

KETs2026 reloaded – EU brokerage event September 24, 2026 (and beyond) | online



Workshop 4 - Energy Storage & Bioeconomy

Michael Wessel

German Industrial NCP (PtJ)

Online, 24 September 2026

Pitches by the Participants

1. Pierre Beaujean (University of Namur)
2. Stefan Simm (Coburg University of Applied Science)
3. Mara van Welie (European Science Communication Institute)
4. Ahmed Osman (Canterbury Christ Church University)
5. Lolade Kumolu (OCEAN MINT)
6. Jochen Zausch (Fraunhofer ITWM)
7. Ralph Lano (Technische Hochschule Nürnberg)
8. Yusra Hambal (SKZ - German Plastics Center)
9. Haijun Ruan (Coventry University)
10. Lachezar Tsenov (Hydrogenera)
11. Jimun Yoo (Forschungszentrum Jülich)
12. Balázs Mogyorósi (LC Innoway)
13. Hadi Vatankhah Ghadim (University of Canterbury)

Pierre Beaujean (University of Namur)

Laboratoire de chimie théorique (University of Namur)

- **Location:** French-speaking part (Wallonia) of Belgium (in Namur)
- **Scientific goal:** predicting and understanding the structural, optical, and electrical properties of molecules, polymers, supramolecular assemblies, and molecular crystals.
- **Key methods:** development and application of quantum-chemical approaches, and simulation and interpretation of advanced electronic and vibrational spectroscopies.
- **Impact:** contributions to multidisciplinary projects (TRL < 4) aimed at designing new materials with exceptional optical, electronic, and magnetic properties.
- Recently, part of an inter-university project on batteries, combining theory and experiment: ECOBAT (<https://eos-ecobat.eu/>)



Our expertise on batteries

- **What we do:** using quantum chemistry methods, we uncover the mechanisms behind battery performance, stability, and degradation.
- **How we do it:** combining state-of-the-art DFT and in-house methods, and HPC optimization on Tier-2 to Tier-0 supercomputers (e.g. LUMI).
- **Why it matters:** we offer realistic modelling of electrolytes, SEI, and electrode materials, with direct links to experiments via IR, Raman, XPS, and XAS simulations.

We are particularly interested in the RIA **HORIZON-CL5-2027-05-Two-Stage-D2-07** (*novel approaches towards next-generation battery concepts, leveraging the enabling role of innovative advanced materials*)



Contact details



All contact info and more
on my
website <https://pierrebeaujean.net>



Contact person

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B2Match profile	https://www.b2match.com/e/kets2026-reloaded/participants/3617125
LinkedIn	https://www.linkedin.com/in/pierre-beaujean/

Stefan Simm

(Coburg University of Applied Science)

Coburg University of Applied Sciences



Research Professor Stefan Simm

What are your core strengths?

- Multi-Omics and Bioinformatics
- Explainable AI and Data Science
- Abiotic stressors in plants



City/country:

Coburg / Germany

Research areas:

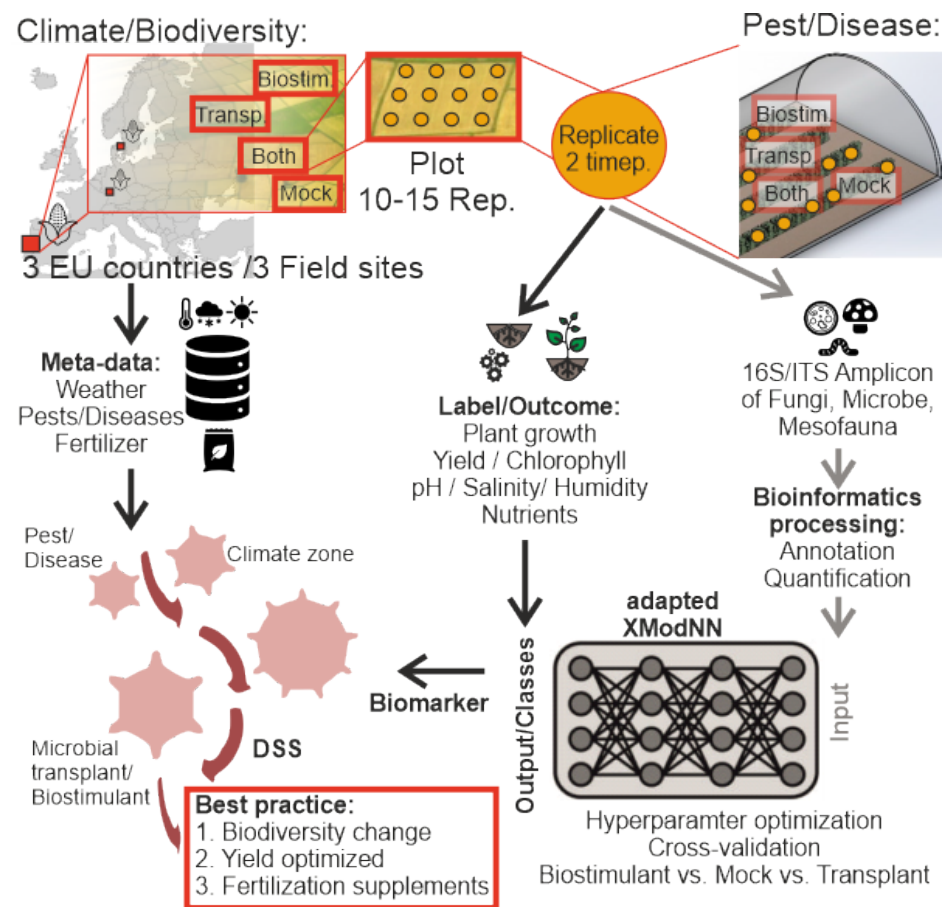
Data Science / Explainable AI / Bioinformatics / Microbiology / SMART & Precision Farming and Forestry

Type of organization:

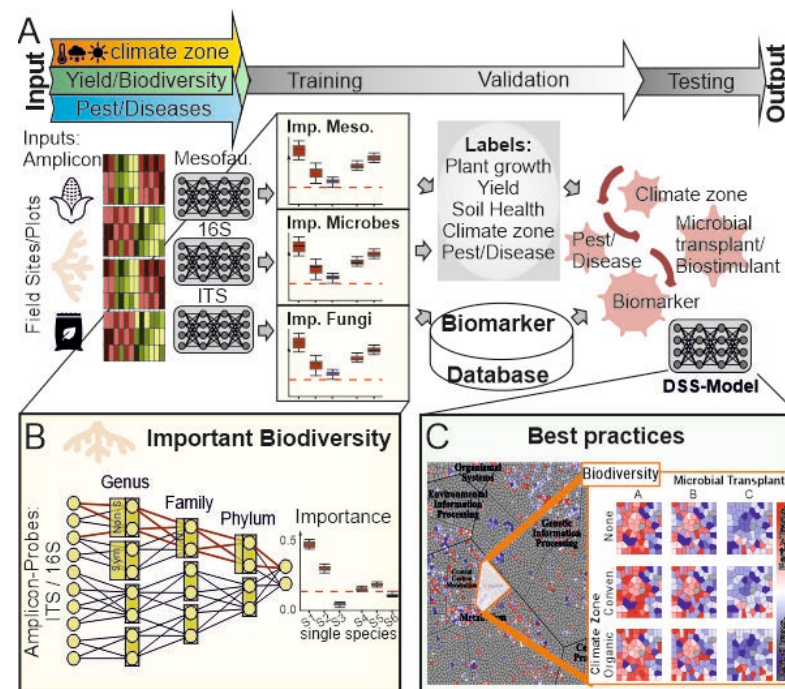
University / Research institute

Project idea /expertise

- Global collaboration action on climate, environment and one health.



- Global collaboration action towards better prevention, treatment and clinical management of HIV co-infections or co-morbidities.



Project track record/
existing partnerships

ArtIFARM –Artificial Intelligence in Farming

- Optimizing Fertilizer via Drones
- Automized Roe Deer Detection

AIMS – Artificial Intelligence meets space

XAI-TABS – Explainable AI for Antibiotic Stewardship

AI4Coping – Artificial Intelligence for Hygiene Microbiomes

Bioreforest – Microbiome and AI for reforestation strategies

GreenTRaint – Teaching to implement sustainable agriculture/ conservation biodiversity

COST Actions: ReCROP and MiCROPBiome

Contact details

Contact person

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**Mara van Welie
(European Science Communication
Institute)**

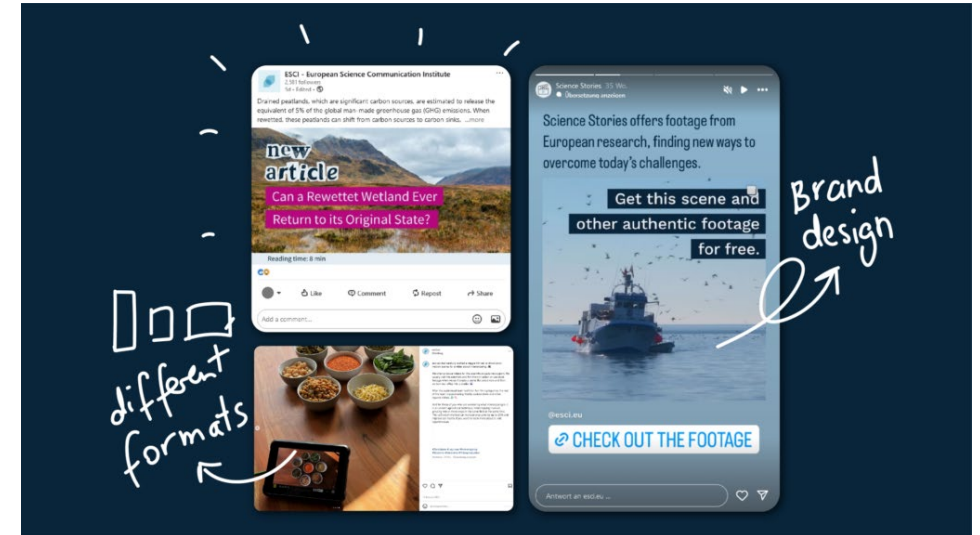
European Science Communication Institute (ESCI)

- Non-for-profit organization founded in 2016 specialized in Science Communication
- Based in Oldenburg (DE) – with experts in Belgium, France, UK, Greece, the Netherlands & Sweden
- Led Communication and Dissemination Work Packages in more than **55 EU Research and Innovation projects** (H2020 / Horizon Europe)
- Supporting EU proposal applications



ESCI expertise

- **Science Journalism & Outreach** - 200+ articles published, in 15 countries and 10 languages since 2022
- **Graphics** – Logo design, website design, infographics, animations, brochures, booklets, etc.
- **Video production** - incl. development of MOOCs
- **Social media** – strategi campaigns, incl. monitoring and evaluation
- **Training** – on everything SciComm
- **Citizen engagement** – science talks, hackathons, living labs, serious boardgames, etc.



Contact details

Contact person	Dr. Mara van Welie
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B2Match profile	Mara van Welie
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Ahmed Osman (Canterbury Christ Church University)

FROM WASTE & CARBON TO NET-ZERO INDUSTRY

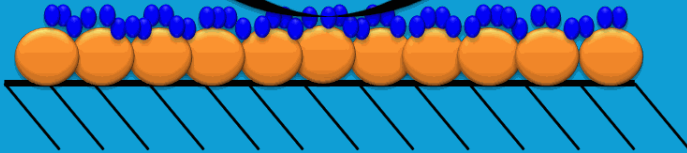
Seeking Horizon Europe 2027 partners for circular construction, biochar, hydrogen and industrial decarbonisation

Industrial decarbonisation, hydrogen,
CCUS/CDR & LCA/TEA

P1 — Methane partial oxidation



400°C



Ni/CeO₂-ZrO₂/ZSM-5

P4 — Hydrogen-rich syngas

Pd-Pt-Ti-Ni/ZSM-5

~55% H₂ yield at 600 °C

H₂/CO ≈ 2.8

~70% H₂ yield at 650 °C

H₂/CO ≈ 2.15



P5 — Ultralow-Pd catalyst

0.02 wt% Pd

~80% CH₄ conversion / ~77% H₂ yield at 600 °C

>70% H₂ yield maintained for 30 h

Circular construction, biochar &
waste-derived materials



Industrial application-fuel exhaust

- Pd-coated monolith
- Activity near 300 °C

ATMOSPHERIC CO₂ REMOVAL



Pilot-scale biochar unit

Dr Ahmed I. Osman

Senior Lecturer in Energy

Engineering

Canterbury CC University,

United Kingdom

ahmed.osman@canterbury.ac.uk



LOOKING FOR PARTNERS

- Horizon Europe 2027 coordinators
- Industrial partners and end-users
- Materials manufacturers and waste/feedstock owners
- Demonstration sites and scale-up collaborators
- Hydrogen, circular construction and clean-industry consortia

Lolade Kumolu (OCEAN MINT)



- Institutional information on your organisation: University of Lincoln, Brayford Pool , Lincoln LN6 7TS
- Your skills and expertise: Sustainable Innovation Development
- Past experience in EU-funded projects (if any)- No
- You can use text, diagrams, photos, etc. to present your organization-



Due to the limited time, the space to present your organisation is strictly limited to one slide – additional slides will be removed by the organiser and will not be available during the Brokerage Event!

Maximum size of the file: 2 MB!

Deadline to send your presentation: 20th of September 2026

Contact: Michael Wessel – m.wessel@ptj.de

Project idea /expertise

- Material innovation and adoption - Distribution channel and Logistics management /platform

and/or: Port Decarbonisation transition Roadmap strategic approach , to de-risk and reduce dependency on fossil fuels, towards renewable solutions. Using secured innovative platform Ocean Mint Exportable Traceability Network to generate data for Taxes and fleet control.

Expertise in material sourcing and innovation

- Description of what you can offer to other proposals or request from partners: Biomass solution for clean energy, industrial materials and alternative Advanced material like biochar, pallated cassava peel fibre ,support biochar carbon credit project. Exploring carbon opportunity and develop the project through carbon feasibility and potential assessment.

Approved space: One slide (!)

Contact details

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Jochen Zausch (Fraunhofer ITWM)

Organisation name

- Institutional information on your organisation
- Your skills and expertise
- Past experience in EU-funded projects (if any)
- You can use text, diagrams, photos, etc. to present your organization

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Contact: Michael Wessel – m.wessel@ptj.de

Fraunhofer Institute for Industrial Mathematics ITWM

Applied Mathematics for Industry



- Divisions: Analytics & Computing, Mathematics for Vehicle Engineering, Optimization, Processes and Materials

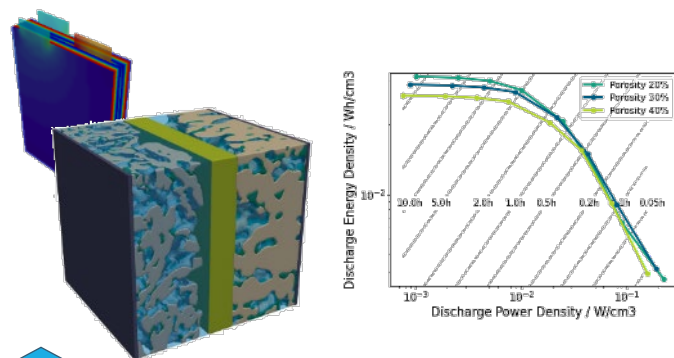
Department "Flow Processes"

Modeling, simulation, optimal design and software tools for fluid dynamic applications

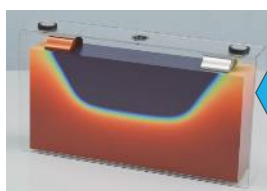
- complex rheology
- dynamics of threads, fibers and filaments
- filtration and separation
- energy networks
- electrochemistry



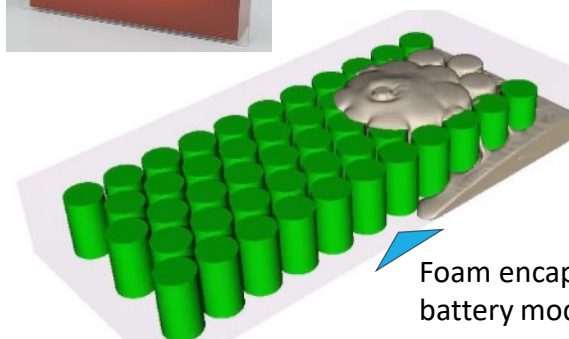
Simulation of lithium ion cell operation and battery production processes



Multiscale simulation of Li-ion cells for cell design from material to system scale. **BEST**



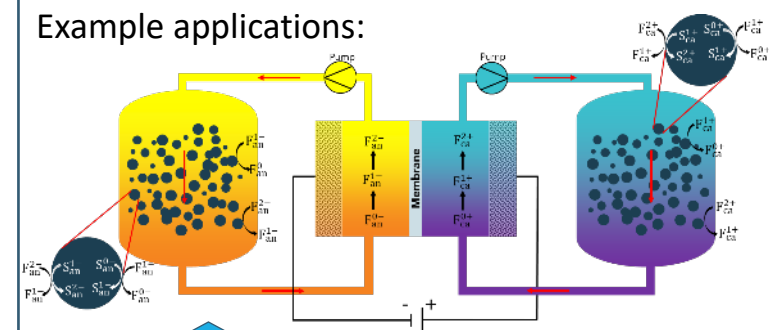
Simulation of the electrolyte wetting process



Foam encapsulation of battery modules

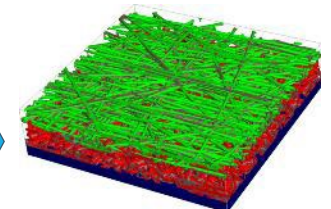
Modeling for electrochemical systems

Example applications:

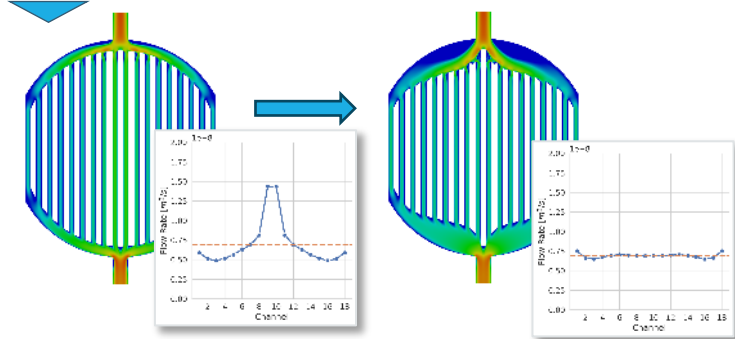


redox flow batteries

Microstructure design of electrodes for fuel cells/electrolyzers



Automated shape optimization of flow fields



Contact details

Contact person	Dr. Jochen Zausch
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Ralph Lano **(Technische Hochschule Nürnberg)**

Technische Hochschule Nürnberg

Thermal energy storage research for renewable heat

Dr. Ralph Lano, Professor

- PhD in Theoretical Physics
- Thermal modelling and simulation
- Experimental prototype development
- Measurement, data analysis and system modelling

Dr. Bastian Raab, Professor and Chair

- PhD in Mineralogy
- Refractory and inorganic materials
- Materials durability and high-temperature behaviour
- XRF / XRD material characterization

Relevant TH Nürnberg capabilities

- Thermal-storage prototype construction and testing
- Material characterization
- Thermal RC modelling and simulation
- Scale-up from 0.3 → 2.6 → 13 kWh

Workshop preference: Energy storage · Cluster 5



Prof. Dr. Ralph Lano



Prof. Dr. Bastian Raab

Project idea / expertise

High-temperature mineral storage for renewable heat and infrastructure retrofit

Concept

- High-temperature store based on magnetite
- High volumetric heat capacity combined with slow effective heat transport
- Charge from surplus renewable electricity
- Discharge through heat exchanger into an existing district-heating network
- Key idea: the storage layer also acts as thermal buffer

Why it can succeed

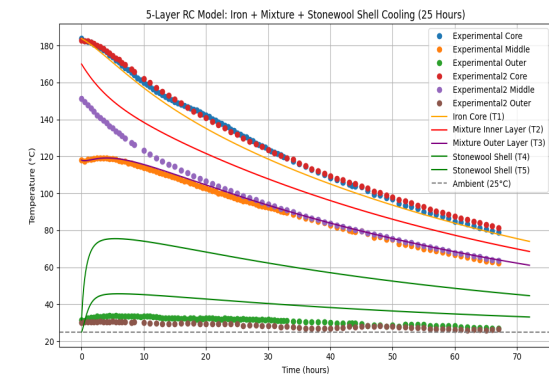
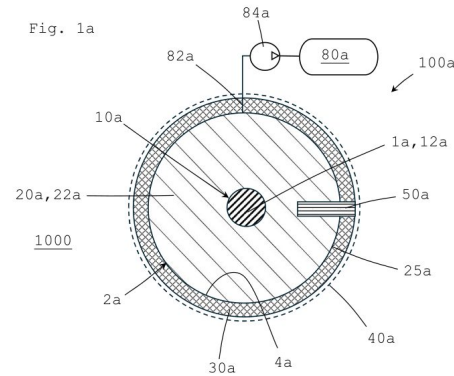
- 13 kWh prototype built and tested
- Multi-hour redistribution and multi-day storage behaviour experimentally observed
- Thermal models validated against prototype data and used for scale-up studies
- Patent application: DE 10 2026 122 227.7

Proposed Horizon Europe project

- Scale from research prototype to MWh-class thermal storage
- Retrofit / repurpose existing district-heating or energy infrastructure
- Demonstrate charging from renewable electricity and heat delivery to the network
- Evaluate performance, safety, economics and environmental impact

Partners sought

- District-heating operator / infrastructure owner
- Thermal-system / plant engineering company
- High-temperature equipment / insulation partner
- European demonstration site / energy-system partner



Goal: demonstrate low-cost mineral thermal storage as a flexible renewable-heat buffer for existing energy infrastructure.

Contact details

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B2Match profile	[to be added]
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Preferred workshop: energy storage (Cluster 5). Project focus: long-duration thermal storage for renewable district heating and reuse of existing energy infrastructure.

Open to joining or co-developing a Horizon Europe consortium for MWh-scale thermal-storage demonstration.

Yusra Hambal

(SKZ - German Plastics Center)

SKZ - German Plastics Center

Shaping the Future of Plastics: Materials, Processing, Testing, Circular Economy & Digitalization



Non-profit



130+ Scientists & Engineers



50+ Trainers



430
Industry Partners



25.000 m²
Laboratories &
Technical Facilities



600+
Industrial
Projects



100+
Publicly Funded
Projects pa.



600+
Events pa.



13.000+
Participants pa.

Material development

Battery Slurries, Additives &
Functional Fillers, Biobased
Coatings & Inks, Composites

Processing

Compounding, Extrusion, Blow
Molding, Thermoforming, Injection
Molding, Adhesive Bonding,
Surface Technology

Measurement & Testing

Mechanical & Thermal Testing,
Non-Destructive Testing, Surface
Characterization, Suspension
Properties

Circular Economy

Recycling Methods, Recycled
Materials, Design for Recycling,
Sustainability and Life Cycle
Assessment

Digitalisation Digital Infrastructure, Data Collection, Data Analysis, AI, Simulation



- **3** successfully completed EU Projects
- Partner in **2** ongoing EU-Projects:
 - Batmachine (Boost Europe's sustainable industrial battery cell manufacturing value chain)
 - AUTOLOOP (automated sorting, tracing and closed-loop recycling technologies for textiles)
- **9** contributions in **Autumn 2025** in Cluster 4 & 6; **8** contributions in **Spring 2026** in Cluster 4
- **Experience** with CORNET, EUROSTARS, EUREKA, IraSME

Advanced Material Development & Testing

Bioeconomy

- Biobased coatings and inks for functional surfaces
- Mechanical performance of biobased polymers in chemical environments
- Accelerated thermo-physical and thermo-oxidative ageing of bio-based and recycled polymers
- Data-driven prediction of long-term mechanical properties

Energy Storage

- Hydrogen permeation and barrier-performance analysis of lightweight hydrogen storage materials
- Thermal cycling and durability assessment of lightweight materials for liquid hydrogen storage
- Formulation and production of sustainable battery slurries and binders for lithium-ion and sodium-ion batteries

Circular Economy

- Development of sustainable deinking, decoating and paint-stripping technologies
- Advanced characterization and fingerprinting of recyclates using hyperspectral imaging and spectroscopic methods
- Micro-computed tomography (micro-CT) for impurity detection in recycled polymers

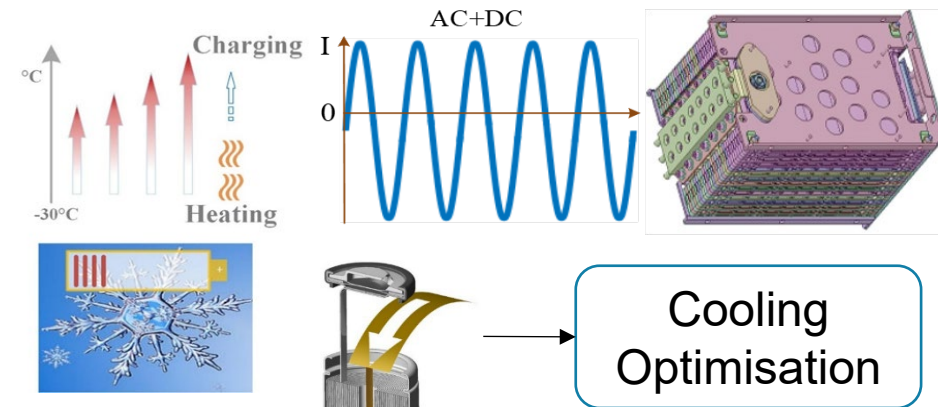
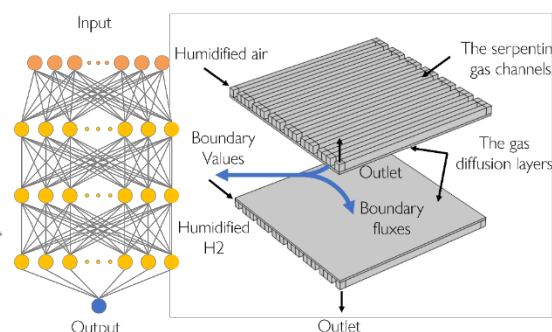
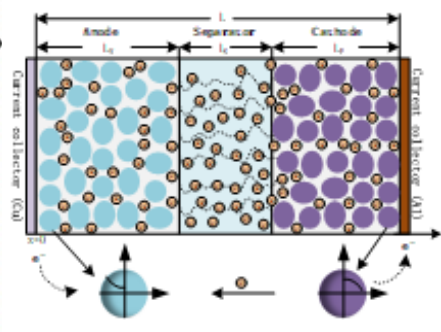
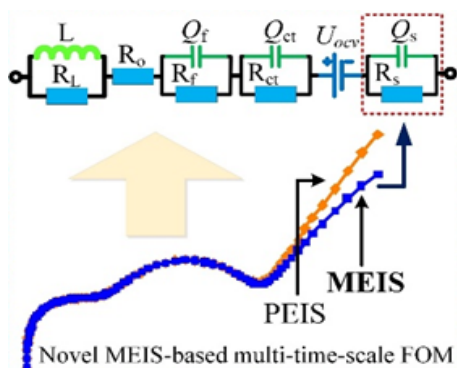
Contact details

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B2Match profile	Yusra Hambal KETs2026 reloaded
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Haijun Ruan (Coventry University)

- Haijun Ruan, Assistant Professor, [Leverage AI to innovate battery production & Applications](#)



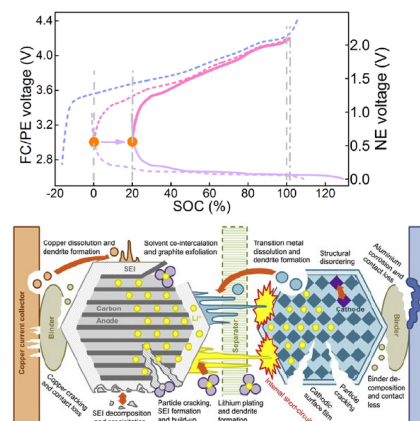
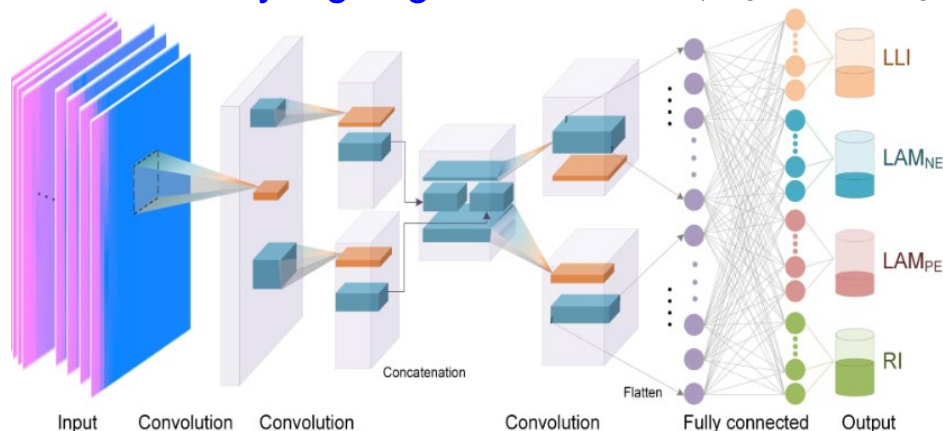
Multi physics modelling; AI-accelerated models

(Multi physics characterisation; accelerated testing)

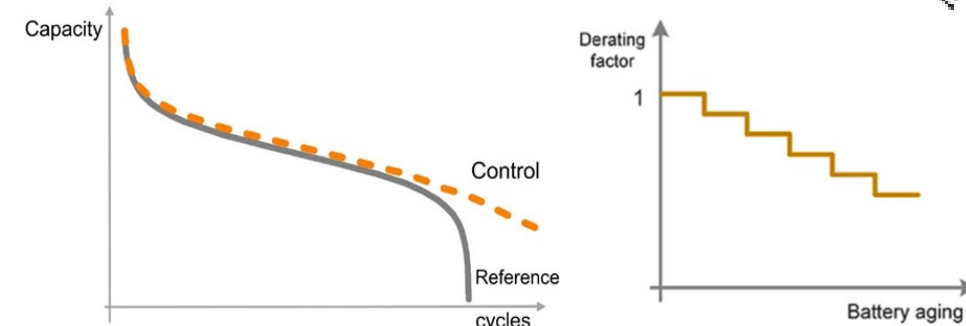
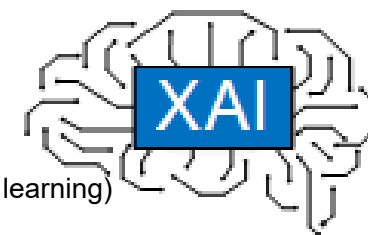
AI for Batteries

AI-enhanced Fast charging (Smart charging);
Thermal management (Optimal preheating & cooling)

AI-driven degradation mode diagnostics;
Stoichiometry; ageing mechanisms (Degradation prognostics & lifetime forecasting)



Intelligent lifetime extension;
AI-enabled derating control (Predictive control; eXplainable AI; reinforcement learning)



- HORIZON-CL5-2027-02-D2-06: Sustainable and Competitive Cell Production Techniques for Lithium-ion And Sodium-ion Batteries
 - ✓ **Optimization** of dry-room cell assembly processes: [AI-enabled process optimisation](#)
 - ✓ Establishment of rapid and energy-efficient cell **formation** processes, significantly shortening formation and aging times: [AI-driven diagnostics/prognostics](#)
 - ✓ **Digitalisation** of the production line, including in-line quality testing and identification of defects: [AI-powered fault diagnostics](#)
- HORIZON-CL5-2027-03-D2-05: Improvement of Adaptability, Flexibility and Efficiency of Existing Recycling Processes
 - ✓ **Optimization** of hydrometallurgical and/or pyrometallurgical processes for enhanced recovery rates of critical raw metals: [AI-enabled process optimisation](#)
 - ✓ Robust and **digitalised sorting** technologies and other advanced pre-treatment technologies: [AI-driven diagnostics/prognostics](#)
- CL5-2027-05-Two-Stage-D2-07: Novel approaches towards next-generation battery concepts, leveraging the enabling role of innovative advanced materials
 - ✓ Solutions for enhanced safety, **thermal management**, **performance monitoring**, and **predictive diagnostics**: [AI-driven diagnostics/prognostics](#).
 - ✓ Solutions for **extended cycle life**: [Battery lifetime extension](#); [AI-based Material optimisation](#) & [performance monitoring](#)
- CL5-2027-06-D2-08: Demonstration for Long-duration Battery Energy Storage Systems
 - ✓ Integrate [advanced digital technologies](#): accurate [SOC](#), [SOH](#), [lifetime predictions](#), [optimize](#) BMS, [EMS](#), & component performance for extended system [longevity](#).
- HORIZON-CL5-2027-03-D5-18: Enhanced electric operation and battery durability
 - ✓ **Improved lifetime** and safe use of batteries in waterborne transport; Address the **degradation** and failure in specific maritime operating conditions
 - ✓ Creating concepts for rapid zero-emission in-route charging, **fast charging**, offshore charging or battery replenishment.
- CL5-2027-03-D5-05: Higher Voltage, Megawatt Charging System compatible, modular powertrain for Heavy Duty Vehicles (HDV)
 - ✓ **Fast charging** methods that extend battery lifetime (both fast, long life and safe): [AI-powered battery lifetime extension](#)
 - ✓ Battery **modular design** that would favour **second-life applications** to further enhance sustainability: [AI-driven diagnostics/prognostics](#)
- HORIZON-CL5-2027-03-D5-03: Data-driven circular economy for e-mobility ecosystem
 - ✓ **Digital-twin** based circularity product passport on vehicle level, which is interoperable / compatible with the upcoming [battery passport](#).
 - ✓ Advanced battery **thermal management** methods, including preheating and cooling
 - ✓ AI enabled/improved life-cycle management.

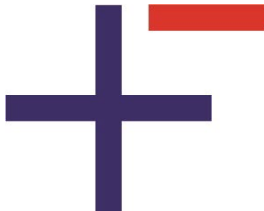
Contact person	Haijun Ruan	Organisation	Coventry University
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We deliver ≥5 EU projects relevant to batteries:

SUCCESSOR

HEALING
BAT

 THE FARADAY
INSTITUTION

 **SeNSE**
sense-battery.eu


energetic

BEYOND  REC

Lachezar Tsenov (Hydrogenera)

HYDROGENERA

INSTITUTIONAL INFORMATION

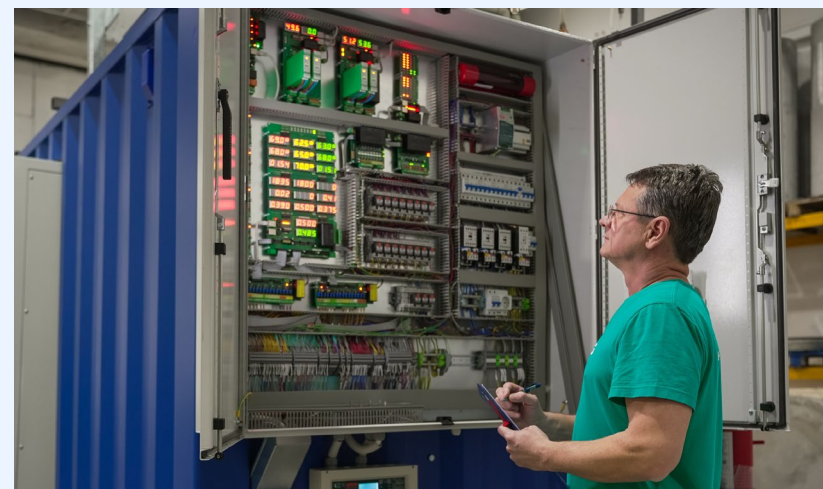
- ✓ Bulgarian hydrogen technology company with in-house **R&D, engineering, manufacturing and commissioning**
- ✓ **100+ integrated hydrogen systems** delivered
- ✓ Focused on hydrogen production, storage, compression and industrial applications

SKILLS AND EXPERTISE

- ✓ **Alkaline electrolyzers** and multi-MW system integration
- ✓ **Metal-hydride hydrogen storage and compression**
- ✓ **Hydrogen-based industrial decarbonisation**
- ✓ Complete system engineering: **BoP/BoS, gas treatment, controls and safety**

EXPERIENCE IN EU-FUNDED PROJECTS

- ✓ **I3 – ENSA**
- ✓ **Horizon Europe – HYPPOS**



Second-life metal hydride: closed-loop recovery of AB5 hydrogen-storage alloy

MAIN IDEA To recover AB5 (LaNi₅-type) alloy from end-of-life NiMH batteries, faded storage canisters and off-spec powder, and re-melt it into working hydrogen-storage alloy instead of dissolving it into elements

WHOLE-BATTERY ROUTE

Anode gives back the alloy, cathode nickel becomes the nickel feed of the same melt

PRODUCT

Recycled-content AB5 alloy and MH canisters, plus, canister take-back

WHY IS IT NEEDED

- ✓ Lanthanum, nickel and cobalt in AB5 alloy are EU critical raw materials
- ✓ The hybrid packs sold in 2010-2020 are now retiring across Central and Eastern Europe, and NiMH is still fitted in new hybrids
- ✓ Conventional recycling recovers the elements but destroys the engineered alloy, so no route today returns this material to functional use

THE IDEA WILL SUCCEED, BECAUSE :

- ✓ **It runs on our existing line: in-house vacuum induction melting and canister production, off-spec re-melting is already tested**
- ✓ Feedstock is growing worldwide (spent NiMH ~180 kt in 2025, >300 kt by 2035)
- ✓ Element recovery pays for nickel and mixed rare-earth oxide; a short-loop re-melt keeps the engineered alloy, worth several times more per kg

LOOKING FOR PARTNERS

- ✓ Collector or dismantler of end-of-life NiMH batteries, ideally in Central and Eastern Europe
- ✓ Universities or research groups with expertise in batteries and/or battery recycling
- ✓ Off-takers and host sites for field testing of recycled-content MH storage

Contact details

CONTACT PERSON

Lachezar Tsenov

ORGANISATION

HYDROGENERA

COUNTRY

BULGARIA

E-MAIL

l.tsenov@hydrogenera.eu

B2MATCH PROFILE

[Lachezar Tsenov](#)

LINKEDIN

[Lachezar Tsenov](#)



Lachezar Tsenov

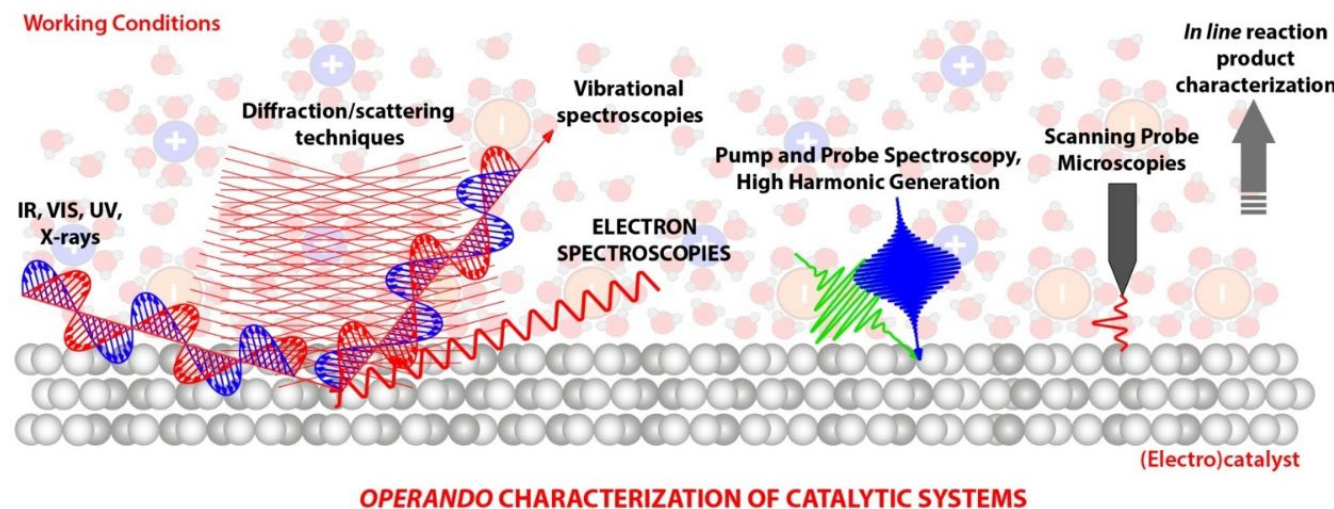
*Director of Business Development
and Strategic Partnerships*

Jimun Yoo

(Forschungszentrum Jülich)

IHE-1, Forschungszentrum Jülich

- IHE-1 institute at Forschungszentrum Jülich investigates energy-based conversion and storage processes at solid-liquid interface, where electrode material structure, interfacial solvation, ion transport, and charge-transfer kinetics jointly determine energy device performance. By combining ***operando* spectroscopy and microscopy** on functional electrode-electrolyte interface, we reveal dynamic interface processes under realistic operating conditions.
- IHE-1 has expertise:
 - Multi-modal *operando* characterizations of electrified solid-electrolyte interfaces and interphases.
 - Complementary X-ray scattering and spectroscopic methodologies for identifying key parameters to lead electrochemical performances.
 - *Operando* X-ray-based analyses including scattering, diffraction, reflectivity, absorption, and photoelectron spectroscopies
 - Deriving key guideline for advanced material or system parameter design for optimal energy device performance.

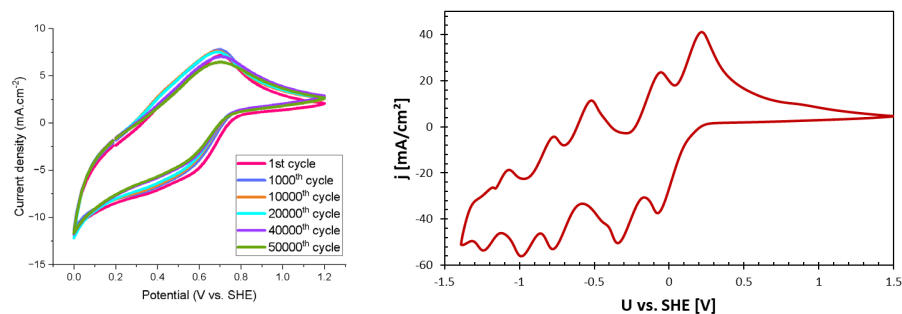


J. Phys. D: Appl. Phys. 2021, 54, 173001

Foundational and scalable understanding across scales → Rational design of and new concepts for improved materials

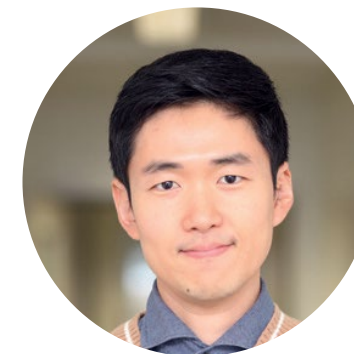
Redox Flow Battery Suitable for GWh Capacity

Storage of renewable electricity is of great importance and much less expensive than extending the grid. Redox flow batteries have the principal capability of realizing GWh capacity and GW power. Current systems suffer from high costs, stability, environmental issues. The proposed approach uses inorganic metal complex ions with multiple charge states in aqueous solution of high concentration with 100-150 Wh/l specific capacity. Some of these complexes have been explored to be very stable, environmentally benign, of fast kinetics (see figures, PV14 as posolyte, SiW12 as negolyte). Complexes based on W and V are however expensive and therefore complexes with cheaper metals like Fe, Mn, Sn, Al, Zn will be synthesized and characterized and then selected on the basis of redox suitability, stability, being environmentally benign, suitability of mass production etc.. Lab tests will be done with single redox flow cells and, in close contact with industry, systems will be selected for upscale.



Contact details

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Dr. Jimun Yoo



Prof. Dr. Hans-Georg Steinrück

Péter Mogyorósi **(LC Innoconsult International)**

LC Innoway Nonprofit Kft.

Our skills and expertise: 12 experts/7 PhD

Our references

Project partner

- **4 H2020** – 3 of them WP leader
- **4 BBI & CBE** – 3 of them WP leaders
- **7 HEU** – 6 of them WP leaders
- **1 CLEANH2 JU** – WP leader

External service provider

- 40 FP7 and H2020 projects (ESICII, CEB, SSERR)
- 40+ H2020 projects as Horizon Results Booster expert
- 4 projects from the market

Key player in the field of Exploitation

Exploitation

- Commercialization roadmap
- Business model
- Business plan
- Risk Analysis

Monitoring innovation

- Market analysis
- Techno economic feasibility study
- Stakeholder engagement
- Bankability analysis

Knowledge management

- Background IP
- FTO
- IP strategy
- IP Ownership

Communication and Dissemination

- D&C guideline and plan
- Raising public awareness
- Disseminating the generated knowledge

Contact details

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Hadi Vatankhah Ghadim (University of Canterbury)

Why partner with us?



Research Excellence and Capacity

Our team

- Part of a top 100 department (QS, 2026)
- NZ's largest energy systems group

Our skills

- Highly resolved multi-sector energy pathway modelling
- Renewables, storage, and power-to-X integration
- Techno-economic and uncertainty analysis
- Prospective lifecycle assessments (LCA) inc. hotspots



Selected Research Highlights

Selected projects

- NZ-German Platform for Hydrogen Integration (~3M NZD): Binational project with the German Aerospace Center, involving over 15 researchers
- Derisking Carbon Dioxide Removal at Megatonne Scale in Aotearoa (~10M NZD): National Endeavour project spanning across 10 institutions.

Selected publications

- Applied Energy (2026): [Can distributed hydrogen production improve the earthquake resilience of power systems?](#)
- Nature Scientific Data (2026): [Projected hourly and regional energy demand for power heat and transport in New Zealand to 2050](#)
- Cleaner Production (2026): [Environmental impacts and trade-offs for New Zealand's energy system](#)
- Applied Energy (2025): [Are we too pessimistic? Cost projections for solar photovoltaics, wind power, and batteries are over-estimating actual costs globally](#)



Strategic Context: New Zealand

- Highly renewable power system (~90%) with nodal marginal pricing
- Advanced residential heating decarbonisation (80% in Christchurch), high smart meters roll out, and time-of-use tariffs
- Natural testbed for system resilience (earthquakes, floods, fires, extreme weather, volcanoes)
- Ideal conditions for synfuels innovation (cheap electricity, storage, biomass, low interest rates, land)
- Strong community and Māori engagement
- Remote and isolated: contrasting case study to European systems (energy security), and a model for remote regions (island systems)

Process Industries

HORIZON-CL4-2027-02-MAT-PROD-32-two-stage

Efficient energy input from renewable sources and energy management in the process industries

Call priorities that match our capabilities

- At least 20% GHG reduction through renewable electrification, hybrid heat and energy integration.
- Storage-enabled operation under variable renewable supply, validated in industrial pilots with a credible scale-up case.

Capabilities we offer to partners

- Optimise industrial energy hubs that coordinate renewable electricity, process heat, hydrogen and storage.
- Compare electrified and hybrid heat pathways, equipment sizing and operating strategies.
- Quantify GHG avoidance, lifecycle impacts, system costs and robustness under uncertainty.
- Develop spatial resource assessments and pilot-to-scale techno-economic scenarios.

Best SERG role: system integration, optimisation, independent impact assessment and scale-up evidence. We contribute to multi-vector optimisation, Power-to-X integration and technology-cost analysis across both calls.

Long-duration battery storage

HORIZON-CL5-2027-05-D2-08

Demonstration for Long-duration Battery Energy Storage Systems (BATT4EU Partnership)

Call priorities that match our capabilities

- System-level demonstration of novel battery storage lasting more than eight hours for grids or industrial consumers.
- Quantified resilience, emissions and cost impacts, including hybridisation, digital energy management and scale-up planning.

Capabilities we offer to partners

- Define high-value grid and industrial use cases using time-resolved power-system models.
- Jointly size and dispatch LDES, renewables and flexible demand, including hybrid storage portfolios.
- Independently assess techno-economics from measured performance: CAPEX, OPEX, lifetime, efficiency and safety provisions.
- Evaluate system value, uncertainty and energy-security benefits across future scenarios.

Sustainable Energy Research Group (SERG),
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Resilience of
Energy Systems
& Climate Risk

Urban and
Distributed
Energy Systems

Carbon Negative
Systems
and Power-to-X
Technologies

Multi-Sector
Energy Transition
Pathways



Presenter

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