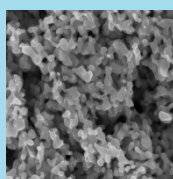
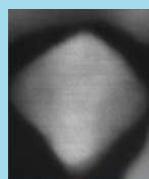


Technical Electrocatalysis Laboratory

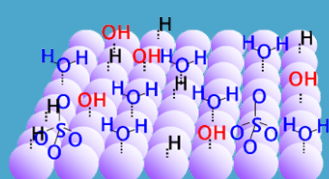
Advanced Materials for Energy Conversion and Energy Storage



Design of Materials

Model & Real Electrode Systems

Spherical mono-metallic & multi-metallic NPs
Shape-controlled NPs
Polycrystalline films
Single Crystals
Processes



Understanding of Electrochemical Reactions

Fuel Cells

Oxygen Reduction
Hydrogen Oxidation
Alcohol Oxidation

Electrolyzers

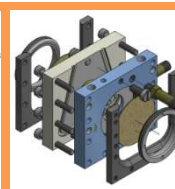
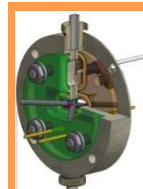
Oxygen Evolution
Hydrogen Evolution
CO₂ Reduction



Development of Electrochemical Tools

Techniques

Rotating Ring-Disk Electrode (RRDE),
EC flow cells and
Test stations for H₂-O₂ fuel cell and PEMWE



Use of Advanced *in-situ* & *ex-situ* Tools

Microscopy

HR-(S)TEM, SEM, AFM

Spectroscopy

XPS, EDX, EELS, FT-IR,
Raman, ICP, DEMS, XAS

Diffraction

XRD, HT-XRD

Education

B. Sc. Chemistry, B. Sc. Sustainable Energy Systems and Electromobility
M. Sc. Chemistry, M. Sc. Sustainable Energy Systems



visit our website

Joint Research Project: Hydrogen Terminal Braunschweig



H₂ "ecosystem" demonstration facility
*Consideration of the electricity, natural gas,
hydrogen and heat network*

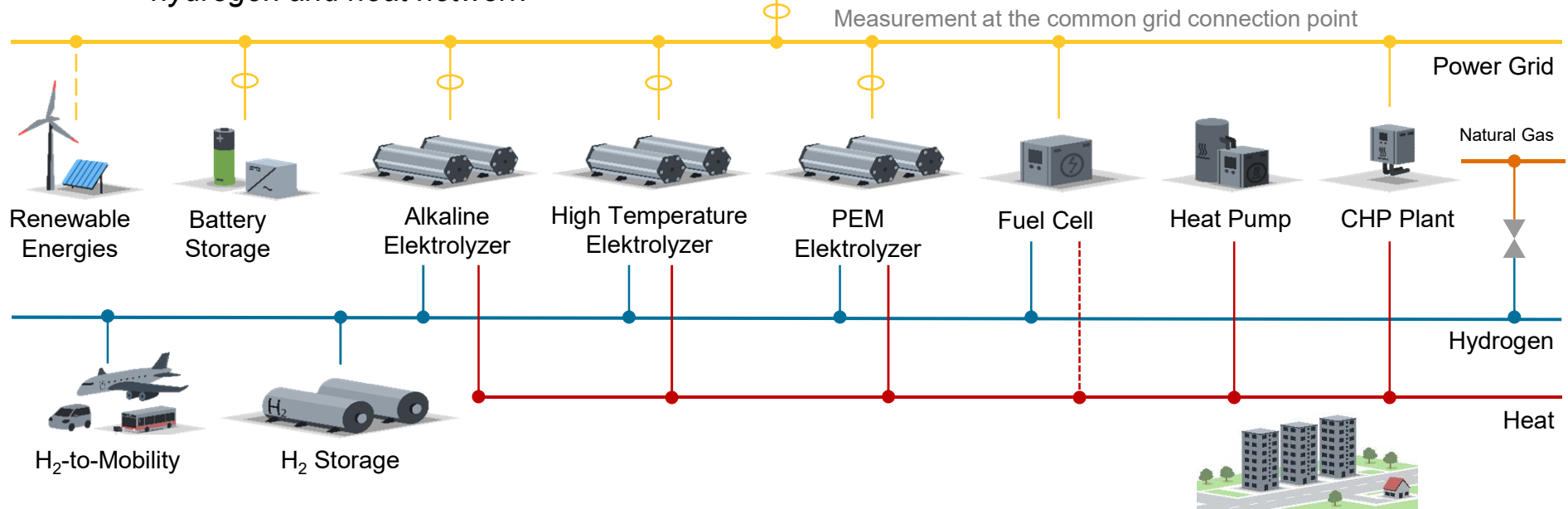


Grid connection

siz energie+
Steinbeis-Innovationszentrum



Σ 8 PI's



Technische
Universität
Braunschweig

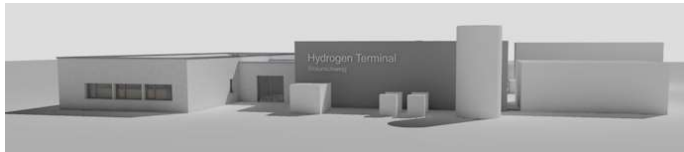
Technical Electrocatalysis Laboratory | Group Özaslan | <https://www.tu-braunschweig.de/itc/oezaslan>
DAAD Seminar Energy for Europe – Green Hydrogen and the Role of Higher Education and Research | Brussel | 09 May 2023

Hydrogen Terminal Braunschweig

GEFÖRDERT VOM



Bundesministerium für Bildung und Forschung



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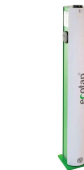
Übersichtsplan H₂ Terminal (jahn-architektur)



01. Wärmepumpe (Quelle: Combiheat)



05. Gefahrgutcontainer (Quelle: Jungheinrich/www.jh-profshop.de)



Ladesäule Ecotop Duo (Quelle: esi-mobility.com)



02. BT - Gebäude (Quelle: Betonwerk)



04. Elektrolyseur im modifizierten Überseecontainer (Quelle: enapter)



E-Bike Ladestation Wall PC61 (Quelle: esi-mobility.com)



03. Powerstation (Quelle: SMA Solar Technology)



06. Elektrolyseur im modifizierten Überseecontainer (Auflicht Rückführer) (Quelle: enapter)



09. Battery Rack (Quelle: SMA Solar Technology)



07. H₂ Tank (Quelle: Router STC GmbH)

Project description	
Period	4 years
Invest	11 Mio.€
Area	~1000 m ²



Technische Universität Braunschweig

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Japanese - German Joint Green Hydrogen Material Laboratory

Joint Laboratory with University of Yamanashi (Japan) • Material Innovation • Fuel Cells • Electrocatalysis • Travel Grant (PhD/MSc, 3-6 month) • Workshops/Conference in Germany • Summer School in Germany and Japan • Incubator for future research projects

Support (Germany)

State of Lower Saxony

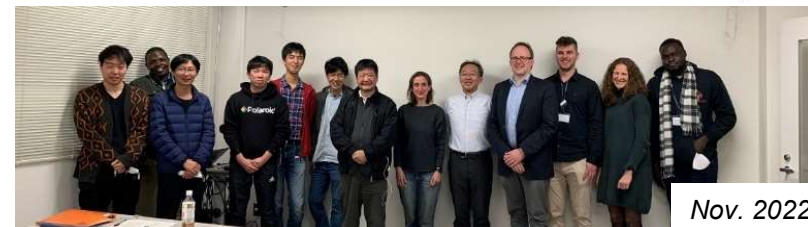
- Ministry of Science and Culture
 - Ministry of Economy with representation in Japan (Tokyo)
- Energy Research Centre of Lower Saxony
ECOS Consult



Prof. Dr. Mehtap Oezaslan
Dr. Frédéric Hasché



Prof. Dr. Katsuyoshi Kakinuma
Prof. Dr. Junji Inukai



Nov. 2022



Japanese - German Joint Green Hydrogen Material Laboratory

