NEFI
NEW ENERGY FOR INDUSTRY

klima+ energie fonds

24.10.24
–
25.10.24

NEFI CONFERENCE 2024

Innovating Together:
Paving the Path to Climate Neutrality

MUSEUMSQUARTIER
VIENNA, AUSTRIA

Registration: www.nefi.at/en/nefi-conference-2024

NEFI+ is the new innovation laboratory of the Climate and Energy Fund's RTI initiative for the transformation of industry. Important practical research and demonstration projects for a climate neutral industry are being developed in six hubs. The innovation network NEFI - New Energy for Industry (AIT Austrian Institute of Technology, Montanuniversität Leoben, OÖ Energiesparverband, Business Upper Austria) supports the development of the innovation hubs with its infrastructure, expertise and existing networks. Significant funding comes from the two strong industrial federal provinces of Upper Austria and Styria. The Climate and Energy Fund's RTI initiative for the transformation of industry is part of the Climate Action Ministry's overarching climate and transformation campaign "Transformation of Industry".

AIT AUSTRIAN INSTITUTE OF TECHNOLOGY
MONTAN UNIVERSITÄT LEOBEN
business upper austria
OÖENERGIESPARVERBAND
VORZEIGEREGION ENERGIE
ober österreich
Das Land Steiermark

PROGRAMME

NEFI
NEW ENERGY FOR INDUSTRY

Day 1
Thursday,
24 October 2024

Overview Day 1

09.30 – 10.00
Check-in and Get-together

10.00 – 10.30
Welcoming and Opening

10.30 – 10.50
Impulse Lecture NEFI+:
The Innovation Lab for the Transformation of Industry

10.50 – 11.30
Keynotes

11.30 – 12.20
Panel Discussion

12.20 – 13.30
Lunch Break

13.30 – 15.00
Parallel Sessions

15.00 – 15.45
Break/ Poster Session

15.45 – 17.15
Parallel Sessions

17.20 – 17.35
Summary and Conclusion of the First Conference Day

17.35 – 18.30
Get-together

18.30 – 21.00
Conference Dinner and Young Scientist Award Ceremony

Sponsors of the event dinner and the Young Scientist Award

ENERGIE STEIERMARK JENBACHER

Breitenfeld Edelstahl

SPH voestalpine ONE STEP AHEAD.

09.30 – 10.00
Check-in and Get-together

10.00 – 10.30 | Arena 21
Welcoming and Opening

BERNHARD GAHLEITNER
Member NEFI Network Steering Committee, AIT Austrian Institute of Technology (AIT)

CORNELIA ERTL
Moderation

LEONORE GEWESSLER
Federal Minister for Climate Action, Environment, Energy, Mobility, Innovation and Technology (BMK)

BERND VOGL
CEO, Climate and Energy Fund, Austria

MARKUS ACHLEITNER
Regional Minister for Economy and Energy of Upper Austria

10.30 – 10.50 | Arena 21
Impulse Lecture NEFI+:
The Innovation Lab for the Transformation of Industry

THOMAS KIENBERGER
Head of NEFI+ and Head of Chair of Energy Network Technology, Montanuniversität Leoben

10.50 – 11.30 | Arena 21
Keynotes:

Keynote 1
International collaboration priorities on industrial decarbonisation

MELANIE JANS-SINGH
Lead Technical Energy Advisor, Department for Energy, Security & Net Zero, UK

Keynote 2
Insights into the OMV Strategy and Perspectives on Hard-to-Abate Emissions, CO_2-neutral Gases, CO_2 Storage and Infrastructure

REINHARD OSWALD
Senior Vice President Value Center Operations OMV Energy

11.30 – 12.20 | Arena 21
Panel Discussion: How Can the Transformation of Industry Succeed?

THOMAS BÜRGLER
Chief Executive Officer, K1-MET

PHILIPP IRSCHIK
Director of Strategy and Business Development, Energie Steiermark AG

THOMAS KIENBERGER
Head of NEFI+ and Head of Chair of Energy Network Technology, Montanuniversität Leoben

ANDREAS KUNZ
Chief Technology Officer, INNIO Group

ELVIRA LUTTER
Mission Director of the Net-Zero Industries Mission

ISABELLA PLIMON
Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology (BMK)

CHRISTIANE EGGER
Moderation, Member NEFI Network Steering Committee, Deputy Manager OÖ Energiesparverband, Manager Cleantech Cluster Energy

12.20 – 13.30 | Ovalhalle
Lunch Break

13.30 – 15.00
Parallel Sessions (see page 4)

15.00 – 15.45 | Ovalhalle
Break / Poster Session (see page 4)

15.45 – 17.15
Parallel Sessions (see page 5)

17.20 – 17.35 | Arena 21
Summary and Conclusion of the First Conference Day

CHRISTIANE EGGER
Member NEFI Network Steering Committee, Deputy Manager OÖ Energiesparverband, Manager Cleantech-Cluster Energy

17.35 – 18.30 | Libelle
Get-together

18.30 – 21.00 | Libelle
Conference Dinner and Young Scientist Award Ceremony

PROGRAMME

Day 2
Friday,
25 October 2024

Overview Day 2

08.30 – 09.00
Check-in and Get-together

09.00 – 09.15
Welcoming and Opening

09.15 – 09.35
Keynote 3

09.35 – 11.05
Parallel Sessions

11.05 – 11.30
Break

11.30 – 13.00
Parallel Sessions

13.00 – 14.00
Networking Lunch

08.30 – 09.00
Check-in and Get-together

09.00 – 09.15 | Arena 21
Welcoming and Opening

DORIAN WESSELY
Member NEFI Network Steering Committee, Cluster Manager Environment, Cleantech Cluster, Business Upper Austria – OÖ Wirtschaftsagentur

SUSANNE MEYER
Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology (BMK)

CORNELIA ERTL
Moderation

09.15 – 09.35 | Arena 21
Keynote 3

An innovation system perspective on industrial transition

JOHANNA MOSSBERG
Chair IETS TCP, Department Manager Resource Efficient Society, Swedish Energy Agency

09.35 – 11.05
Parallel Sessions **(see page 6)**

11.05 – 11.30 | Ovalhalle
Break

11.30 – 13.00
Parallel Sessions **(see page 7)**

13.00 – 14.00 | Ovalhalle
Networking Lunch

PROGRAMME

NEFI
NEW ENERGY FOR INDUSTRY

Day 1
Thursday,
24 October 2024

PARALLEL SESSIONS

13.30 – 15.00

Session 1 - Arena 21
Legislation, Politics, and Business Models

The industrial energy transition depends on regulatory, legal, and policy frameworks that drive the transformation of energy markets and infrastructure. Consequently, this session explores the latest developments in decarbonisation policy challenges, the impact of RED III on third-party access, and the economic effects of digitalisation in energy-intensive industries.

Session Chair

CHRISTIANE EGGER
Energiesparverband Oberösterreich

Impulse Statement
Preserve – Repair – Rebuild – Extend? Insights into Ongoing Discussions on Reforms of the Electricity Market.

CHRISTIAN FURTWÄNGLER
AEA - Österreichische Energieagentur

Policy Challenges in Industrial Decarbonisation: Next Steps for The UK's Cluster-based Approach

ANNA PULTAR
IDRIC, UK Industrial Decarbonisation Research and Innovation Centre

RED III – What Is New for Third Party Access

MARIE-THERES HOLZLEITNER-SENCK
Energieinstitut an der JKU Linz

A Survey on Drivers, Obstacles and Economic Effects of Digitalisation in Energy-Intensive Industry

DANIEL SCHLAR
Chair of Economic- and Business Management, Montanuniversität Leoben

Session 2 - Barock Suite A
Systemic Innovations: Scenarios, Efficiency Potentials

Achieving climate neutrality in industry requires systemic innovations, future scenarios, and strategies that unlock efficiency potentials, provide actionable recommendations, and scale net-zero technologies across various sectors. This session explores the transformation towards a climate-neutral industry, including the integration of geothermal energy, cascading heat utilisation, and the impact of innovative heat pricing on district heating networks.

Session Chair

THOMAS KIENBERGER
Chair of Energy Network Technology, Montanuniversität Leoben

Impulse Statement
Future Scenarios and Strategic Pathways to a Climate-neutral Industrial Sector

KARL STEININGER
Wegener Center for Climate and Global Change

Transform.Industry – Toward Carbon Neutrality in Austrian Industries

VERENA ALTON
AIT

Examination of the Suitability of Industries for the Integration of Geothermal Energy and Cascading Utilisation of Heat Using the Example of Gmunden

ANDREAS HAMMER
Chair of Energy Network Technology, Montanuniversität Leoben

The Impact of a Novel Heat Pricing Method on a Supra-regional District Heating Network

JOSEF STEINEGGER
Chair of Energy Network Technology, Montanuniversität Leoben

Session 3 - Barock Suite B
CO_2-neutral Gases & Green Hydrogen: System Integration

This session focuses on the advancement, production, and integration of CO_2-neutral gases such as green hydrogen, bio-CH_4, and Syn-CH_4, serving as sustainable alternatives to fossil fuels. The session will highlight scientific strategies for optimising and integrating these gases into existing and future energy systems.

Session Chair

CHRISTOPH MARKOWITSCH
Chair of Process Technology and Environmental Protection

Impulse Statement
Industrial Hydrogen in Europe: Production, Infrastructure, and Applications

MARGHERITA MATZER
WIVA P&G

Modelling the Future Hydrogen System: Insights from the Hydrogen Valley "East Austria"

STEFAN STRÖMER
AIT

Strategic Analysis of Regional Biomethane Injection Potential from Agricultural Residues: Leveraging LP Optimisation for Economic Assessment

FLORIAN MARCO MOŽINA
TU Wien

Electrolysis in Distribution Grids: A Regulatory Valuation on Grid-supportive Operation

PHILIPP ORTMANN
AIT

POSTER SESSION

15.00 – 15.45 | Ovalhalle

Economic Analysis on a Green Hydrogen Electrolysis Power Plant in Northeastern Brazil

MAGNO AGUIAR
University of Applied Sciences Upper Austria

Energy Efficiency as an Underrated Key Lever for Industrial Decarbonisation: Data From 71 On-site Efficiency Assessments in the Non-energy-intense Manufacturing Industry

NICOLAS MARX
AIT

Evaluation of the Industrial Synergy Potential in the Industrial Zone of Callao/Peru

JOSEPHIN PAETZOLD
AEE INTEC

Embracing the Potential of Open Strategy in Energy Transition Planning: Partner Selection and Stakeholder Engagement Strategies for Grand Challenges

CHRISTIAN BRUCK
Vienna University of Economics and Business (WU Vienna)

Day 1
Thursday,
24 October 2024

PARALLEL SESSIONS

15.45 – 17.15

Session 4 - Arena 21
NEFI Technology Talk: Innovative DC Solutions in Industry

Innovative direct current solutions can make a significant contribution to the transformation and flexibilisation of industry. They simplify the system integration and coupling of renewable energies through the resource and energy-efficient integration of electrical machines, PV systems, battery storage and e-mobility.

This Technology Talk is dedicated to innovative projects and solutions for the integration and implementation of direct current applications in industry.

Moderation

FRIEDERICH KUPZOG
OVE Österreichischer Verband für Elektrotechnik

Open DC Alliance ODCA – DC Industries

HARTWIG STAMMBERGER
Eaton, Germany

ADC Pilot Factory & Hyperride

GERHARD JAMBRICH
AIT

DCI4CHARGE – Integration of Charging Stations into the DC Grid

ISABELLA BIANCHINI
Fraunhofer IPA , Germany

The NExT Factory

ANDREAS FORSTER
Schaltbau, Germany

Session 5 - Barock Suite A
Industrial Symbiosis and Energy Efficiency

This session will focus on industrial symbiosis, highlighting how collaborative strategies in energy and material exchange can enhance energy efficiency and reduce material and energy consumption. The session focuses on innovative approaches to waste heat recovery, the optimisation of thermo-chemical processes, and the decarbonisation of energy-intensive industries like steel processing.

Session Chair

KERSTIN PFLEGER-SCHOPF
Chair of Energy Network Technology, Montanuniversität Leoben

Impulse Statement
Synergising Industrial Processes: Advancing Energy Efficiency and Decarbonisation

CHRISTOPH BRUNNER
AEE – Institute for Sustainable Technologies

On the Potential of Waste Heat Recovery by Means of Thermoelectricity

OLIVER MAIER
K1-MET

Modelling of a Bidirectional Charging System in an Industrial DC Microgrid

LUCAS EDUARDO MARRA DE LIMA
Fraunhofer Institute for Manufacturing Engineering and Automation

Decarbonisation of Steel Processing

DANIELA LEIBETSEDER
AIT

Session 6 - Barock Suite B
Strategies for Industrial Demand Response

This session explores innovative solutions for managing volatile energy generation through enhanced demand-response approaches in industry and the efficient design of production processes. Contributions will focus on optimising production scheduling, cross-factory energy and production integration, and demand response strategies to improve flexibility in various industrial contexts.

Session Chair

JULIA VOPAVA-WRIENZ
Chair of Energy Network Technology, Montanuniversität Leoben

Impulse Statement
Grid Services in the Paper Industry

PETER PRINZ
Heinzelpaper

Optimised Production Scheduling: A Case Study for the Food and Steel Industries

VANESSA ZAWODNIK
Chair of Energy Network Technology, Montanuniversität Leoben

Cross-factory Production and Energy Optimisation

THOMAS SOBOTTKA
Fraunhofer Austria Research

Flexibilisation of Industrial Energy Systems by Optimisation-based Demand Response

BERND RIEDERER
BEST – Bioenergy and Sustainable Technologies

Day 2
Friday,
25 October 2024

PARALLEL SESSIONS / WORKSHOP

09.35 – 11.05

Session 7 - Arena 21
Techno- economic Approaches to Maximising Industrial Flexibility

This session will focus on techno-economic approaches that maximise industrial flexibility, including innovative solutions for energy-based industrial redispatch provision, and the cost-benefit analysis of flexible systems. Contributions will examine how technological innovations and optimisation strategies can enhance flexibility in various industrial contexts, covering both technical and economic considerations

Session Chair

GUSTAV RESCH
AIT

Impulse Statement
Energy-based Industrial Symbiosis in Climate Neutral Industrial Energy Systems: The Influence of Technological Innovation

KERSTIN PFLEGER-SCHOPF
Chair of Energy Network Technology, Montanuniversität Leoben

A Cost-Benefit Analysis of Industrial Flexibility for Austrian Redispatch Provision

SARAH FANTA
AIT

Industrial Flexibility for Redispatch Provision – An Optimisation-based Approach for Bid Generation

BENEDIKT MAUEL
AIT

Finding a New Balance – Valid Indicators for Techno-economic Energetic Flexibilities

MARTIN PUSTER
Chair of Energy Network Technology, Montanuniversität Leoben

Session 8 - Barock Suite A
Advances in CCU and CCS Technologies

This session focuses on cutting-edge technologies and processes for capturing, utilising, and storing CO_2 emissions, particularly from hard-to-abate industrial sectors. Presentations in this session will explore the application of CCU and CCS technologies in industries like cement, investigate catalytic processes for CO_2 conversion, and introduce innovative methods for characterising materials used in CO_2 methanation, while considering both economic and ecological impacts.

Session Chair

MARKUS LEHNER
Chair of Process Technology and Environmental Protection, Montanuniversität Leoben

Impulse Statement
CCU Implemented in the Cement Industry: Project ZEUS

KATHARINA MAIRHOFER
Net Zero Emission Labs

Development of an Optimal Power Flow Model for CO_2 Network Design

SUSANNE HOCHMEISTER
Chair of Energy Network Technology, Montanuniversität Leoben

Investigating the Reverse Water Gas Shift Reaction on Nickel- and Perovskite-based Catalysts

MARION ANDRITZ
Chair of Process Technology and Environmental Protection, Montanuniversität Leoben

A Time-efficient Characterisation Method for Sorbent Materials Used for Methanation

GAYANEH ISSAYAN
University of Applied Sciences Upper Austria

Session 9 - Barock Suite B
Circular Economy

This session focuses on innovative approaches in the circular economy, showcasing research on waste heat utilisation in thermo-chemical processes, life cycle assessment for sustainable steel industry transitions, and energy, water, and carbon flow optimisation in biopharmaceutical facilities. Presentations highlight key strategies for reducing environmental impact and enhancing resource efficiency.

Session Chair

BETTINA MUSTER
AEE – Institute for Sustainable Technologies

Impulse Statement
Circular Economy – Where are we? Where do we go?

KARIN FAZENI-FRAISL
Energieinstitut an der Johannes Kepler Universität Linz

Optimised Use of Waste Heat in Thermo-chemical Processes for Processing Secondary Raw Materials

JULIA VOPAVA-WRIENZ
Chair of Energy Network Technology, Montanuniversität Leoben

Dynamic Prospective Life Cycle Assessment of Transition Paths for the Steel Industry

LADISLAUS LANG-QUANTZENDORFF
Joanneum Research Forschungsgesellschaft

Energy, Water, and Carbon Flow of a Biopharmaceutical Drug Substance Facility Including Potential Improvements

CORNELIA HAAS
VTU Engineering

Day 2
Friday,
25 October 2024

PARALLEL SESSIONS / WORKSHOP

11.30 – 13.00

Session 10 - Arena 21
NEFI Technology Talk: Decarbonisation of the Paper Industry – Perspectives, Opportunities, and Innovative Solutions

At over 348 808 GWh per annum, the European paper and pulp industry has a particularly high energy demand. What role do energy efficiency, renewable gases, electrification, and the circular economy play in the decarbonisation of this sector? In this Technology Talk, we will explore the challenges and solutions facing the industry. Various system levels – from industry level to site level, and down to the process and component level – will be presented and discussed, with insights into current innovative research projects.

Welcome and Introduction

VERONIKA WILK
AIT

Keynote
Decarbonisation Framework: A Regulatory Wish List of the Pulp and Paper Industry in Austria

DAVID KAINRATH
Speaker for Energy & Climate, Austropapier

Decision Support Tool for Decarbonised Energy Supply at Paper Production Sites, Based on Mathematical Programming

SOPHIE KNÖTTNER
AIT

Decarbonisation of the Paper Industry in Practice: Norske Skog Bruck's Waste-to-Energy Boiler Project

GERT PFLEGER
Norske Skog, Norway

Innovative Solutions for Decarbonising Drying Processes in the Paper Industry

SABRINA DUSEK
AIT

Questions from the Audience and Discussion

Session 11 - Barock Suite A
CO_2-neutral Gases & Green Hydrogen: Modelling and Optimisation

At over 348 808 GWh per annum, the European paper and pulp industry has a particularly high energy demand. What role do energy efficiency, renewable gases, electrification, and the circular economy play in the decarbonisation of this sector? In this Technology Talk, we will explore the challenges and solutions facing the industry. Various system levels – from industry level to site level and down to the process and component level – will be presented and discussed, with insights into current innovative research projects.

Session Chair

GERALD STEINMAURER
University of Applied Sciences Upper Austria

Impulse Statement
Scientific Approaches to Hydrogen Application in Industry

FRANZ WINKLER
HyCentA Research GmbH

On the Advantages of Dynamic Simulations When Modelling Multi-node Blending of Green Hydrogen

DANA ORSOLITS
AIT

Green Hydrogen from Solar: Identifying Effective Dopants and Deposition Methods for Hematite Photoelectrodes

NAZIR TUKUR
University of Applied Sciences Upper Austria

Optimising Large-scale PEM Electrolysis for Green Hydrogen Production: A Comprehensive Techno-economic Case Study

NATALIE FRASSL
AIT