

SDU Center for Energy Informatics

University of Southern Denmark (SDU.DK)

Research areas

Smart Industries – The research focuses on developing ICT centered solutions for improving the energy efficiency and predictability of energy intensive industrial processes, without compromising process and product quality.

Smart Cities and Communities – The research investigates synergies between energy supply and demand patterns for energy networks in cities and rural communities to improve energy efficiency, increase integration of renewable sources, and provide resilience towards system faults caused by extreme weather situations, like hurricanes and flooding.

Smart Energy Business Ecosystems – The research aims to integrate a multi-disciplinary approach to investigating and developing innovative solutions for the smart energy sector from a business ecosystem perspectives.



Smart Energy Networks – The research focuses on developing ICT based solutions for coordinating the supply and demand in environmentally sustainable energy networks, including; electricity, gas, district heating and cooling, with storage, such as geothermal storage.

Smart Buildings – The research focuses on developing ICT based solutions for improving the energy efficiency of existing buildings and ensuring the energy performance of buildings certified according to energy efficiency and sustainability standards like ENERGY Star, LEED and Green Globes.



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- **Industrial Energy Systems, Decarbonization, Digitalization**
- **Process and System Integration & Optimization, Operational Planning, Sector Coupling**
- **Big Data Analytics, Artificial Intelligence (AI), Digital Twin Technology**
- **Business Models and Feasibility Analysis and Modeling**

Energieinstitut an der JKU Linz

Overview

- Non-university research institute, founded in 2001
- Legal form: Association - not profit-oriented
- Around **45 employees** working on 100 R&D projects p.a.
- In the three scientific departments of **Energy Economics, Energy Law and Energy Technology**, we conduct holistic research especially in the following areas:
 - Energy Infrastructure
 - Energy Behavior, Commitment & Acceptance
 - Market Design & Regulation
 - Industrial Processes, Industrial Symbiosis & Circular Economy
 - Hydrogen & CCUS & Power-to-X
 - Energy Communities & Demand Flexibility
- Involved team members:
 - **Dr. Simon Moser (Key Researcher)** – Industrial Symbiosis & Industrial Decarbonization
 - **Gregor Riha DI (Junior Researcher)** – Industrial Energy Efficiency



Project Team



Univ. Prof. **René Hofmann**
Head of the Institute of Energy
Systems and Thermodynamics
and the Research Unit Industrial
Energy Systems



Univ. Ass. **Martin Fischer**
PhD Candidate at the
Research Unit Industrial
Energy Systems

Research Focus

Net-Zero Transition and Energy Efficiency
measures for the integration of **renewable**
energy sources

AI for Energy Systems and Digital Methods
for Energy-Intensive Industry

Digital Twins and Optimization for real-time
monitoring and optimal energy control

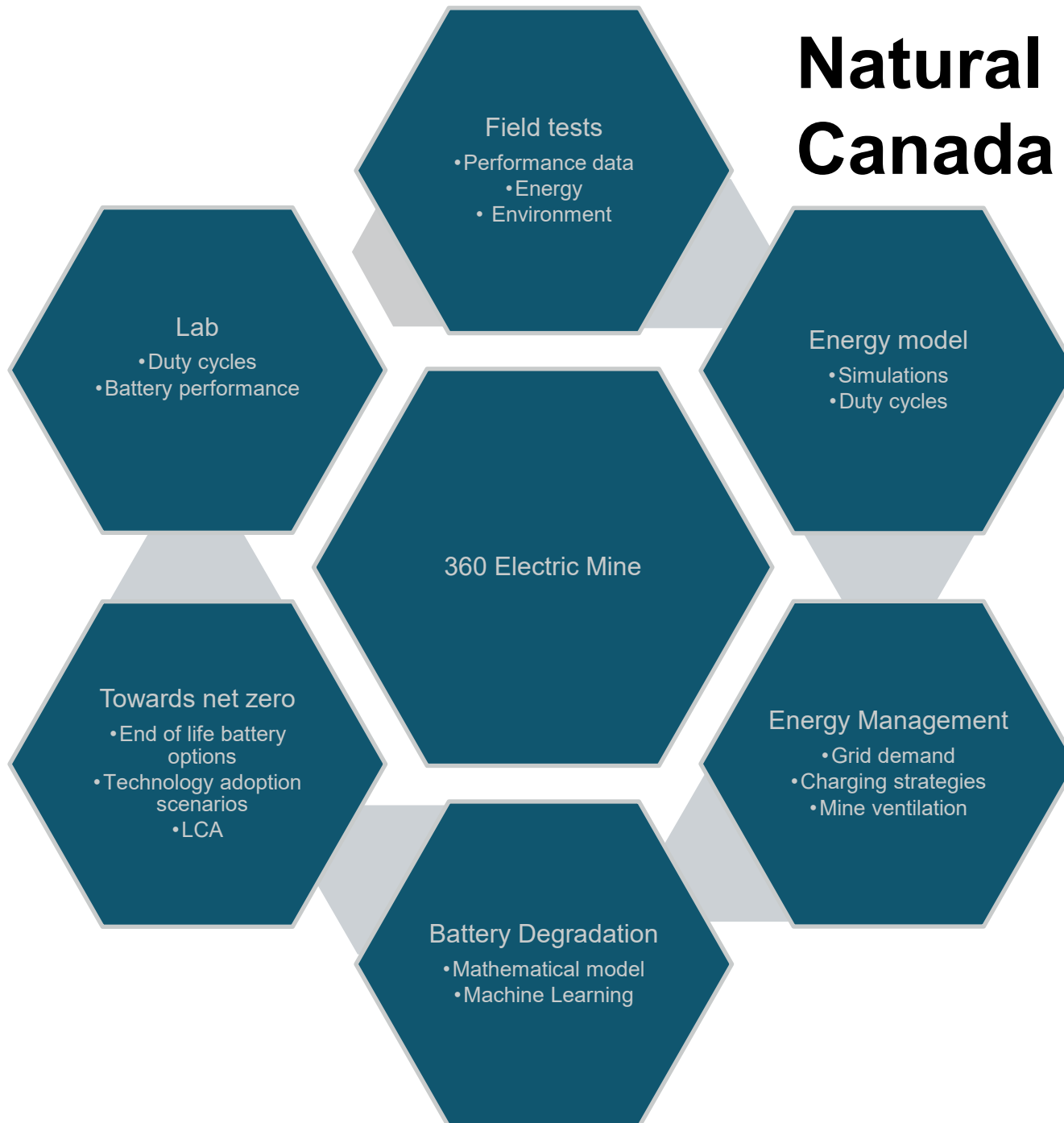
Expertise

Modelling and Optimization of Energy Intensive
Systems and Processes

Demand Side Management and Flexibility for
Industrial Energy Systems



Natural Resources Canada – BEV Team



- Michelle Levesque: energy management and decarbonization
- John Le: mining vehicle design and performance testing
- Enrique Acuna: mine ventilation, optimization
- Connie Smith: mining engineering and energy management
- Osama Asa'd: energy efficiency and heat transfer
- Zhenhuan Xu: Machine Learning
- Manish Pal: battery testing, sensors and instrumentation

IRIT / University of Toulouse

- Research focus
 - Energy efficiency and sufficiency for large scale Cloud/HPC systems
 - Scheduling, simulation, experimentation, monitoring, multi-objective optimization
- Links between datacenters, renewable energies, usage, climate change
- Flexibility for users and usage of large scale datacenters (Cloud and HPC)
- Example, [DataZero2](#) (National funded research project), a 100% renewable powered datacenter
- National groups
 - [NumPEX](#) : Digital for Exascale
 - French national project,
 - [Drocc](#) : The Occitanie regional data centre
 - Participants
 - Georges Da Costa as an initial point of contact

Institution name: Politecnico di Milano, Department of Architecture and Urban Studies

Research focusses relevant to Task XXII:

- Development of building energy optimization and metamodeling applications;
- Socio-environmental simulation game experimentations;
- Open-source advocacy in urban and architectural environmental design.

Names, positions, and expertise of the team members involved in the task:

- Gian Luca Brunetti, PhD, Associate Professor – building simulation, building optimization, metamodeling;
- Matteo Clementi, PhD, Associate Professor – urban simulation, GIS analysis
- Valentina Dessì, PhD, Associate Professor – building simulation, urban simulation
- Alessandro Rogora, PhD, Full Professor – building simulation, environmental design, lighting analysis.



ISEP – Instituto Superior de Engenharia do Porto

GECAD - Research Group on Intelligent Engineering and Computing for Advanced Innovation and Development

Zita Vale – Principal Coordinator Professor
Fernando Lezama – Auxiliary Researcher
Pedro Faria – Auxiliary Researcher

Wholesale and Local Electricity Markets

Energy communities

Energy resources management

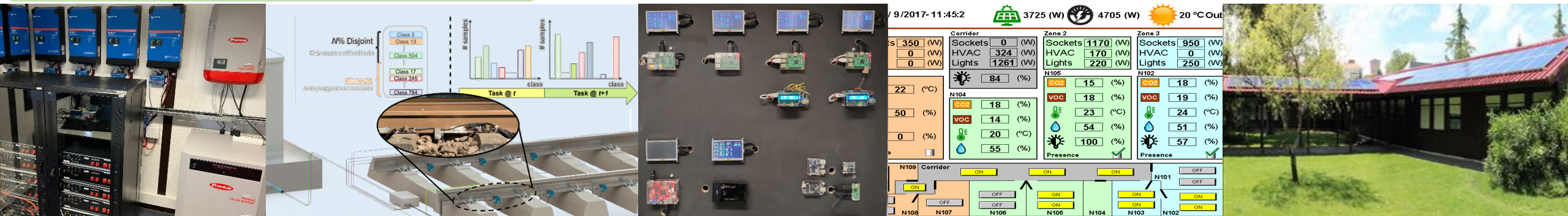
Digital Industry

Smart Cities

Forecasting (load, generation, etc)

Demand Response

Electric Vehicles





Who are we – KTH Byggvetenskap

Byggvetenskap is dedicated to the research and education in the areas of

- **Renewable integrations for buildings and energy systems**
- **Building informatics and control/BMS systems**
- **Energi resilience & circularity for the built environment**

Key contributions

Energy resilience and robustness analysis for energy-intensive industries of the built environment

- **Industry need assessment and feasibility analysis**
- **Adaptation strategies, scenarios and future research roadmaps**
- **Engaging AI/data-driven methods to understand the potentials to mitigate risks for such industries across their lifecycle**



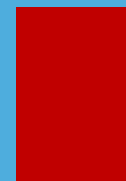
Qian Wang

Project Leader
KTH



Youssef Elomari

Postdoc researcher



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New PhD student

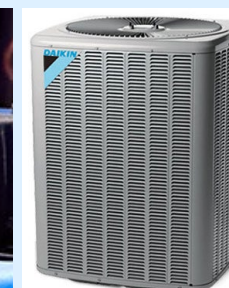


Annika Gram

Project Leader
KTH



- Concrete/cement industries
- Heat pump industries
- HVAC industries

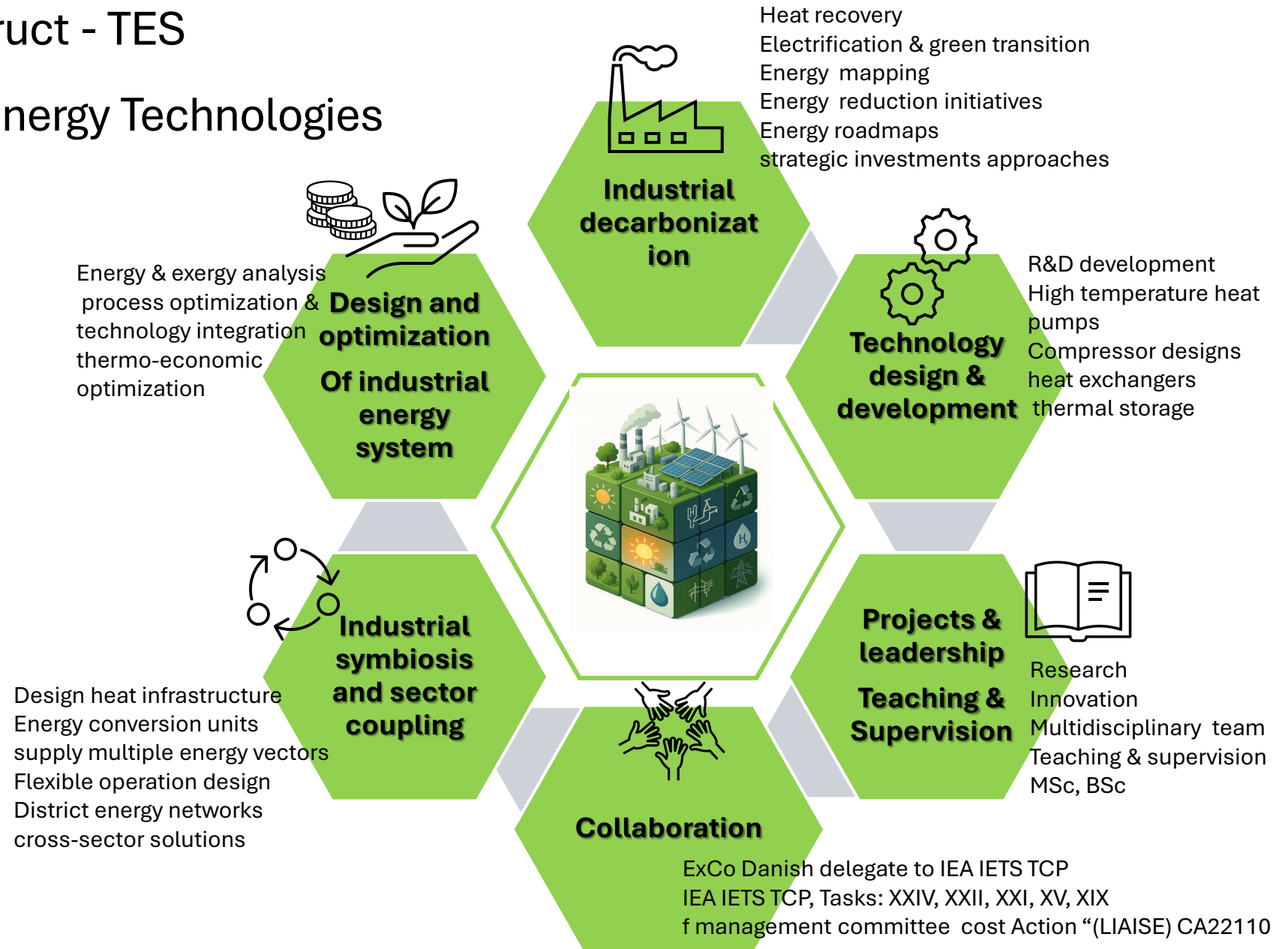


DTU Construct - TES

Sustainable Thermal Energy Technologies



Nasrin Arjomand Kermani
Senior Researcher
Energy Specialist
DTU Construct
Thermal Energy section





Climate, Energy & Environmental Resilience



Overview

Independent French consultancy founded in 2020 (Chambéry, Savoie) after 20+ years of industrial experience (chemicals, polymers, global operations).

Mission: Support organisations toward carbon neutrality and climate resilience by 2050.



Expertise

Decarbonization strategies & industrial emissions reduction

Climate-risk assessment & adaptation planning

Circularity & sustainability (LCA, carbon accounting)

Organisational transformation: skills, governance, and change management



Team

Juliette Jannes – President, chemical-industry & LCA specialist

Maxime Katgely – CEO, materials/polymers engineer, circularity & climate risk

Climate & Resilience Consultants:
Clémence Denarier, Vincent Stella, Gibran Rueda Pla, Léa Rewaha-Ferrapie



Relevance to Task XXII

Expertise in climate-risk, industrial decarbonization, LCA, and organisational resilience, supporting cross-sector analysis and scenario development.