions for **complex building** and **retrofit market**
- adopt solutions for **sector coupling** and **system integration** with other clean renewable energy technologies
- safe and efficient operation with **low GWP refrigerants**
- **alternative cycles**
- to **overcome non-technical barriers**






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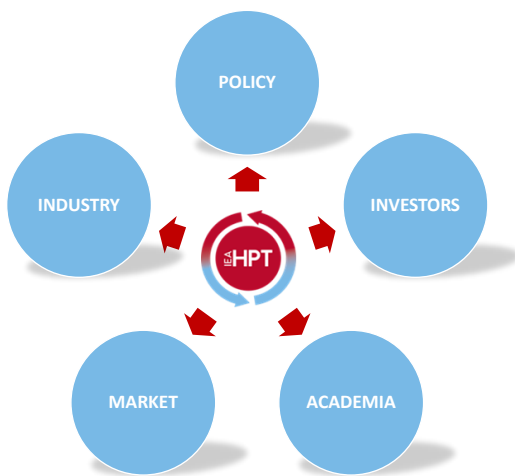


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RDD&D Priority Areas 2023-2028 – International collaboration projects (Annexes)

System integration	Robust, sustainable and affordable value chains	Extending operation range and applications	Refrigerants and New technologies
			
Sector coupling, energy efficiency, flexibility, resilience, storage, digitalization, positive energy districts	Improving affordability, securing value chains, circular economy, removing barriers for mass deployment	To fulfill demand from all climate zones, new markets, new applications and new demand. Refrigeration in emerging countries.	Non-traditional heat pumping technologies (for heating and cooling) Refrigerants (low GWP, safety etc.)
<ul style="list-style-type: none"> Annex 57: Heat pumps in multi-vector energy systems END SOON Annex 61: Heat Pumps in Positive Energy Districts Comfort and Climate Box solutions for cooling and dehumidification Flexibility from Large-Scale and Aggregated Heat Pump Systems Digital Services for Heat Pumps Heat pumps for hydrogen and carbon capture 	<ul style="list-style-type: none"> Annex 63 Placement Impact on Heat Pump Acoustics NEW Annex 65 Heat Pumps in a Circular Economy NEW Project 66 Optimal Heat Pump Design and Operation for Broader Acceptance NEW New or alternative business models for heat pumps Enhanced miniaturized components 	<ul style="list-style-type: none"> Annex 60: Retrofit Heat Pump in Larger Non-domestic Buildings Annex 58: High Temperature Heat Pumps END SOON Annex 59: Heat Pumps for Drying Annex 62: Heat Pumps in residential multifamily buildings in cities NEW Industrial High Temperature Heat Pumps Heat Pumps in residential multifamily buildings in cities – follow-up 	<ul style="list-style-type: none"> Annex 53: Advanced cooling and refrigeration technology development Annex 54: Heat Pump Systems with low GWP Refrigerants END SOON Annex 64: Safety Measures on Flammable Refrigerants NEW Monitoring of Advanced Vapor-Compression and non-Vapour-Compression Technologies for Heating, Cooling and refrigeration
Recently finalized, Ongoing , Proposals under discussion			

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IEA HPT TCP Executive Committee

Stephan Renz (Chairman)

info@renzconsulting.ch

Heat Pump Centre

Monica Axell (Coleader)

monica.axell@ri.se

Caroline Haglund Stignor (Coleader, Expert)

caroline.haglundstignor@ri.se

Emilia Pisani Berglin (Coordinator and Communication Specialist)

emilia.pisani.berglin@ri.se

Metkel Yebiyo (Technical Expert, editor)

metkel.yebiyo@ri.se

hpc@heatpumpcentre.org

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