

EUROPEAN HEAT PUMP SUMMIT

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NUREMBERG, 28.–29.10.2025
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 **NÜRNBERG
MESSE**

PROGRAMME

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11:30	Leak hole sizes of plate heat exchangers used in Heat Pumps – Extending existing leakage databases [7] Dr. Thore Oltersdorf Fraunhofer ISE
11:50	Development of a method to determine in real time the refrigerant charge of a residential Heat Pump [8] Maëlle Jounay EDF
12:10	Evaluation of Odorants in Refrigerant R-290 to Improve Leak Detection [9] Xudong Wang Air-Conditioning, Heating and Refrigeration Institute
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PROGRAMME

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15:50	Turning Industrial Waste Heat into Value – Enabling Carbon-Free Steam with ComprivAP [37] Josef Grassauer GIG Karasek GmbH
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16:10	Advancing Heat Pump Technology with Innovative Compressor Solutions and Process Integration [38] Matteo Cameletti Exergy International Srl
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16:50	End

ACCELERATING THE HEAT PUMP REVOLUTION: FROM VISION TO INDUSTRIAL REALITY



Dr.-Ing. Rainer M. Jakobs

Coordinator European Heat Pump Summit
Information Centre on Heat Pumps and Refrigeration IZW e.V. (Management)
German Society of Refrigeration and Air Conditioning DKV e.V. (Board Member)

The European Heat Pump Summit returns for its ninth edition at a pivotal moment in the global energy transition. As we gather at the NürnbergMesse the Heat Pump industry stands at an unprecedented inflection point where political commitment, technological innovation, and market momentum converge to reshape how we heat our buildings and power our industries. Since evolving from the Heat Pump Symposium at Chillventa in 2008, the European Heat Pump Summit (since 2009) has established itself as the premier B-2-B dialogue platform for the international Heat Pump community. Under the banner "Connecting Heat Pump Experts," this biennial gathering brings together industry leaders, researchers, policymakers, and innovators to chart the course for sustainable heating and cooling solutions across Europe and beyond. The European Heat Pump market has undergone remarkable transformation. Building on 2022's record-breaking 38 % sales increase to 3 million units, the market continues its exponential growth trajectory. With over 20 million Heat Pumps now installed across Europe, we're witnessing a fundamental shift in heating and cooling approaches.

Germany's ambitious target of six million Heat Pumps by 2030 and the UK's commitment to scaling installations from 55,000 annually in 2021 to 600,000 by 2028 exemplify political recognition that Heat Pumps are indispensable for achieving climate neutrality. These national strategies, supported by the European Commission's Heat Pump Action Plan, demonstrate that Heat Pumps have moved from the periphery to the center of energy policy. While residential applications have driven initial growth, industrial Heat Pumps represent the next critical frontier. With process heat accounting for over two-thirds of industrial energy consumption - still use predominantly fossil-fuels- the transformation potential is immense. Simultaneously, 20-50 % of industrial input energy is lost as waste heat, presenting an untapped circular energy resource.

This year's summit features groundbreaking presentations on industrial applications pushing technical and economic boundaries: Transforming waste heat into high-pressure steam at 215 °C or delivering solutions with 50 MW_{th}, e.g. with the flagship BASF Ludwigshafen installation. It demonstrates real-world viability at scale.

The ongoing evolution of refrigerant regulations remains critical, demanding industry-wide collaboration and innovation. F-Gas Regulation amendments and PFAS discussions require thinking beyond traditional metrics. While Global Warming Potential remains important, comprehensive assessments using Total Equivalent Warming Impact (TEWI) and Life Cycle Climate Performance (LCCP) provide more accurate environmental impact pictures.

Our 36 technical sessions explore how manufacturers adapt to regulatory changes while maintaining performance and cost-effectiveness. From natural refrigerants to next-generation synthetic

alternatives, the industry demonstrates remarkable resilience in meeting environmental requirements without compromising efficiency or safety.

The 2025 program reflects increasing sophistication in Heat Pump applications. Denmark's Esbjerg Mega Heat Pump showcases successful district heating integration, while presentations on chemical, petrochemical, food and beverage, and pulp and paper applications demonstrate sector-specific solutions. These real-world case studies offer practical insights for navigating complex industrial transformations.

The convergence of Heat Pump technology with digitalization and IoT capabilities opens new optimization frontiers. Analysis of over 40 case studies from seven countries reveals how interconnected Heat Pumps enhance performance monitoring, predictive maintenance, and grid integration, enabling crucial roles in demand response and renewable energy integration.

This year's enhanced program maximizes knowledge transfer and networking opportunities. Day one focuses on market developments, research advances, and component innovations, including critical discussions on vibration control, acoustic management, and high-temperature compressor design. Day two examines applications for existing buildings, residential quarters, commercial facilities, and industrial processes.

Our Foyer Expo brings together 30 leading exhibitors showcasing the latest innovations. This carefully curated exhibition provides direct access to cutting-edge solutions and opportunities to engage with technical experts and decision-makers shaping the industry's future. The summit's international character is reflected in our speaker lineup -featuring over 35 prominent experts- and flexible participation options in person or via livestream.

As we convene in Nuremberg, the Heat Pump industry stands ready to deliver sustainable, efficient heating and cooling for all economic sectors. The presentations in this brochure represent the cutting edge, from residential retrofits to industrial mega-projects, from component optimization to system integration. The journey from fossil fuel dependence to renewable heating requires technological innovation, regulatory support, and market transformation. With each successful project, technological breakthrough, and policy milestone, we move closer to a decarbonized future where Heat Pumps play a central role.

Together, we will explore innovations, share experiences, and forge partnerships necessary to accelerate the Heat Pump application. We thank all speakers for their contributions and all companies, associations, and societies for their support and wish the participating Heat Pump community a successful Summit, animated discussions and excellent networking.

Welcome to the future of sustainable heating and cooling. Welcome to the European Heat Pump Summit 2025.



Dr.-Ing. Christian Vering

E.ON Energy Research Center, RWTH Aachen (Chief engineer,
Team Leader Refrigerant cycles) Information Centre on
Heat Pumps and Refrigeration IZW e.V. (Chairman)
Heat Pump Academy (CEO)

TUESDAY, 28.10.2025 – HALL BRÜSSEL

Policy Shifts and Market Data

- [1] **Introduction**
Dr.-Ing. Rainer M. Jakobs, Information Centre of Heat Pumps and Refrigeration, IZW e.V.

A short review: Highlights from the past Heat Pump Summits – The current situation and a outlook – The focus areas of the Summit

- [2] **From policy to certification: building trust in the Heat Pump market**
Saverio Papa & Leopold Micò | European Heat Pump Association (EHPA)

Europe's clean energy transition is underway, and Heat Pumps are playing a starring role with over 300 manufacturing sites across Europe, providing 433,000 direct and indirect jobs. But ambition alone isn't enough. Achieving scale, speed, and trust across the continent requires stable long-term policies, reliable certification, and a united voice.

Unpacking the EU climate and energy regulatory framework and the latest policy developments stemming from the Clean Industrial Deal – and explain what it means for manufacturers, installers, and policymakers alike. Policy isn't just paperwork; it sets the tempo for innovation and investment.

- [3] **The Heat Pump market in the Netherlands is an opportunity and challenge**
Andries van Wijhe | TNO

The Dutch market for domestic heating systems has been defined by the gas-fired combi-boiler for heating and domestic hot tap water. With the phasing out of natural gas infrastructure, Heat Pumps are becoming a more and more essential option. However, the Dutch market faces specific challenges. The Netherlands is an interesting and challenging market for Heat Pumps. Of the approximately 8.5 million households, 2 million are equipped with a Heat Pump.

- [4] **Germany's Heat Pump Market: Current Status and Future Outlook**
Dr. Björn Schreinermacher | Bundesverband Wärmepumpe e.V.

The German heating market has shown a steady shift from fossil-based heating systems to Heat Pumps over the past years. In the new-build sector, this transition is already well advanced: Heat Pumps now account for around 75 % of all newly installed heating systems.

However, a major development has occurred since 2020 -most Heat Pump installations now take place in existing buildings. This reflects a broader transformation, as decarbonising the existing building stock is essential to achieving climate targets.



Research & Development

- [5] **Latest news from HPT TCP by IEA**
Dr. Caroline Haglund Stignor | Heat Pump Centre

The Technology Collaboration Programme on Heat Pumping Technologies (HPT TCP) by IEA is a worldwide key player in generating and communication independent information. The mission of the programme is to accelerate the transformation to an efficient, renewable, clean and secure energy sector in our member countries and beyond by performing collaborative research, demonstration and data collection and enabling innovations and deployment. The presentation will include highlights of recent results from the ongoing projects.

- [6] **Safety with hydrocarbon refrigerants, an overview of IEA HPT Annex 64**
Björn Palm | IEA Annex 64

The IEA HPT TCP Annex 64 is investigating how to ensure high safety when using flammable refrigerants, in particular hydrocarbons. This presentation will give an overview of ongoing activities within the Annex, as well as some results from the work up to now.

- [7] **Leak hole sizes of plate heat exchangers used in Heat Pumps – Extending existing leakage databases**
Dr. Thore Oltersdorf | Fraunhofer ISE

This study investigates leak hole sizes of more than 40 plate heat exchangers (PHE) to improve safety standards for flammable refrigerants like R290. Current guidelines were improved in recent years but for PHE leak statistics are unavailable which may lead to design constraints and increased costs. Although significant progress has been made in refining safety guidelines in recent years, there remains a lack of specific leak data for PHEs, which are widely used components Heat Pump systems.

[8] Development of a method to determine in real time the refrigerant charge of a residential Heat Pump

Maëlle Jounay | EDF

Detecting and quantifying refrigerant leakages in residential Heat Pumps (HPs) at an early stage is a major stake to maintain their efficiency and extend their lifespan. It is also of great interest in terms of safety when using flammable refrigerants.

The work aimed to develop a quantitative early leakage detection method for residential HPs, addressing the shortcomings of existing methods and fitting within the current technological context.

[9] Evaluation of Odorants in Refrigerant R-290 to Improve Leak Detection

Xudong Wang | Air-Conditioning, Heating, and Refrigeration Institute

Applying the odorant in R-290 systems with unknown compatibility with the compressor lubricant and construction materials may result in premature chemical or electrical failure and the degradation of the system efficiency.

The institute undertook a research project to conduct experimental testing to evaluate odorants impact on system performance.

[10] Selecting the right gas detection technology for Heat Pumps using flammable refrigerants

Erik den Hollander | Sensata Technologies

As the F-gas regulation drives the H-V-AC industry toward refrigerants with lower global warming potential, R-290 has emerged as a leading alternative. However, its flammability presents new safety challenges. Integrating gas sensors into refrigeration systems can mitigate these risks by detecting leaks early and enabling preventive action.

[11] Experimental Validation of R-474A as a Drop-in Replacement for R-454C

Christian Macri | Daikin Chemical Europe GmbH

As the R-AC-HP sector accelerates the transition to low-GWP refrigerants, the challenge remains to identify safe, efficient, and regulatory-compliant alternatives that can be deployed across a wide range of applications.

This study focuses on R-474A, a newly developed ultra-low GWP, A2L-classified refrigerant, as a complementary solution to R-290, particularly in applications where safety or regulatory constraints make the use of hydrocarbons impractical or prohibited.

[12] Design and analysis of falling film evaporator using refrigerant R1336mzz(Z)

Kim Man-Hoe | KNU IEDT

This CFD study offers valuable insights into falling film behaviour in high-temperature Heat Pump evaporators using R-1336mzz(Z). Employing the Volume of Fluid (VOF), Continuum Surface Force (CSF), and Lee models in ANSYS Fluent, the analysis captures critical zones -free-fall, stagnation, film development, and dry-out- and reveals how they evolve under varying thermal and flow conditions.

[13] R-290 Heat Pumps: Gas Properties and Safety Standard

Massimiliano Manfro | Aermec S.p.A.

This presentation explores the use of R-290 in Heat Pumps, focusing on its thermodynamic properties, flammability and relevant safety standards (EN 378, EN 60079-10-1).

Targeted at H-V-AC-R designers, plant managers and installers, this presentation aims to raise awareness among key actors across the supply chain regarding the necessity of carrying out a serious Risk Assessment whenever dealing with systems based on flammable refrigerants.

Vibrations Noise

[14] Minimize Vibrations. Reduce Noise. Design Quieter Heat Pumps

Manon Längle | Getzner Werkstoffe GmbH

Low-frequency noise from Heat Pumps poses challenges in residential areas. This presentation shows how two-stage PUR based vibration isolation at the compressor effectively reduces noise emissions and enables quieter, more acceptable Heat Pump solutions.

Test Systems

[15] How Automotive Testing Methods Are Advancing Heat Pump Technology

Andreas Baumgartner | AVL List GmbH

The work of AVL in designing and operating advanced thermal lab test cells for the automotive industry offers a valuable foundation for exploring advancements in Heat Pump technology across various sectors. For decades, AVL has rigorously tested automotive components and complete vehicle thermal systems under a range of climate conditions, from challenging heat to cold environments.

Heat Exchangers

[16] Advanced Heat Pump Technology. Brazed heat exchangers: from traditional to regenerative function

Matteo Todescato | Alfa Laval

Brazed heat exchangers have a transformative potential in residential air-to-water Heat Pumps.

Traditionally utilized as condensers and evaporators, our presentation will highlight their critical role as internal heat exchangers, enhancing efficiency and performance in residential applications.

This technology is revolutionizing the Heat Pump industry, offering sustainable, reliable, and effective solutions for modern homes.

Active Magnetic Bearings

[17] High-Speed Motors and Magnetic Bearings: Their Positive Impact on Industrial Heat Pumps and Lessons

Lateb Ramdane | SKF MAGNETIC MECHATRONICS

SKF is a global leader in bearing and sealing technologies, offering advanced solutions to improve reliability, energy efficiency, and sustainability. Among its innovations, Active Magnetic Bearings (AMB) is key enablers in high-performance systems.

AMBs allow contactless shaft rotation using real-time electromagnetic control. This eliminates mechanical wear, reduces maintenance, supports high-speed operation, and enables integrated monitoring.

Compressors

[18] High-Temperature R-290 Heat Pump with Frascold Compressor Integration

Patrizio D'Alessandro | Frascold SpA

Frascold introduces a high-temperature compressor integrated into an R-290 Heat Pump system, designed to address the growing demand for sustainable, efficient heating solutions. Capable of reaching outlet water temperatures up to 65 °C, this innovation ensures optimal performance even in retrofitted buildings with traditional radiators, which require higher water temperatures.

[19] Maximizing the Potential of Industrial Heat Pumps: Efficient Solutions for Versatile Applications

Dirk Schlehuber | BITZER Kühlmaschinenbau GmbH

Industrial Heat Pumps are a key technology for decarbonising high-temperature process heat. This presentation explores efficient solutions for heat generation across a broad temperature range – from hot water starting at 40 °C to pressurized hot water or steam at up to 120 °C.

The session begins by classifying industrial Heat Pump applications into four temperature bands: low (LT), medium (MT), high (HT), and ultra-high temperature (UHT), aligning compressor technologies accordingly. A key focus is on system design flexibility. BITZER's compressors are available with mechanical capacity regulation or integrated/external inverters, enabling modular and scalable configurations.

Certification

[20] Revised EPBD & Long-term HVAC Performance: Eurovent Certification and Daikin Smart Control System

Gaetano Sanfelice | Daikin Applied, Eurovent certification

This presentation will explore the essential role of Eurovent certification in delivering high-performing, reliable H-VA-C solutions. In the first part, the focus will be on how using certified equipment contributes to the overall success of H-VA-C projects, ensuring quality, compliance, and long-term value.

The second part will introduce Daikin's Smart Control System (SCS) a comprehensive and dedicated platform developed specifically for certified equipment.

[21] Summary of the first day

A review of the first day with a short report on each presentation.



WEDNESDAY, 29.10.2025 – HALL BRÜSSEL

H₂ production, CO₂ CCS + CCU

[22] Heat Pumps for hydrogen production and carbon capture processes

Dr. Veronika Wilk | Austrian Institute of Technology

H₂ and CO₂ infrastructure are crucial for decarbonizing hard-to-abate sectors. Our project develops innovative Heat Pump solutions to maximize efficiency in these emerging technologies. Heat Pumps recover waste heat from electrolysis (35 – 58 °C) for district heating and reduce energy demands in carbon capture processes. Additional opportunities exist in gas compression and storage operations, where significant efficiency gains are achievable. We provide practical concepts and application examples for integrating Heat Pumps into hydrogen production and carbon capture systems. Our research supports technology providers, infrastructure operators, and system integrators with proven solutions for sustainable process design. Join us in advancing efficient energy infrastructure for a carbon-neutral future.

Boiler replacement

[23] Heat source integration for boiler replacement

Carsten Wemhöner | OST Eastern Switzerland Univ. of Applied Science

Overcome Heat Pump limitations in existing buildings with our innovative multi-source integration approach. By combining different heat sources strategically, we solve space constraints, reduce drilling depths, and minimize noise issues that typically block large Heat Pump installations. Our proven concept delivers superior performance through smart synergies -using air sources to regenerate ground sources, optimizing summer hot water production, and reducing overall system size. Validated through extensive simulations and a 170 kW demonstration project in multi-family buildings, our solution achieves full heating coverage with smaller borehole fields and enhanced efficiency. Transform building renovations with standardized multi-source solutions that deliver economic benefits and sustainability.

Experimental Analysis, Modelling

[24] Experimental Analysis of Heat Pump Systems: From Steady-State to Field-Test-in-the-Lab

Stephan Göbel | RWTH Aachen University

The comprehensive hardware-in-the-loop testing facility accelerates Heat Pump innovation from concept to deployment. Using versatile test benches with multiple cycle configurations, we optimize refrigerant selection and system design for safety and performance across all operational ranges.

Our rigorous experimental approach includes steady-state measurements and dynamic testing to develop cutting-edge model-based controllers. We validate complete system efficiency by integrating Heat Pumps with building models and renewable energy components like PV and batteries.

Experience the future of energy management with model predictive control (MPC) solutions, thoroughly tested in holistic building energy systems. Our data-driven development process ensures your Heat Pump delivers optimal performance and minimal environmental impact.

Modelling compressors

[25] Fast and accurate modelling for vapour injection compressors in Heat Pumps

Marek Lehocky | Gamma Technologies

Regulatory pressure drives the transition to natural refrigerants in Heat Pump systems, requiring optimisation for efficiency and safety. This presentation demonstrates how vapor injection compressors enhance COP performance in sustainable Heat Pumps. We present a comprehensive modelling methodology using GT-SUITE, combining high-fidelity 1D compressor models for design optimization with map-based approaches for computational efficiency. This hybrid strategy enables detailed investigation of vapour injection parameters while maintaining realistic simulation runtimes for full system analysis. The methodology provides a practical framework for accelerating development of environmentally responsible Heat Pump systems, balancing accuracy with computational feasibility for effective system architecture evaluation.

STone eco-system

[26] From climatic room to room acclimatisation: Your H-VA-C unit's life cycle based on STone

Sergio Maria Capanelli | Carel Industries

CAREL's STone platform revolutionizes H-V-AC development through Software-in-the-Loop processes and AI-powered tools. The ecosystem supports complete product lifecycle with features including automated code generation, Digital Twin simulations for virtual prototyping, and seamless integration with existing modelling environments. This reduces physical testing requirements while accelerating development. A remote support application enables secure communication between machines, technicians, and experts globally. The presentation demonstrates how STone enhances collaboration, reduces costs, and ensures rapid deployment of high-quality H-V-AC systems.

Design approach Large-Scale HPs

[27] Optimising the Planning of Large-Scale Heat Pumps for Decarbonizing District Heating Networks

Sebastian Ostlender | RWTH Aachen University

Large-scale Heat Pumps (LSHP) are essential for decarbonizing district heating networks below 120 °C. However, their complex off-design behaviour – showing significant capacity and efficiency variations unlike conventional heaters – creates planning challenges that hinder market adoption. RWTH Aachen University presents an integrated design approach using coupled simulation tools for simultaneous optimization of all system components, including refrigerant selection and configuration. The modular software environment predicts district heat demand, models dynamic component interactions, and simulates thermodynamic cycles, significantly accelerating planning processes for faster LSHP deployment.

Positive Energy Districts

[28] Towards Cost-Optimal Heat Pump System Design for Positive Energy Districts

Assoz. Prof. Dr.-Ing. Fabian Ochs | University of Innsbruck

Achieving Positive Energy Districts requires optimized Heat Pump integration, particularly challenging in existing high-density areas. This presentation introduces a comprehensive design workflow considering multiple HP configurations: central, semi-central with boosters, decentral, and mixed systems for varying temperature needs (heating, DHW, cooling). The EPBD cost-optimality approach evaluates trade-offs between central systems' lower investment costs and decentral systems' superior performance. Case studies from Germany (Quarree100), Austria (Campagne), and Switzerland (Papieri) demonstrate practical applications supporting PED planning decisions.

High Temperature, Industrial, Mega Heat Pumps

[29] Industrial high temperature Heat Pump technology

Mauro Bonfanti | Officine Mario Dorin S.p.A.

Officine Mario Dorin's compressor expertise combines with TNO's HTHP research to advance sustainable industrial heating. This presentation covers hydrocarbon solutions achieving 160 °C discharge temperatures, addressing critical challenges in oil viscosity, compressor design, and high-temperature operation. We demonstrate cyclopentane configurations reaching 180 °C and steam generation capabilities. Field experience, product availability up to 140 °C, and Tecnia's HFO testing results showcase practical applications. Our comprehensive test suite validates interdisciplinary collaboration's importance in developing next-generation HTHP technology.

[30] Adaptation of Industrial Heatpumps to Heatsources and Applications

Rüdiger Rudischhauser | SRMTec Group GmbH

Industrial decarbonisation requires replacing fossil-fuelled boilers with electric Heat Pumps using green electricity. Cascade systems split temperature lifts into two steps, optimizing different refrigerants' properties while overcoming excessive temperature gaps. New safety-focused compressors enable closer proximity to demand centres. Integration with refrigeration cycles utilizes waste heat from air-cooled condensers, eliminating boilers. Critical synchronization of heating/cooling demands is achieved through project cooperation. Multiple operational projects confirm concept viability, demonstrating practical pathways to industrial heat decarbonisation.

[31] Heat Pumps – Case studies, experiences, and future perspectives

Per Skov, Morten Deding | Sabroe JCI

Heat Pumps are crucial for electrification and clean energy transition, supporting REPowerEU's vision for affordable, secure, sustainable energy. This presentation showcases 2 – 3 real-life case studies demonstrating natural refrigerant Heat Pumps with various compressor technologies, illustrating how different solutions match specific applications and demands. Johnson Controls presents insights into the future of R-717 Heat Pump technology, highlighting pathways for increased efficiency, reduced energy consumption, and diversified energy sources in Europe's decarbonization journey.





[32] **Accelerating Industrial Decarbonisation with High-Temperature Heat Pumps – IEA HPT Annex 68**
 Martin Pihl Andersen | Danish Technological Institute

This global initiative unites 15+ countries to decarbonize industrial process heat through high-temperature Heat Pumps delivering >100 °C efficiently. The presentation showcases technology mapping of commercial solutions, performance trends, and innovations; deep sector collaborations bridging pilots to mass adoption; and open-access educational resources. Real-world examples from food processing, paper drying, and chemical steam generation demonstrate achieved energy savings and integration lessons. Learn how international collaboration accelerates sustainable, electrified industrial heating transformation.

[33] **UPGRADER 95°, the high temperature Heat Pump with R-717**
 Sophie Tevenon, Michael Thies | Equans - Kaelte Technik

Discover EQUANS' evolution from SULZER's 1938 Zurich City Hall installation -the world's oldest functioning Heat Pump- to today's cutting-edge solutions. This presentation introduces the Bouygues Group's energy segment and EQUANS' German-speaking operations, then explores R-717 refrigerant advantages in industrial applications. We showcase our flagship UPGRADER 95° high-temperature Heat Pump, detailing key components (compressor, heat exchanger, control system) and performance capabilities. Reference projects demonstrate practical applications and implementation success stories across various industries.

[34] **Decarbonizing industrial process heat with Heat Pumps: Focus on Food & Beverage**
 Ivan Rangelov | Danfoss Climate Solutions

This presentation explores innovative Heat Pump applications for replacing fossil fuel boilers in industrial processes, focusing on the Food & Beverage sector. Topics include combined cooling/heating solutions, low-pressure steam generation, integration in new and retrofit installations, and performance/cost analysis through simulations. Real-world case studies demonstrate successful deployments, showcasing practical applications and tangible results. Discover how Heat Pumps drive industrial decarbonisation with proven technology, optimal energy efficiency, and compelling economic benefits for sustainable operations.

[35] **Mega Heat Pumps – First operation experiences of the world largest R-744 Heat Pump**
 Tobias Hirsch | Everllence (former MAN Energy)

Following successful commissioning and handover to DIN Forsyning, this presentation shares insights from Denmark's Esbjerg Mega Heat Pump project. We detail the transcritical process technology, initial operating experiences, and performance results. The presentation extends beyond this flagship project to explore alternative technologies and application fields for large-scale Heat Pumps. Additionally, we provide updates on other ongoing mega Heat Pump projects, demonstrating the expanding potential of industrial-scale Heat Pump solutions for district heating decarbonisation.

[36] **Heat Pumps for district heating up to 60 MW – from feasibility studies to practical implementation**
 Ivo Eiermann, Stefan Henninger | York JCI

This presentation navigates the complete Heat Pump project lifecycle from initial considerations through planning to implementation, addressing typical challenges encountered. Following an introduction to applicable refrigerant and compressor technologies, we examine integration challenges through specific location-based examples. The session concludes with insights into current market trends and future technological developments, providing attendees with practical knowledge for successful Heat Pump project execution and an understanding of emerging opportunities in the field.

Mechanical vapour recompression

[37] **Turning Industrial Waste Heat into Value – Enabling Carbon-Free Steam with ComprivAP**
 Josef Grassauer | GIG Karasek GmbH

GIG Karasek's ComprivAP transforms industrial decarbonisation through open-cycle mechanical vapour recompression, converting waste heat into high-pressure steam up to 215 °C without synthetic refrigerants. This modular system reduces operating costs by 70 % compared to fossil-fired production, targeting paper, chemical, petrochemical, and steel industries. The flagship BASF Ludwigshafen installation -world's most powerful 50 MW_{th} industrial Heat Pump- demonstrates real-world capability. Combined with renewable electricity, ComprivAP enables carbon-neutral steam production, positioning waste heat as a valuable circular economy asset.

High Temperature Heat Pump

[38] **Advancing Heat Pump Technology with Innovative Compressor Solutions and Process Integration**
 Matteo Cameletti | Exergy International Srl

Exergy leverages ORC expertise to deliver the X-heat series, featuring optimized single/dual-stage configurations with 20 % COP improvement through flash tank economizers. Proprietary radial compressor technology and strategic partnership with Cannon Bono enable tailored solutions from <1 to 50 MW_{th}, delivering temperatures 50 – 150 °C. Applications span chemical, petrochemical, food/beverage, pulp/paper, data centers, and district heating. Real-world case studies, including wood dyeing industry implementation, demonstrate reduced fossil fuel dependency and enhanced profitability through industrial sustainability.

[39] **Summary of the second day**

A review of the second day with a short report on each presentation.

Projects, reports, press releases in connection with presentations ...

- [2] **European Heat Pump Market 2025**
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Map of Heat Pump factories
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- [3] **The Netherlands: Heat Pump Market Report**
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- [4] **Member Country Report Germany**
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- [2-4] **IEA: Is a turnaround in sight for Heat Pump markets?**
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- [5] **HPT TCP**
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 Current member countries: Austria, Belgium, Canada, China, the Czech Republic, Denmark, Finland, France, Italy, Ireland, Germany, Japan, the Netherlands, Norway, South Korea, Spain, Sweden, Switzerland, the United Kingdom, and the United States
- [6-9] **Welcome to the Project (Annex) 64 of HPT TCP**
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- [11] **Next Generation Refrigerant**
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- [20] **Heat Pump Certification**
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- [22] **Improving Energy Efficiency of Carbon Capture Processes with Heat Pumps**
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- [32] **High-Temperature Heat Pumps: Project (Annex) 68 of HPT TCP**
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