

Member Country Report 2022

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Overview

- **Policy**
- **Market statistics**
- **Research overview**

Climate and Energy Strategy

- Austrian Climate and Energy Strategy “Mission 2030”:
 - The strategy formulates a goal of 100% renewables in the power sector by 2030. This ambitious goal requires additional production capacities of renewable power of 20-25 TWh, mainly achieved by wind, photovoltaic and hydro power.
 - Also **heat pumps** will play an important role (e.g. in balancing the grid). For the total end energy consumption Austria is aiming at 46-50% of renewables by 2030. A 36% reduction of greenhouse gas emission (compared to 2005) is targeted by 2030.
- International R&D Initiative “Mission Innovation”:
 - Austria and Australia have launched the Mission Innovation mission “Net-zero industries” at the Global Clean Energy Action Forum in Pittsburgh, USA, in September 2022

Climate and Energy Strategy

- Austrian “Renewable Heat Law- Erneuerbare-Wärme-Gesetz (EWG)”
 - Decarbonisation of space heating by the year 2040.
 - The law was already under review and is to be approved (quickly).
 - In new buildings, central oil and coal heating systems have already been banned since 2020. From 2023, no central or decentralised heating systems that can be operated with fossil fuels may be installed in new buildings in Austria.
 - There are exceptions for buildings that have already been approved/planned/constructed.
 - From 2023, broken oil and coal heating systems may only be replaced by climate-friendly heating systems.

Climate and Energy Strategy

- Austrian “Renewable Heat Law- Erneuerbare-Wärme-Gesetz (EWG)”
 - From 2025, the mandatory decommissioning of particularly old coal and oil heating systems begins. This begins in 2025 with all oil heating systems older than the year of construction 1980.
 - By 2035, all coal and oil heating systems in Austria must be decommissioned.
 - Climate neutrality is to be achieved in Austria by 2040, which also requires the decarbonisation of space heating. To this end, all fossil-fuelled gas heating systems in Austria must be decommissioned by then.
 - Owners of individual units (flats) that are heated in a decentralised manner should be enabled to connect to a climate-friendly central heating system.

Climate and Energy Strategy

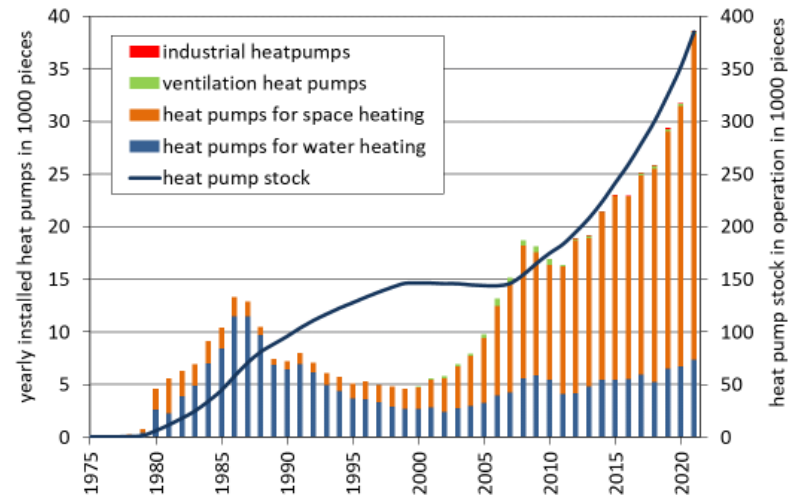
- Funding schemes
 - Several schemes on different level available (national, counties, cities, utilities) for companies and private households
 - Get out of oil and gas - „Raus aus Öl und Gas“
 - For single and multifamily houses
 - Shift to district heating (efficient and climate friendly), biomass and heat pumps
 - Heat pump funding criteria:
 - EHPA quality label
 - Refrigerant with GWP< 1500
 - Supply temperatures <40°C
 - No district heating available

Policy and Quality Support

- **National Heat Pump Association**
 - “**Wärmepumpe Austria**” (**WPA**) is an industry association based in Linz that covers the entire value chain. At present, over 90% of all heat pump manufacturers in Austria, all electricity supply companies via the Austrian energy association “**Österreichs Energie**” and suppliers and drilling companies are organised by the WPA.
- **Training for Installers:**
 - The Austrian installers are educated in three steps called “**Lehrling**”, “**Geselle**” and **Meister**”. During their education they have to participate in trainings including exams to reach the next step. Within this, the installers get the basic knowledge of all heating technologies. If they want to specialize in the field of heat pumps manufacturer offer trainings on their products connected to some marketing activities.
- **Quality Label and Keymark**
 - On the Austrian market the **EHPA-Quality label** is used in almost every funding scheme. It covers beside some minimum requirements on the product efficiency also some customer aspects, for example to guaranty the support or the availability of spare parts and so on. The label is also strongly used in Germany, Switzerland, the Czech Republic and some other countries.
 - **EHPA Heat Pump Keymark** is recognized in Austria and can be used as the basis to apply for the EHPA-Quality label, therefor it replaces the test report. In addition, some Austrian companies use the EHPA Heat Pump Keymark to obtain subsidies in export countries when no more than the Keymark is required.

Market Statistics

- Data from **41 Austrian** heat pump producers and heat pump distributors
- The total sales volume of heat pumps (domestic market plus export market) increased in 2021 50,210 units sold in the previous year to **57,399** units.
- This corresponds to a growth of **14,3 %**. Growth was observed both in the domestic market (+21.6 %) and in the export market (+1.9 %).
- Strong growth was particularly noticeable in heat pumps for space heating.
- Domestic hot water heat pumps showed an increase of 9.1 % in the home market and an increase of 23.4 % in the export market.



Market development of heat pumps in Austria until 2021 (Biermayr et.al., 2022)

R&D in Austria

- The **main research topics** are the development of **heat pumps** for use in buildings, in district heating and cooling systems and in industrial processes, the coupling of heat pumps to smart grids and the use of low-GWP refrigerants.
- The topics were summarized in the national technology and implementation roadmap. National research programmes such as "**Energieforschung**" and the "**Basisprogramm**" of the Austrian Research Promotion Agency offer appropriate funding depending on the Technology Readiness Level (TRL).
- **Heat pump research** is carried out at universities (Graz University of Technology, Vienna University of Technology, Innsbruck University, University of Natural Resources and Applied Life Sciences Vienna), Universities of applied sciences (Pinkafeld University of Applied Sciences) and applied research institutes (AIT Austrian Institute of Technology GmbH) addressing both national and in the European calls (H2020).
- AIT operates the only **accredited laboratory** for heat pumps in Austria covering the main technologies used in Europe. The laboratory provides the ability test and investigate air/water-, brine/water-, water/water- and DX (direct expansion)/water-heat pumps.

R&D Highlight: DryFiciency: Industrial Demonstration

High temperature heat pumps up to 160°C



Closed loop heat pump

Brick drying



Wienerberger AG
Uttendorf (AT)

Starch drying



AGRANA Stärke GmbH
Pischelsdorf (AT)

Open loop heat pump

Bio sludge drying



Scanship A/S
Drammen (NO)

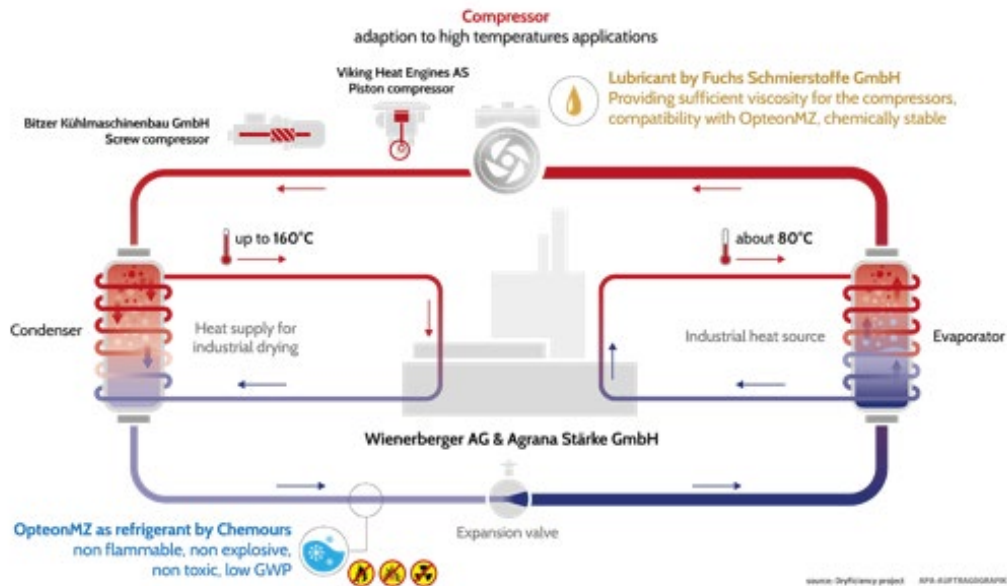


The project has received funding from the European Union's Horizon 2020 programme for energy efficiency and innovation action under grant agreement No. 723578.

www.heatpumpingtechnologies.org



R&D Highlight: DryFiciency: Industrial Demonstration

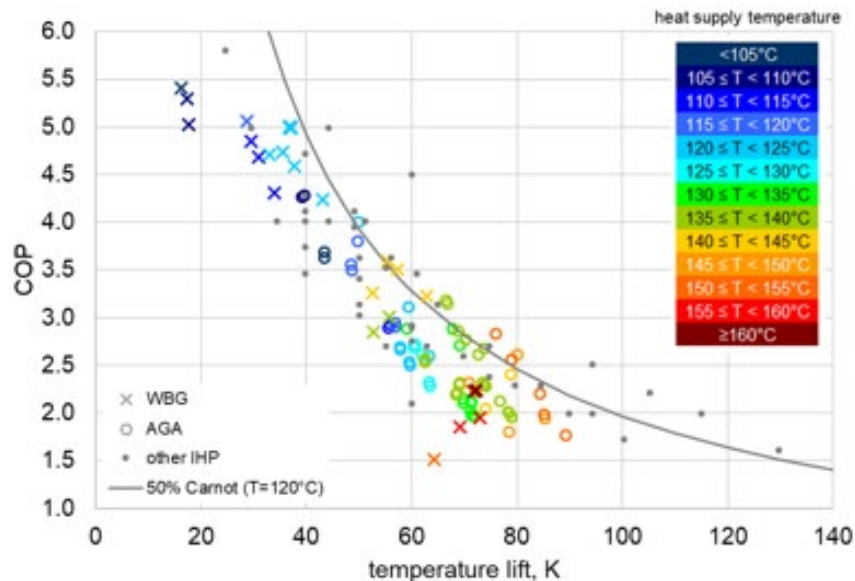


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R&D Highlight: DryFiciency: Industrial Demonstration



each data point represents > 10 h of stationary operation

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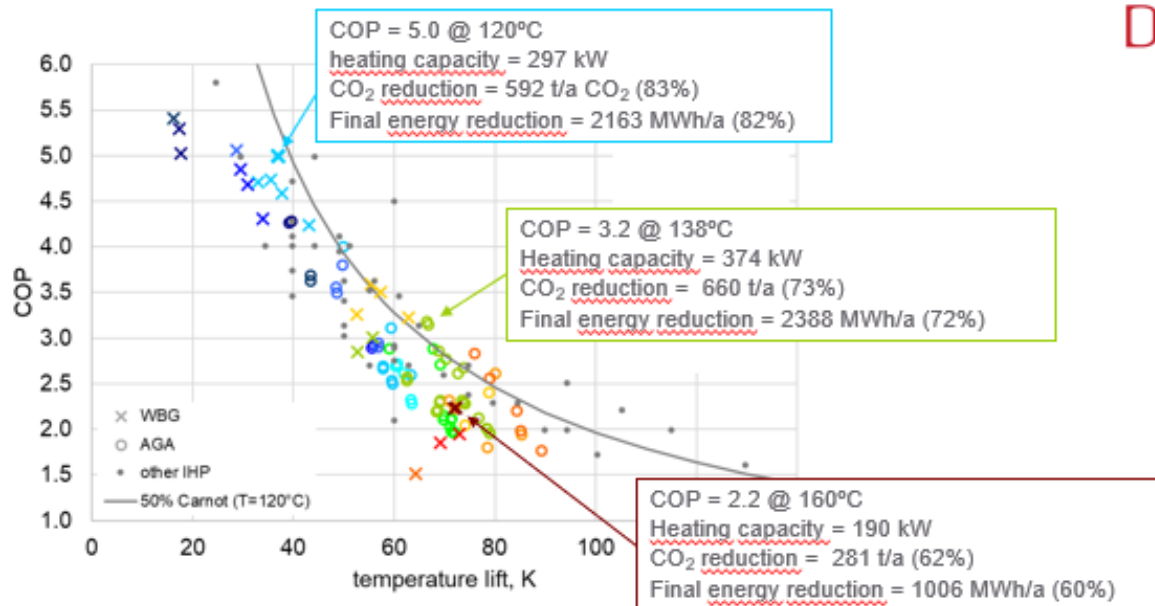
Operating hours:
WBG: 4020 h
AGA: 4006 h

other IHP from Arpagaus et al. High temperature heat pumps: Market overview, state of the art, research status, refrigerants, and application potentials, Energy (152), p.985-1010, 2018.

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R&D Highlight: DryFiciency: Industrial Demonstration



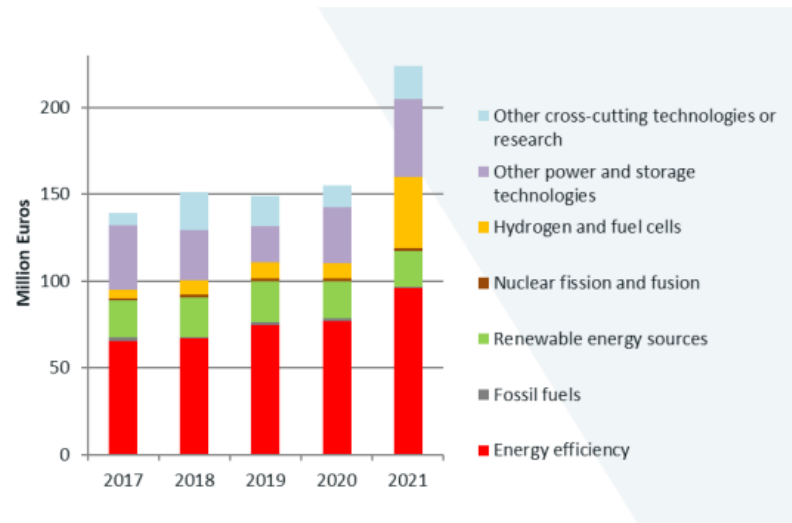
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Monitoring energy R&D

- Austria has established a **monitoring system** to yearly record all energy related research, development and first-of-its-kind demonstration projects and financed by means of public funds.
- In 2021, Austria's public expenditures for energy-related research and development amounted to **224,1 Million Euros**.
- Increase of 68,9 millions or 44,4% compared to 2020
- Public funded R&D research **on heat pumping technologies** and cooling devices amounts to appr. **5,8 Mio €** per year.



Public energy R&D expenditures in
Austria 2017–2021 – Topics according to
IEA Code (Indinger et. al, 2022)

Summary

- Heat pumps are a relevant part of the Austrian Climate and Energy Strategies
- Austrian “Renewable Heat Law- Erneuerbare-Wärme-Gesetz (EWG)” in implementation phase
- Austria has established different quality measures (also in the European context)
- Good framework for research to establish new fields of applications, increasing budgets and highlighting industrial demonstrators for high temperature heat pumps
- Growing markets over the last years, positive outlook
- Challenges are how to fulfill the steep implementation curves for decarbonisation (not only a heat pump topic)

References

- Andreas Indinger et al., 2022, Berichte aus Energie- und Umweltforschung 22/2022, „Energieforschungserhebung 2021“
- Peter Biermayr et al, 2022, Berichte aus Energie- und Umweltforschung 21/2022 “Innovative Energietechnologien in Österreich Marktentwicklung 2021“