



DeCarbCH Newsletter

July 2024

Dear DeCarbCH Partners,

Before we take a well-deserved summer break, we would like to update you on the latest news from the SWEET DeCarbCH project.

This Newsletter covers the following topics:

- [Heat Pumps](#)
- [Process Integration](#)
- [District Heating](#)
- [Socio-Economics](#)
- [Lunch Talks](#)
- [Deliverables and Highlights](#)
- [Recent Publications](#)

We look forward to your participation in the [Upcoming Events](#):

- [4 Sept 2024, 3rd SWEET Conference 2024, Bern](#)
- [30 Aug 2024, 2nd Conference on Energy and Sustainability Law at ZHAW-IRW, Winterthur \(is open for registration\)](#)
- [7 Nov 2024, 10th Symposium Solar Energy and Heat Pumps, Rapperswil](#)

If you have missed a Lunch Talk, you can still watch them on our [YouTube Channel](#).

Also, we would like to draw your attention to a "[Survey on Sustainability Efforts of Companies](#)". We are interested in your experiences and perspectives and would be grateful if you could take 10 minutes to complete our survey.

Finally, don't forget to follow us on [LinkedIn](#) and [Twitter](#).

We look forward to the 2nd half of 2024.

Contact us at info@sweet-decarb.ch if you have any questions.

[The DeCarbCH management team](#)



Project Director
Prof. Dr. Martin Patel
UNIGE-EE



Project Deputy
Prof. Dr. Stefan Bertsch
OST-IES



Project Deputy
Prof. Dr. Beat Wellig
HSLU-TEVT



Project Manager
Dr. Gianfranco Guidati
ETHZ-ESC

Upcoming Events

SWEET Conference 2024

Wednesday, 04 September — Eventforum Bern



4 September 2024, Bern

3rd SWEET Conference 2024

The 3rd SWEET Conference offers a platform for exchange between research and implementation. To increase the opportunities for exchange, more time is allocated to the marketplace than last year. The afternoon discussion is dedicated to “Communication to Business and Politics”.

[read more](#)

Zürcher Hochschule
für Angewandte Wissenschaften



School of
Management and Law

EQUIS
seit 2023

AACSB
seit 2015

2. Tagung zum Energie- und Nachhaltigkeitsrecht

Grenzen der Regulierung

Freitag, 30. August 2024, ab 13.00 Uhr
Aula, Volkartgebäude, Winterthur



Building Competence. Crossing Borders.

In Kooperation mit

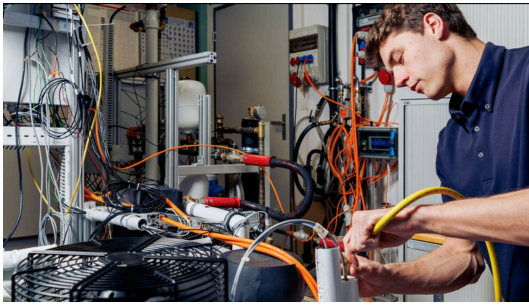


30 August 2024, Winterthur
2nd Conference on Energy and Sustainability Law at ZHAW-IRW

The focus of the conference will be «Grenzen der Regulierung im Energierecht» (Limitations to regulation in energy law). It will be examined under legal, political, technical and economic aspects. Partners from industry and the public are welcome. The participation is free for members of the SWEET DeCarbCH consortium.

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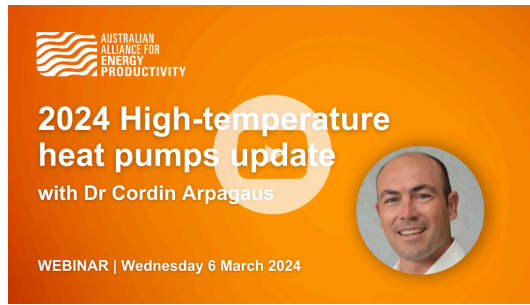
Heat Pumps



29 January 2024
Further training course on Industrial Heat Pumps at OST

The 4-day training course was held for the first time in May/June 2024 and enabled a direct exchange with the experts. Experience was gained in working with high-temperature heat pumps for industrial applications. The next course will take place in September/October 2024. The exact dates will follow.

[read more](#)



6 March 2024
A2HP Webinar 2024: High-temperature heat pumps update

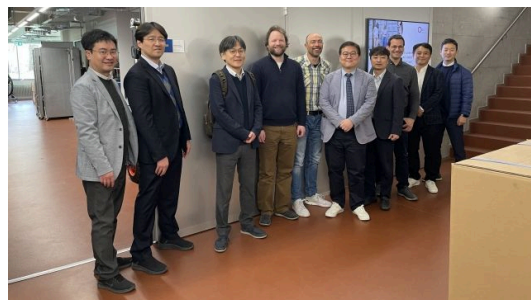
The webinar was organized by the Australian Alliance for Energy Productivity (A2EP) on 6 March 2024. Dr. Cordin Arpagaus from OST presented an update on the latest high-temperature heat pump technology developments and applications. The webinar was recorded, and the PDF presentation slides can be downloaded.

[read more](#)



28 March 2024
Webinar on Steam-Generating Heat Pumps

The Institute for Energy Systems (IES) at OST hosted a Webinar on Steam-Generating Heat Pumps.



11 March 2024
Korean Delegation Team visiting OST IES

The Institute of Energy Systems (IES) at OST in Buchs welcomed a Korean delegation of energy experts

More than 570 participants from over 42 countries participated in the webinar, which was recorded and available on our YouTube channel. The PDF presentation slides are available for download.

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from KRAAC, KIMM and KEIT. The purpose of the visit was to get to know each other, visit the laboratories and the heat pump test center (www.wpz.ch), discuss research trends, and exchange knowledge for future cooperation projects.

[read more](#)



23 April 2024
Final Webinar of the IEA HPT Annex 58 on High-Temperature Heat Pumps

The final webinar on High-Temperature Heat Pumps (HTHP) for industrial applications attracted over 230 participants from around the world. The event took place under the theme HPT TCP Annex 58 HTHP and provided a platform for valuable insights and joint discussions. The webinar recording and PDF presentation slides are available for download.

[read more](#)



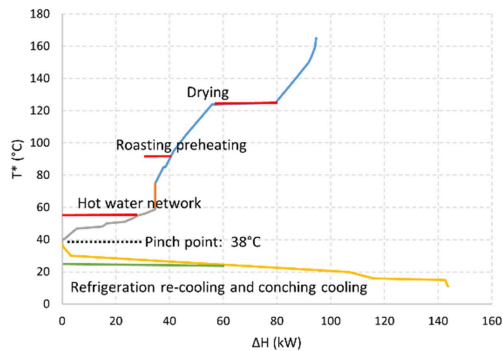
26 June 2024

30th Heat Pump Conference at the Eventfabrik in Bern

The conference covered the market development, challenges and opportunities for heat pump technologies in apartment buildings, energy-plus districts, and industry. A dedicated poster session discussed possible applications of industrial heat pumps and steam-generating heat pumps.

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Process Integration

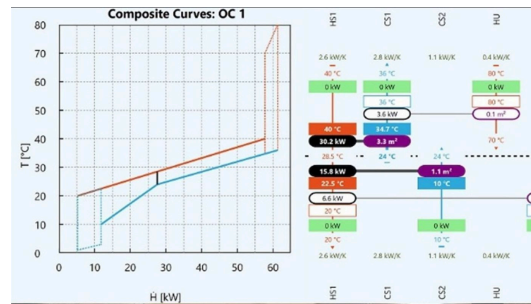


18 July 2024

Heat pump integration in the Swiss chocolate industry

UNIGE-EE and HSLU-TEVT have published a paper on product-specific energy demand profiles. These profiles can be used to identify integration points for heat pumps that are both economically and environmentally feasible. The study in the Swiss chocolate industry shows that heat pumps with a COP of more than 2.6 are generally cost-effective, except for the smallest companies.

[read more](#)



18 July 2024

Insights from the 2024 Course on Energy Optimization with Pinch Analysis

The course from HSLU-TEVT covered Pinch Analysis of continuous processes, batch processes, entire sites, utility system optimization and integration of renewables, thermal energy storage and more. The lab sessions provided detailed insight into the design, equipment and associated costs that are important for designing heat exchanger networks based on Pinch Analysis.

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District Heating

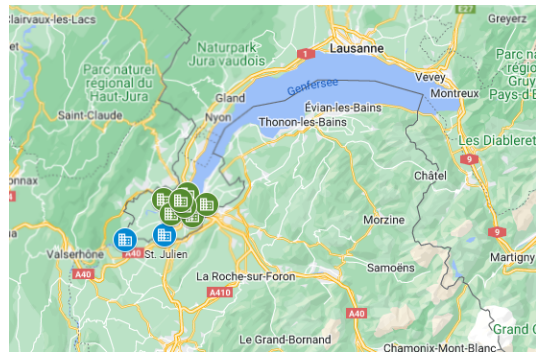


19 June 2023

Spin-off Planeto was awarded 3rd place in ICT at the >>venture>> Startup Competition

Planeto was awarded 3rd place in the >>venture>> Startup Competition (ICT category). In a field of more than 300 submissions, this recognition is truly an honor. Planeto aims to accelerate the energy transition with software that digitizes the planning of district heating networks, saving cost and time.

[read more](#)



23 March 2024

Factsheets on Heat Pumps in Multi-Family Buildings from the University of Geneva

As part of the IEA HPT Annex 62, the Energy Systems Group of the University of Geneva has compiled various case studies of heat pumps in multi-family buildings in Geneva. These factsheets cover multi-family buildings of different years of construction (from 1972 to 2020) and different thermal insulation qualities (non-insulated to very well-insulated buildings).

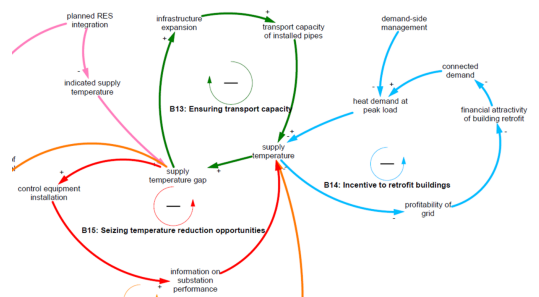
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Socio-Economics



15 July 2024

Survey on sustainability efforts of companies



15 July 2024

Qualitative model of the dynamics of thermal grid

Implementing sustainability in a company is not always easy. Defining and prioritizing specific measures requires expert knowledge. The Institute for Sustainable Development (INE) at ZHAW is investigating the specific hurdles that companies have to overcome and how they can best be supported in their sustainability efforts. We would be delighted if you would take part in our survey.

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integration in cities and municipalities

The Institute for Sustainable Development (INE) at ZHAW has created a qualitative model of the dynamics of thermal grid integration in cities and municipalities. The net-zero targets are forcing municipalities and energy suppliers to examine new options. The federal government and cantons should promote the development of skills and technologies. Energy suppliers should focus their entire business model more strongly on energy efficiency.

[read more](#)

Lunch Talks

HT-HEAT PUMP WITH TEMPERATURE GLIDE

**by Dennis Roskosch (ETHZ)
and Leon Brendel (OST)**

sweet swiss energy research
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LUNCH TALKS SERIES

6 February 2024
**Highly efficient high-
temperature heat pumps with
temperature glide**

[Presentation given by Dennis
Roskosch \(ETHZ\) and Leon Brendel
\(OST\)](#)

INDUSTRY DECARBONIZATION THROUGH ELECTRIFICATION

by Kevin Pahud (E-CUBE)

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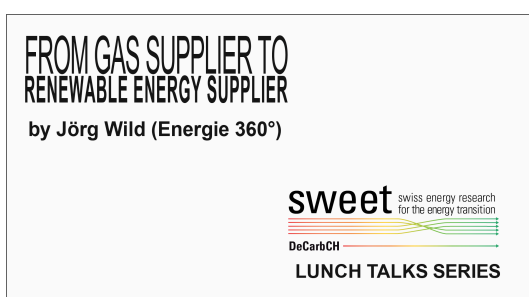
2 April 2024
**Industry decarbonization
through electrification**

[Presentation given by Kevin Pahud
\(E-CUBE\)](#)

*This talk addresses the
electrification potential of the Swiss*

This talk introduces the SNF and Innosuisse-funded bridge discovery project “Highly efficient high-temperature heat pumps with temperature glides” and presents the first results. Heat pumps with temperature glides can increase efficiency and enable higher temperatures. The current knowledge gap is in refrigerant selection and handling in practice.

[read more](#)



2 July 2024

From gas supplier to renewable energy supplier

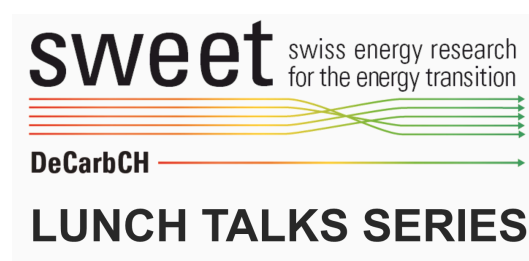
[Presentation given by Jörg Wild \(Energie 360°\)](#)

This talk is about Energie 360 °'s transformation from a gas supplier to a renewable energy supplier by 2040. Energie 360°, based in Zurich and Lausanne, plans, builds and operates energy solutions, invests in electric charging stations and is a leader in biogas, solar systems and wood pellets.

[read more](#)

industrial sector as a key to achieving net zero emissions. It shows that electrification in industrial low-temperature sectors is competitive. Industrial heat pumps are a cornerstone technology in the electrification process that is already competitive with fossil alternatives.

[read more](#)



3 September 2024

SWEET CROSS & SWEET COSI

Presentation given by Adriana Marcucci Bustos, Energy Science Center, ETH Zurich



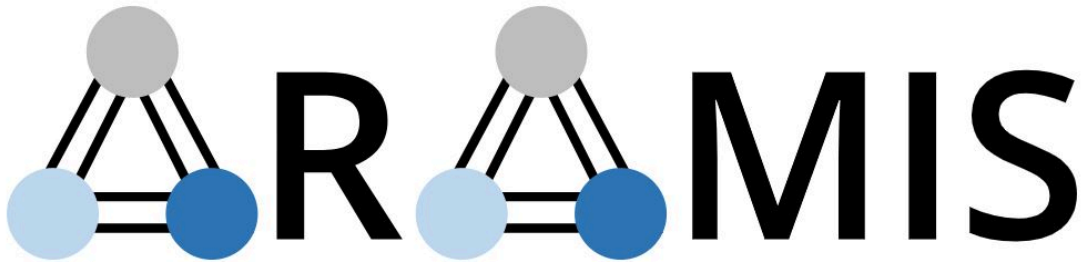


Watch our previous Lunch Talks on our YouTube Channel

1. [*Pinch Analysis*](#)
2. [*Socio-Economic Challenges*](#)
3. [*Industrial Heat Pumps*](#)
4. [*Thermal Networks*](#)
5. [*Long-term Thermal Energy Storages*](#)
6. [*Temperature Reduction in District Heating*](#)
7. [*Solar Energy for Networks / Industry*](#)
8. [*Perspectives on Thermal Grid Modelling under Uncertainty*](#)
9. [*Negative Emission Technologies*](#)
10. [*Case Study – Decarb City of Zurich*](#)
11. [*Renewable Heat: Is it rocket science?*](#)
12. [*Deep geothermal energy to decarbonize the Swiss energy system*](#)
13. [*Bubble in the lake, big thermal storage underwater?*](#)
14. [*Decarbonisation of heat supply of Vienna's district heating system*](#)
15. [*Beyond the Numbers: Why Energy Scenarios Often Fail to Connect with Decision-Makers*](#)
16. [*RESHeat - system for heating, cooling and domestic hot water production for residential buildings*](#)
17. [*Decarbonising New Zealand Industry through Process Integration and Renewable Energy Integration*](#)
18. [*Current legal issues relating to district heating*](#)
19. [*Revolutionary energy storage cycle with carbon-free aluminium*](#)
20. [*Highly efficient high-temperature heat pumps with temperature glide*](#)
21. [*Industry decarbonization through electrification, potential and impacts in CH*](#)
22. [*From gas supplier to renewable energy supplier*](#)

are available on [YouTube](#) and the presentation slides on our [DeCarbCH Website](#).

Deliverables and Highlights



DeCarbCH Deliverables and Highlight Reports are now available on the [ARAMIS](#) data platform

Recent Publications



See our list of 2024 publications

Work Package WP02

1. Abegg, Andreas; Seferovic, Goran: Ausschreibungsverfahren bei Gebietskonzessionen für thermische Netze am Beispiel der Stadt Zürich, sui generis 2024, S. 31-41, <https://doi.org/10.21257/sg.249>

Work Package WP04

1. Bhadbhade, N., Ong, B.H.Y., Olsen, D.G., Wellig, B., Patel, M.K. (2024): Assessment of CO₂ abatement potential of heat pumps using pinch analysis for the Swiss chocolate industry, *Journal of Cleaner Production*, 455, 142323, <https://doi.org/10.1016/j.jclepro.2024.142323>
2. Bhadbhade, N. & Patel, M.K. (2024): Energy efficiency investment in Swiss industry: Analysis of target agreements, *Energy Reports*, 11, 624-636, <https://doi.org/10.1016/j.egy.2023.12.021>

Work Package WP05

1. Bever, P.-M., Bless, F., Arpagaus, C., Bertsch, S.S. (2024): High-Temperature Heat Pumps for Industrial Use, *Chemie Ingenieur Technik*, <http://doi.org/10.1002/cite.202300241>
 2. Brendel, L.P.M, Bernal, S.N., Widmaier, Ph., Roskosch, R., Arpagaus, C., Bardow, A., Bertsch, S.S. (2024): High-glide refrigerant blends in high-temperature heat pumps: Part 1 – Coefficient of performance, *International Journal of Refrigeration*, 165, 84-96, <https://doi.org/10.1016/j.ijrefrig.2024.05.005>
 3. Brendel, L.P.M., Bernal, S.N., Hemprich, C., Rowane, A.J., Bell, I.H., Roskosch, D., Arpagaus, C., Bardow, A., Bertsch, S.S. (2024): High-glide refrigerant blends in high-temperature heat pumps: Part 2 – Inline composition determination for binary mixtures, *International Journal of Refrigeration*, 165, 45-57, <https://doi.org/10.1016/j.ijrefrig.2024.05.012>
 4. Jeßberger, J., Arpagaus, C., Heberle, F., Brendel, L., Bertsch, S.S., Brüggemann, D. (2024): Experimental Investigations of Upscaling Effects of High-Temperature Heat Pumps with R1233zd(E), *International Journal of Refrigeration*, 164, 243-256, <https://doi.org/10.1016/j.ijrefrig.2024.04.023>
 5. Brendel, L.P. M. , Bernal, S.N., Arpagaus, C., Roskosch, D., Bardow, A., Bertsch, S.S. (2024): Experimental Performance Comparison of High-Glide Hydrocarbon and Synthetic Refrigerant Mixtures in a High-Temperature Heat Pump, *Energies*, 17, 1981, <https://doi.org/10.3390/en17081981>
 6. Payá, J., Cazorla-Marín, A., Arpagaus, C., Corrales Ciganda, J.L., Hassan, A.H. (2024): Low-Pressure Steam Generation with Concentrating Solar Energy and Different Heat Upgrade Technologies: Potential in the European Industry, *Sustainability*, 16, 1733, <https://doi.org/10.3390/su16051733>
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All the News on the Website

Any question can be sent to info@sweet-decarb.ch



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SWEET DeCarbCH
Room B 609
Boulevard Carl-Vogt 66
Genève 1205
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