Michael Lauermann
Senior Research Engineer
Sustainable Thermal Energy Systems



Research interests

Industrial Processe, Heat pumps

Employment

Senior Research Engineer
Sustainable Thermal Energy Systems
AIT Austrian Institute of Technology GmbH
1 May 2024 → present

Former external affiliation
TU Wien, Institut für Energietechnik und Thermodynamik
Austria
1 Feb 2010 → 1 Aug 2014

Research outputs

REFRIGERANT BLENDS FOR MW-SCALE HIGH TEMPERATURE HEAT PUMPS
Hubmann, F. & Lauermann, M., Oct 2026, *Conference Proceedings NEFI NEW ENERGY FOR INDUSTRY 2026.* Vol. 2026. p. 248-250

Refrigerant Blends for Industrial Heat Pumps: A Simulation Study Supporting MW-Scale Demonstration
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Part-load strategies for a steam-generating ejector heat-pump using numerical simulations
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Decarbonization of district heating and cooling: Role of seasonal thermal energy storage and heat pumps
Dahash, A., Bayer, M., Kalfa, M., Bajlo, L., Jentsch, R. & Lauermann, M., 19 Jun 2026, *15th IEA Heat Pump Conference: Conference Proceedings.* Vienna, Vol. 15. 12 p.

HP2035: Performance Assessment of Natural Refrigerants in Heat Pumps for Micro-district Heating
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Brick drying with heat pumps: Development of an operating strategy based on dynamic simulation
Sulzgruber, V., Pölzl, M., Lauermann, M. (Author and Speaker), Boot, E. & Puskas, S. (Speaker), 6 Jul 2025.

Experimental Investigation of Heat Pump Modules Limited to 150 g of Refrigerant R290 and a Dedicated Test Rig
Preisinger, S., Lauermann, M., Schwarzfurtner, M., Fischer, S., Kling, S., Moisi, H. & Reichl, C., 10 May 2025, In: Energies. 18 (10), 10, 17 p., 2455.

Design of Ejectors for High-Temperature Heat Pumps Using Numerical Simulations
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Experimental investigation of a modular heat pump for residential applications
Schwarzfurtner, M., Lauermann, M. (Supervisor) & Reichl, C. (Supervisor), 2025, 65 p.

Experimental investigation of a modular heat pump with a PCM storage for residential applications
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Integration of a latent heat storage in the refrigeration cycle of an air source heat pump for energy-efficient heating, cooling and DHW operations
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Net-Zero Industries - Dekarbonisierungslösungen für die Zukunft
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Characterization of the fluid flow phenomena in an ejector for a high temperature heat pump
Schieder, M. (Speaker), Zenz, C., Unterluggauer, J., Lauermann, M., Buruzs, A., Wilk, V., Fleckl, T. & Reichl, C., 15 May 2023, *Proceedings of the 14th IEA Heat Pump Conference.* 10 p.

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GeoFit: Experimentelle Untersuchungen und numerische Validierung von oberflächennahen Spiralkollektoren als Basis für die Entwicklung eines Auslegungstools für die geothermische Umrüstung von Bestandsgebäuden
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Wärmerückgewinnung für Trocknungsprozesse mit Hochtemperatur-Wärmepumpen
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Hochtemperatur Wärmepumpe mit Ejektor
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Lauermann, M., 2015

Activities

Decarbonization of district heating and cooling: Role of seasonal thermal energy storage and heat pumps
Dahash, A. (Author and Speaker), Bayer, M. (Author), Kalfa, M. (Author), Bajlo, L. (Author), Jentsch, R. (Author) & Lauermann, M. (Author)
26 May 2026 → 29 May 2026

Msc Renewable Energy Systems: M5 Heat Pumps
Wilk, V. (Speaker), Fleckl, T. (Speaker) & Lauermann, M. (Speaker)
13 Dec 2025

HIGH-TEMPERATURE HEAT PUMPS AND THEIR USE IN INDUSTRY
Lauermann, M. (Speaker)
12 Nov 2025

Angewandtes Labor (Wärmepumpe)
Lauermann, M. (Speaker)
1 Oct 2025 → 31 Jan 2026

VO 302.723 Kältetechnik und Wärmepumpen (WS2025)
Fleckl, T. (Speaker), Wilk, V. (Speaker) & Lauermann, M. (Speaker)
1 Oct 2025 → 31 Jan 2026

Techno-economic advantages of coupling large-scale seasonal thermal energy storage with heat pumps in district heating systems
Dahash, A. (Author and Speaker), Bayer, M. (Author), Jentsch, R. (Author), Meister, C. (Author) & Lauermann, M. (Author)
16 Sept 2025 → 17 Sept 2025

Hydraulic integration of large-scale seasonal thermal energy storage with heat pumps in district heating systems
Dahash, A. (Author and Speaker, invited), Bayer, M. (Author), Meister, C. (Author), Lauermann, M. (Author), Jentsch, R. (Author) & Schmidt, R.-R. (Author)
9 Sept 2025

Energy Efficiency in Industrial Drying
Lauermann, M. (Speaker)
7 Oct 2024

Angewandtes Labor (Wärmepumpe)
Lauermann, M. (Speaker)
1 Oct 2024 → 31 Jan 2025

Grundlagen und Einsatzgebiete industrieller Wärmepumpen und Wärmespeicher als Bestandteil von Dekarbonisierungslösungen
Lauermann, M. (Speaker)
1 Oct 2024

Kältetechnik und Wärmepumpen
Fleckl, T. (Speaker), Wilk, V. (Speaker) & Lauermann, M. (Speaker)
1 Oct 2024 → 31 Jan 2025

Integration of a latent heat storage in the refrigeration cycle of an air source heat pump for energy-efficient heating, cooling and DHW operations
Dahash, A. (Author and Speaker), Klein, G. (Author), Lauermann, M. (Author), Zitzenbacher, R. (Author), Preisinger, S. (Author) & Windholz, B. (Author)

25 Sept 2024

Modularity in water-water heat pumps with integrated latent heat storage for energy-efficient residential applications
Dahash, A. (Author and Speaker), Salvador Collado, C. (Author), Lauermann, M. (Author), Zitzenbacher, R. (Author), Preisinger, S. (Author) & Reichl, C. (Author)
25 Sept 2024

Design and Characterization of a High Temperature Heat Pump with Eject
Stöger, L. (Author), Schieder, M. (Author), Illich, C. (Author), Königsecker, T. (Author), Mair, M. (Author), Unterluggauer, J. (Author), Kling, S. (Author), Sulzgruber, V. (Author), Stingeder, A. (Author), Lauermann, M. (Author), Ciepiela, T. (Author) & Reichl, C. (Speaker)
24 Sept 2024

Experimental characterisation of the charge and discharge behaviour of a PCM storage
Fischer, S. (Author), Schwarzfurtner, M. (Author), Preisinger, S. (Author), Zitzenbacher, R. (Author), Lauermann, M. (Author), Kling, S. (Author) & Reichl, C. (Speaker)
24 Sept 2024

Modular heat pump system with natural refrigerant as a replacement for gas boilers in multi-family houses
Preisinger, S. (Speaker), Zitzenbacher, R. (Author), Schwarzfurtner, M. (Author), Fischer, S. (Author), Lauermann, M. (Author), Kling, S. (Author) & Reichl, C. (Author)
24 Sept 2024

MSc Renwable Energy Systems: M5C: Heat Pumps: Technology, applications and potentials
Wilk, V. (Speaker), Fleckl, T. (Speaker) & Lauermann, M. (Speaker)
15 Sept 2024

Industrielle Trocknung: Von der Produktcharakterisierung hin zum digitalen Zwilling mit der TIL-Library
Lauermann, M. (Speaker), Jentsch, R. (Author) & Rezucha, M. (Author)
10 Sept 2024

Modellierung eines neuartigen Rotordesigns für den Kaltgasprozess einer Rotationswärmepumpe
Jentsch, R. (Author), Lauermann, M. (Speaker), Kalfa, M. (Author), Dusek, S. (Author), Zotter, G. (Author), Längauer, A. (Author) & Adler, B. (Author)
10 Sept 2024

Heat pumps in industrial processes - A key technology of future energy systems
Lauermann, M. (Speaker)
20 May 2024

EDDY – Enhanced Drying: From Drying Kinetic Experiments to A Digital Twin of the Drying Process
Rezucha, M. (Author), Lauermann, M. (Author and Speaker), Jentsch, R. (Author), Dahash, A. (Author), Lager, D. (Author), Friedl, S. (Author), Zimmerleiter, R. (Author), Brandstetter, M. (Author), Holzer, R. (Author), Priesner, R. (Author) & Siedl, M. (Author)
11 Apr 2024

EDDY – Enhanced Drying
Lauermann, M. (Speaker)
5 Dec 2023

Modular low-capacity R-290 Heat Pump water heaters enhanced with compact PCM thermal storage
Giordano, F. (Author and Speaker), Lauermann, M. (Author), Preisinger, S. (Author), Radosavljevic, D. (Author), Obermair, A. (Author), Kling, S. (Author), Klein, G. (Author), Reichl, C. (Author), Barz, T. (Author), Buruzs, A. (Author), Hochwallner, F. (Author), Pink, W. (Author), Habisch, T. (Author), Marian, V. (Author), Zitzenbacher, R. (Author) & Glomba, M. (Author)
25 Oct 2023

Energy efficiency in industrial drying processes
Lauermann, M. (Speaker)
12 Oct 2023

Angewandtes Labor (Wärmepumpe)
Lauermann, M. (Speaker)
1 Oct 2023 → 31 Jan 2024

Kältetechnik
Fleckl, T. (Speaker), Wilk, V. (Speaker) & Lauermann, M. (Speaker)
1 Oct 2023 → 31 Jan 2024

IEA HPT Annex 59 – HP for drying
Lauermann, M. (Speaker, invited), Wilk, V. (Author) & Fleckl, T. (Author)
14 Mar 2023

Demonstrations of High temperature Heat pumps in Industrial Processes
Dusek, S. (Speaker, invited), Wilk, V. (Author, invited), Windholz, B. (Author, invited), Lauermann, M. (Author, invited), Riedl, J. (Author, invited) & Fleckl, T. (Author, invited)
30 Nov 2022

Heat pumps in industrial processes - A key technology of future energy systems
Wilk, V. (Author), Windholz, B. (Speaker, invited), Helminger, F. (Author), Lauermann, M. (Author), Riedl, J. (Author), Sporr, A. (Author), Dusek, S. (Author) & Fleckl, T. (Author)
6 Nov 2022 → 10 Nov 2022

Angewandtes Labor (Wärmepumpe)
Lauermann, M. (Speaker)
1 Oct 2022 → 31 Jan 2023

Kältetechnik
Fleckl, T. (Speaker), Wilk, V. (Speaker) & Lauermann, M. (Speaker)
1 Oct 2022 → 31 Jan 2023

Hochtemperatur-Wärmepumpen in der Prozessindustrie
Fleckl, T. (Speaker, invited), Wilk, V. (Author, invited), Dusek, S. (Author, invited), Lauermann, M. (Author, invited), Beck, A. (Author, invited) & Drexler-Schmid, G. (Author, invited)
15 Sept 2022 → 16 Sept 2022

Heat pumps in industrial processes - A key technology of future energy systems
Windholz, B. (Speaker), Wilk, V. (Author), Helminger, F. (Author), Lauermann, M. (Author), Riedl, J. (Author), Sporr, A. (Author), Dusek, S. (Author) & Fleckl, T. (Author)
22 Aug 2022 → 26 Aug 2022

DryFiciency: Experience and outlook
Wilk, V. (Speaker, invited), Windholz, B. (Author, invited), Helminger, F. (Author, invited), Lauermann, M. (Author, invited), Riedl, J. (Author, invited), Sporr, A. (Author, invited), Schneeberger, A. (Author, invited) & Fleckl, T. (Author, invited)
30 May 2022

High temperature heat pumps for industrial drying: operation experience and replicability
Wilk, V. (Speaker), Windholz, B. (Author), Helminger, F. (Author), Lauermann, M. (Author), Riedl, J. (Author), Sporr, A. (Author) & Fleckl, T. (Author)
5 Apr 2022 → 7 Apr 2022

Grundlagen Trocknungsprozesse Vorteile Wärmepumpe
Lauermann, M. (Speaker, invited)
28 Mar 2022

Heat pumps for drying: Operation experience and application potential
Wilk, V. (Speaker, invited), Windholz, B. (Author, invited), Helminger, F. (Author, invited), Riedl, J. (Author, invited), Kling, S. (Author, invited), Sporr, A. (Author, invited), Lauermann, M. (Author, invited), Schneeberger, A. (Author, invited) & Fleckl, T. (Author, invited)
30 Nov 2021

High temperature heat pumps in the process industry
Fleckl, T. (Speaker), Wilk, V. (Author), Lauermann, M. (Author), Beck, A. (Author), Helminger, F. (Author) & Drexler-Schmid, G. (Author)
24 Nov 2021

Hochtemperaturwärmepumpen für Industrieprozesse
Wilk, V. (Speaker, invited), Windholz, B. (Author, invited), Helminger, F. (Author, invited), Riedl, J. (Author, invited), Kling, S. (Author, invited), Sporr, A. (Author, invited), Lauermann, M. (Author, invited) & Fleckl, T. (Author, invited)
10 Nov 2021

Vorstellung: Heat Pumps for Drying
Lauermann, M. (Speaker), Wilk, V. (Author) & Fleckl, T. (Author)
26 Oct 2021 → 27 Oct 2021

Hochtemperatur-Wärmepumpen für industrielle Anwendungen Betriebserfahrungen und Potentiale
Köfinger, C. (Speaker, invited), Wilk, V. (Author, invited), Windholz, B. (Author, invited), Helminger, F. (Author, invited), Riedl, J. (Author, invited), Kling, S. (Author, invited), Sporr, A. (Author, invited), Lauermann, M. (Author, invited) & Fleckl, T. (Author, invited)
15 Sept 2021 → 16 Sept 2021

Closed loop heat pumps: Initial situation, expectations and results
Wilk, V. (Speaker, invited), Windholz, B. (Author, invited), Helminger, F. (Author, invited), Lauermann, M. (Author, invited), Kling, S. (Author, invited), Riedl, J. (Author, invited), Sporr, A. (Author, invited), Schneeberger, A. (Author, invited) & Fleckl, T. (Author, invited)
6 Jul 2021

Hochtemperatur-Wärmepumpen in der Prozessindustrie
Fleckl, T. (Speaker), Wilk, V. (Author), Lauermann, M. (Author), Beck, A. (Author), Helminger, F. (Author) & Drexler-Schmid, G. (Author)
16 Jun 2021

Waste heat recovery - Reduce energy consumption and emissions with heat pumps
Helminger, F. (Speaker), Knöttner, S. B. (Author), Lauermann, M. (Author) & Wilk, V. (Author)
31 May 2021

Process Decarbonization: DryFiciency and beyond
Wilk, V. (Speaker, invited), Helminger, F. (Author, invited), Lauermann, M. (Author, invited), Windholz, B. (Author, invited), Sporr, A. (Author, invited), Beck, A. (Author, invited), Drexler-Schmid, G. (Author, invited) & Fleckl, T. (Author, invited)
23 Mar 2021

Industriewärmepumpen in Österreich
Wilk, V. (Speaker, invited), Helminger, F. (Author, invited), Lauermann, M. (Author, invited), Dusek, S. (Author, invited), Windholz, B. (Author, invited), Sporr, A. (Author, invited), Geyer, R. (Author, invited), Knöttner, S. B. (Author, invited), Diendorfer, C. (Author, invited), Drexler-Schmid, G. (Author, invited) & Fleckl, T. (Author, invited)
9 Mar 2021

Vorstellung: Forschung Trocknung
Lauermann, M. (Speaker), Wilk, V. (Author) & Fleckl, T. (Author)
9 Mar 2021

Vorstellung: Angewandtes Labor (Wärmepumpen)
Lauermann, M. (Speaker)
1 Mar 2021 → 30 Jun 2021

Industriewärmepumpen: Status Quo und Ausblick
Wilk, V. (Speaker, invited), Helminger, F. (Author, invited), Lauermann, M. (Author, invited), Windholz, B. (Author, invited), Sporr, A. (Author, invited), Koller, M. (Author, invited) & Schneeberger, A. (Author, invited)
15 Oct 2020

High temperature heat pumps for industrial applications
Wilk, V. (Speaker, invited), Helminger, F. (Author, invited), Lauermann, M. (Author, invited), Windholz, B. (Author, invited), Sporr, A. (Author, invited), Beck, A. (Author, invited) & Drexler-Schmid, G. (Author, invited)
13 Oct 2020

Kältetechnik (WS 2020/21)
Fleckl, T. (Speaker), Wilk, V. (Speaker) & Lauermann, M. (Speaker)
1 Sept 2020 → 28 Feb 2021

Laborübung Wärmepumpen (WS 2020/21)
Lauermann, M. (Speaker)
1 Sept 2020 → 31 Jan 2021

Solar Thermal and its Applications
Lauermann, M. (Speaker)
29 Jul 2020

Hochtemperatur-Wärmepumpen für die Industrie: Ergebnisse laufender Demonstrationsprojekte
Wilk, V. (Speaker), Helminger, F. (Author) & Lauermann, M. (Author)
2 Jun 2020

WÄRMEPUMPEN IN INDUSTRIELLEN TROCKNUNGSPROZESSEN - Status, Ausblick und Perspektiven
Helminger, F. (Speaker, invited), Dusek, S. (Author, invited), Drexler-Schmid, G. (Author, invited), Fleckl, T. (Author, invited), Koller, M. (Author, invited), Lauermann, M. (Author, invited), Schneeberger, A. (Author, invited), Sporr, A. (Author, invited), Windholz, B. (Author, invited) & Wilk, V. (Author, invited)
18 Feb 2020

DryFiciency: high temperature heat pumps for industrial processes
Wilk, V. (Speaker), Helminger, F. (Author) & Lauermann, M. (Author)
22 Oct 2019 → 23 Oct 2019

GEOFIT - Ground source heat pump systems for energy efficient building retrofitting
Lauermann, M. (Speaker)
22 Oct 2019 → 23 Oct 2019

Laborübung Wärmepumpen
Lauermann, M. (Speaker)
1 Sept 2019 → 31 Jan 2020

Solar Thermal and its Applications
Lauermann, M. (Speaker)

31 Jul 2019

DryFiciency - Waste Heat Recovery in Industrial Drying Processes
Lauermann, M. (Speaker, invited)
29 Nov 2018

High temperature heat pumps in industrial applications
Wilk, V. (Speaker, invited), Lauermann, M. (Author, invited), Helminger, F. (Author, invited), Beck, A. (Author, invited), Drexler-Schmid, G. (Author, invited), Hofmann, R. (Author, invited) & Fleckl, T. (Author, invited)
20 Nov 2018

Heat Pumps in Process Industry - Current Developments in Research and Best Practice Examples
Fleckl, T. (Speaker, invited), Wilk, V. (Author, invited), Lauermann, M. (Author, invited) & Beck, A. (Author, invited)
6 Nov 2018 → 7 Nov 2018

Innovative Ansätze zum Einsatz von Wärmepumpen in der Sanierung
Fleckl, T. (Speaker, invited), Bres, A. (Author, invited), Zottl, A. (Author, invited), Reichl, C. (Author, invited) & Lauermann, M. (Author, invited)
19 Jun 2018 → 20 Jun 2018

Wärmepumpen in der Prozessindustrie - Aktuelle Entwicklungen in der Forschung und Herausforderungen in der Anwendung
Fleckl, T. (Speaker, invited), Wilk, V. (Author, invited), Lauermann, M. (Author, invited), Beck, A. (Author, invited), Drexler-Schmid, G. (Author, invited) & Hofmann, R. (Author, invited)
17 May 2018

Large heat pump applications in drying - the DryFiciency project
Lauermann, M. (Speaker, invited) & Wilk, V. (Author, invited)
20 Nov 2017

Messung und Simulation einer 50 kW Butan-Hochtemperaturwärmepumpe mit Ejektor
Drexler-Schmid, G. (Speaker), Lauermann, M. (Author), Popovac, M. (Author), Baumhakel, A. (Author), Banasiak, K. (Author) & Hafner, A. (Author)
17 Nov 2016 → 18 Nov 2016

Modeling Refrigerant Flow Evaporation in a Plate Heat Exchanger using OpenFOAM
Popovac, M. (Speaker), Drexler-Schmid, G. (Author) & Lauermann, M. (Author)
15 Nov 2016

A high temperature heat pump with HFO-1336mzz(Z) as the working fluid: Performance Simulations and Measurements
Lauermann, M. (Speaker), Helminger, F. (Author) & Hartl, M. (Author)
11 Oct 2016 → 13 Oct 2016

Angewandtes Labor (Wärmepumpen) WS 2016/17
Lauermann, M. (Speaker)
22 Sept 2016 → 2 Dec 2016

Vernetzte Energietechnologien (Wärmepumpen) WS 2016/17
Lauermann, M. (Speaker)
22 Jun 2016 → 2 Dec 2016

Einführung in die Solartechnik (SS 2016)
Lauermann, M. (Speaker)
25 Apr 2016 → 27 Jun 2016

Einführung in die Solartechnik
Lauermann, M. (Speaker)
27 Apr 2015 → 4 May 2015