

# 2<sup>nd</sup> ANNUAL MEETING

OF THE ENERGY INNOVATION CENTER (EIZ)

# EIZ

Energie-  
Innovationszentrum  
Cottbus

## Agenda



**Tuesday**  
**June 10<sup>th</sup>, 2025**



**STARTBLOCK B2**  
**Siemens-Halske-Ring 2**  
**03046 Cottbus**

08:45 Foyer Registration & Coffee

09:15 Gelber Saal **WELCOME ADDRESS**  
Prof. Dr.-Ing. Andriy Panchenko, COSYS Lab  
Prof. Dr. p.h. habil. Gesine Grande, President of the BTU  
Stefan Müller, Federal Ministry of Research, Technology and Space

09:30 Gelber Saal **GENERAL PRESENTATION EIZ**  
Prof. Dr.-Ing. Johannes Schiffer & Dr. Jakob Pohlisch, Project Coordinators

10:00 Gelber Saal **KEYNOTE:** Optimization-based Control for Dynamic Frequency Response  
Prof. Alessandra Parisio, Professor of Control of Sustainable Energy Networks at the University of Manchester

10:45 Foyer Coffee Break incl. Poster Exhibition

### PARALLEL SESSION 1

11:15 Gelber Saal **Track A.1**  
Session Chair: Dr. Juan E. Machado

Physically compatible modelling of a counter-flow heat exchanger with application to control model development

Marten Klein, Chao Tang, Max Rose, Jasper Weichmann, Heiko Schmidt, Hannes Gernandt

Multi-objective Optimization of Oxyfuel Combustion for a Power-to-X-to-Power Application

Rufat Asgarzade, Tim Franken, Fabian Mauss

Modernization and Future Perspectives for a High-Voltage Climate Chamber

Robert Ebel, Sandro Ellis, Mario Schenk

Development of a Bidirectional CLLC Resonant Converter for High-Power Energy Storage Applications

Marwan Ahmed, Georg Möhlenkamp, Mirko Nikodinoski, Levani Meskhiya, Kateryna Stolz

This project is funded by the German government with funds from the Structural Development Act (Strukturstärkungsgesetz) for coal-mining regions and co-financed with funds from the state of Brandenburg.

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### PARALLEL SESSION 1

11:15 Kleiner Saal

#### Track B.1

Session Chair: Dr. Tim Franken

Insights in Acceptance of an (i)CCS project from a lab-in-the field experiment  
Leon Fazlik, Christin Hoffmann, [Niklas Ziemann](#), Sandra Soult, Felix Müsgens

Publicly Verifiable Aggregation with Applications to Smart Meter Data  
Maryam Sheikhi, [Ivan Pryvalov](#), Andriy Panchenko

CO2 methanation over Ni catalysts supported on CeO2 and CeSmOx: the influence of Sm addition  
[Sichen Liu](#), Fabian Rachow, Evgenia Charlafti, Raquel Sánchez-Barquilla, Luisa María Gómez-Sainero, Vicente Cortés Corberán, Jan Ingo Flege

The Role of Boundary Slip in Turbulent Thermal Convection: Vortex Dynamics and Heat Transfer Enhancement  
[Sai Ravi Gupta Polasanapalli](#), Marten Klein, Heiko Schmidt

11:15 Trainingssaal,  
2<sup>nd</sup> floor

#### Track C.1

Session Chair: Mirko Nikodinoski

System Modeling and Validation of a Power-to-X-to-Power (P2X2P) Energy Conversion Chain  
[Monang Vadivala](#), Tim Franken, Fabian Mauss

Efficient Simulation of Wall-Bounded Turbulent Flows with Prospective Industrial Applications using ODTLES  
[Pavle Marinković](#), Juan A. Medina Méndez, Marten Klein, Heiko Schmidt

Dimensionierung eines Multi-Energiespeichers für netzrelevante Speichermengen im Bereich bis zu 600 MW  
[Kateryna Stolz](#), Georg Möhlenkamp, Mirko Nikodinoski  
(PRESENTATION IN GERMAN)

A Finite-Time Convergent Primal-Dual Gradient Dynamics  
[Oscar Taxis-Loaiza](#), Angel Mercado-Uribe, Jaime A. Moreno, Johannes Schiffer

12:30 Foyer

Lunch

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### PARALLEL SESSION 2

13:30 Gelber Saal

#### Track A.2

Session Chair: Dr. Fabian Rachow

A new hierarchical particle mixing approach for stochastic engine models

Tommy Starick, Tim Franken, Heiko Schmidt, Fabian Mauss

Smells like Green Energy: The Impact of Bioenergy Production on Residential Property Values in Germany

Christin Hoffmann, Shanmukha Srinivas Byrukuri Gangadhar, Felix Müsgens

A cost-optimal predictive operation scheme for sectorcoupled energy plants with start-up delays and start-up costs

Gökçen Devlet Şen, Juan E. Machado, Johannes Schiffer

Experimental and Numerical Investigation of a CO<sub>2</sub> Methanation Reactor for Powerto-Gas Applications

Rakhi Verma, Evgenia Charlafti, Vivien Günther, Fabian Rachow, Binod Raj Giri, Sichen Liu, Jan Ingo Flège, Fabian Mauss

13:30 Kleiner Saal

#### Track B.2

Session Chair: Dr. Ivan Pryvalov

A Modular Control Platform for a Hybrid Hydrogen-Battery Storage Prototype

Levani Meskhiya, Georg Möhlenkamp, Mirko Nikodinoski, Marwan Ahmed, Kateryna Stolz

Fair Heat Sharing in District Heating Systems: A Shifted Passivity-based Approach

Juan E. Machado

Simulation of grid restoration with black-start capable power plants using the Power System Simulator (PSS)

Alexander von Auw, Dirk Lehmann, Mario Schenk, Marcel Kotte

Pressure and Temperature Dependent UNIQUAC Model for Methanol-Water Mixtures

Adina Werner, Jongmin Kim, Fabian Mauss

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### PARALLEL SESSION 2

13:30 Trainingssaal,  
2<sup>nd</sup> floor

#### Track C.2

Session Chair: Dr. Marten Klein

Betriebsverhalten von Blockheizkraftwerken

Julian Metag, Tom Scheppan, Tine Fischer, Dirk Lehmann, Mario Schenk

(PRESENTATION IN GERMAN)

Investigating radius ratio effects of tubular heat exchangers with a stochastic turbulence model

Pei-Yun Tsai, Marten Klein, Heiko Schmidt

Comparative study of anion exchange membrane water electrolyzers using commercial membranes and non-precious metal catalysts

Shiva Kumar Sampangi, Ramakrishna Siripalli, Betty Tietzmann, Mohamed Elasmr, Lars Röntzsch

Synthetic attack generation for Energy Network and Industrial Control Systems

Fabio Cangeri, Mario Alviano, Andriy Panchenko

14:45 Foyer

Coffee Break

15:00 Gelber Saal

#### **KEYNOTE:** 10 Years of Attacking and Defending Industrial Control Systems

Dr. Nils Ole Tippenhauer, Head of the Scy-Phy research group at the CISPA Helmholtz Center for Information Security

15:45 Foyer

Coffee Break incl. Poster Exhibition

### PARALLEL SESSION 3

16:15 Gelber Saal

#### Track A.3

Session Chair: Dr. Oscar Taxis Loaiza

Hydrogen Evolution in Water Electrolysis on Iridium, Platinum nanoparticle and Iridium-Platinum nanoalloy supported on porous carbon electrode

Farid Taherkhani, Tim Franken, Fabian Mauss

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### PARALLEL SESSION 3

#### Track A.3 (continued)

Session Chair: Dr. Oscar Taxis Loaiza

16:15 Gelber Saal Investigating the Impact of Forcing Mechanisms on Passive Scalar Mixing Using Stochastic One-Dimensional Turbulence  
Abhishek Joshi, Marten Klein, Heiko Schmidt

A Novel Storage Power Plant Topology and Its Corresponding Validation Laboratory Model  
Mirko Nikodinoski, Georg Möhlenkamp

16:15 Kleiner Saal

#### Track B.3

Session Chair: Dr. Niklas Ziemann

Towards an improved wall model for turbulent annular pipe flows  
Li-Toong Yap, Marten Klein, Heiko Schmidt, Juan Ali Medina Méndez, Nishidh Shailesh Naik Burye

Systemüberblick sektorgekoppeltes MicroGrid mit zentralem Leitsystem am EPS-Lab  
Tom Scheppan, Julian Metag, Tine Fischer, Dirk Lehmann, Mario Schenk  
(PRESENTATION IN GERMAN)

Ammonia cracking under high pressure conditions for a hydrogen fuel cell: reactor conditions and kinetics

Vivien Günther, Fabian Rachow, Jan Ingo Flege, Fabian Mauss

16:15 Trainingssaal,  
2<sup>nd</sup> floor

#### Track C.3

Session Chair: Dr. Shiva Kumar Sampangi

Assessing Energy Security Risks: Implications for Household Electricity Prices in the EU  
Sulaman Muhammad, Christin Hoffmann, Felix Müsgens

Dynamic Interface Formation in CeOx/NiO/Ni(111) Inverse Catalysts: Insights from Growth Model and Electronic Interaction  
Raquel Sánchez-Barquilla, Dominic Guttman, Carlos Morales, Fabian Rachow, Jan Ingo Flege

Irreversible port-Hamiltonian modeling of sector-coupling elements  
Arijit Sarkar, Jan Küpper, Juan E. Machado, Hannes Gernandt, Johannes Schiffer

17:45 Entrance

Start outside the Building: **LAB TOURS**

18:45 Gelber Saal

**Dinner and Get Together**

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