

# Research Center MORE

## Energy System & Propulsion Tech

Prof. Dr.-Ing. Christian Trapp



**Forschungszentrum**  
**Mobilität und regenerative Energien**  
Universität der Bundeswehr München

der Bundeswehr  
Universität München

# Research Center Mobility & Renewable Energy



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## Mobility & Traffic Management

- Research on mobility behavior and transport systems

## Energy & Propulsion Technology

- Sustainable energy systems and innovative power trains

## Connectivity & Autonomous Drive

- Technologies and algorithms for connectivity and autonomous driving

## Design & Vehicle Technology

- Innovative vehicle concepts and sustainable design

## Opportunities & Impact

- Evaluation of the sustainability of concepts and technologies

23 Chairs @ UniBw

23 Large scale labs

120 Researchers

... endless research possibilities

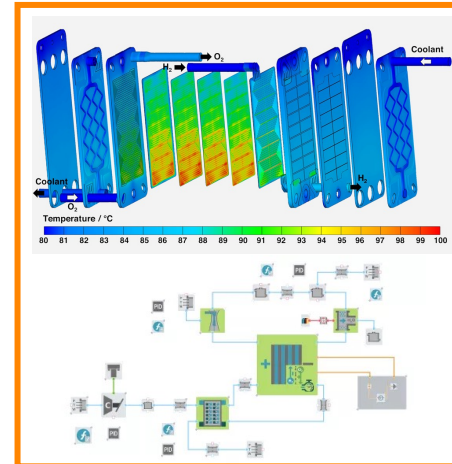
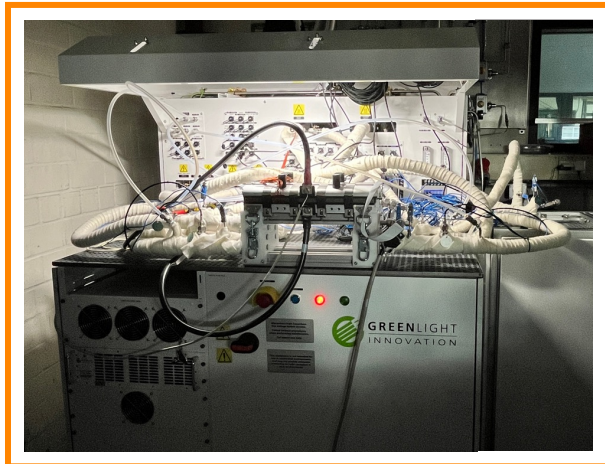


# Hydrogen Laboratory @ Research Center MORE



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The **HyLab Munich** @ Bundeswehr Universities Research Center MORE is a unique laboratory focusing on cutting edge hydrogen research for vehicle, flight and marine power trains as well as energy systems.



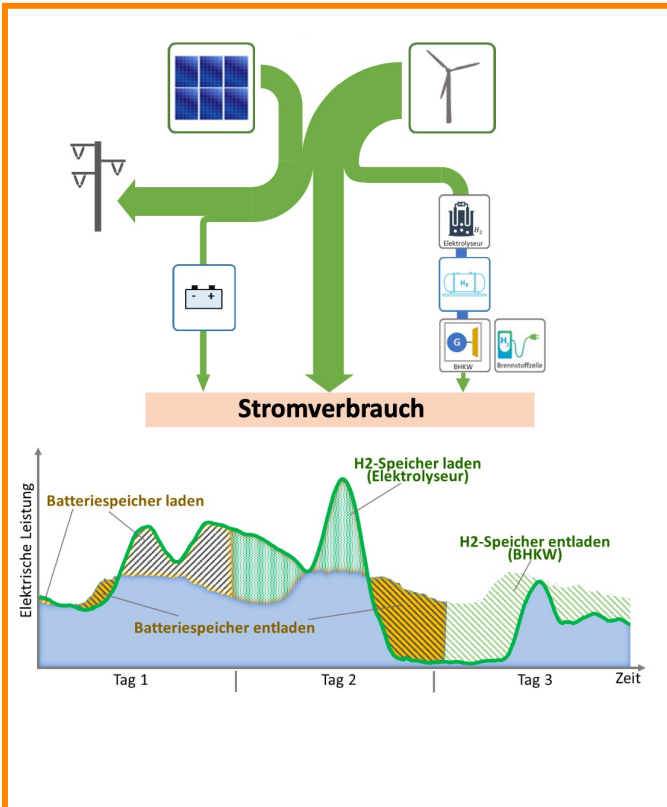
HyLabs high performance computing and simulation methodologies as well as experimental set-up with short-stack and fuel cell system test benches, hydrogen combustion engines test benches, battery emulators, chassis dynos and an own test track provide an inspiring environment for development of future hydrogen solutions.

# Energy Lab @ Research Center MORE



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The **EnergyLab** @ Bundeswehr Universities Research Center MORE is a **center of excellence** for resilient and/or sustainable **energy systems based on** renewable energy. The Energy Lab is the unique energy system and propulsion **Test Site** for NATO's DIANE and key part of the UniBw **NATO DIANA Accelerator**.



# Energy Lab @ Research Center MORE



The energy lab focuses on **simulation based design** and layout of energy systems for civil (incl. critical infrastructure) and military applications (incl. mobile systems), the development of **predictive operation strategies** (incl. AI based algorithms), the optimization of **core components** (battery storage, electrolysers, fuel cells, CHP), the development of **innovative methods and tools** as well as testing.

**System boundaries**

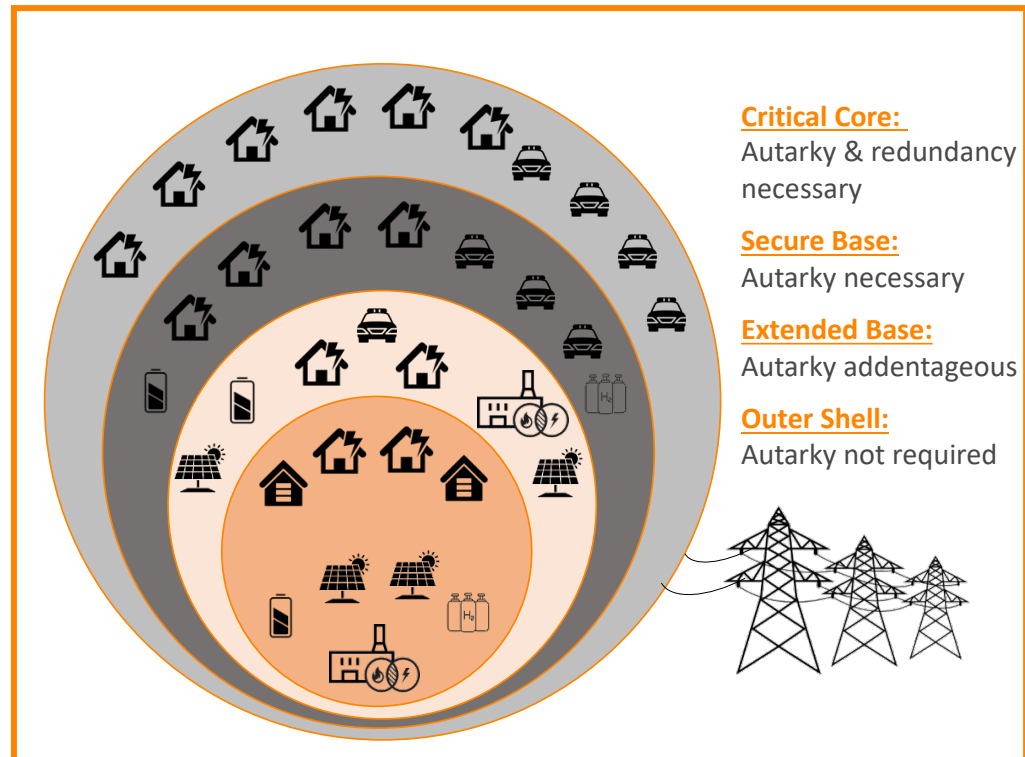
- Demand profiles
- Technological data (component sizes, ...)
- Economic data (market profiles, ...)

**System design**

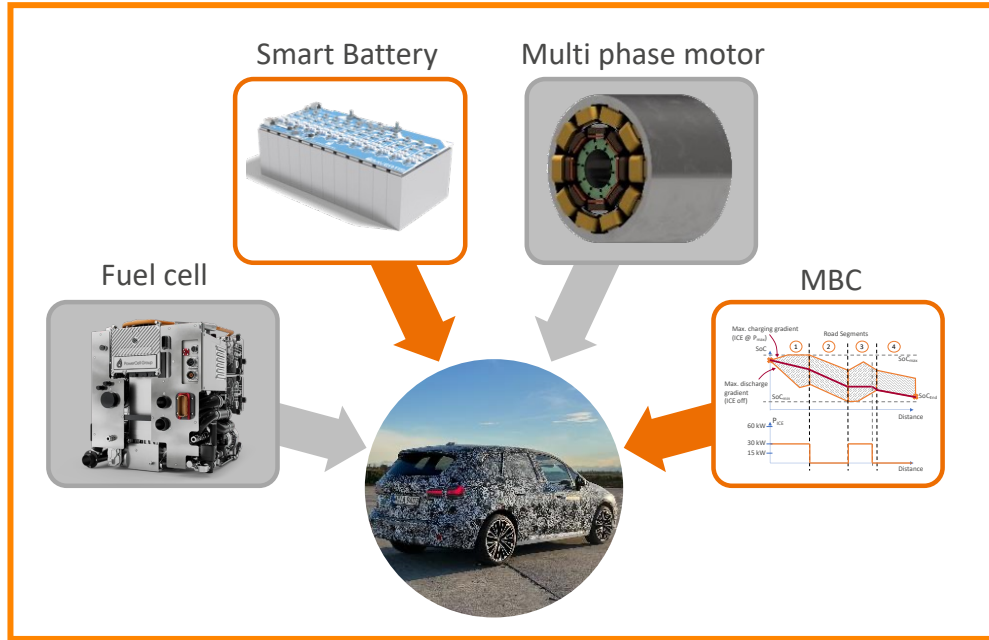
- Sources
- Converter
- Grids
- Storages
- Demands

**Define target function**

- Economic, CO<sub>2</sub>-emissions, autarchy, energy efficiency
- Pareto – optimization (Multi-Objective)



# MORE Smart BEV/PHEV: modular power train concept

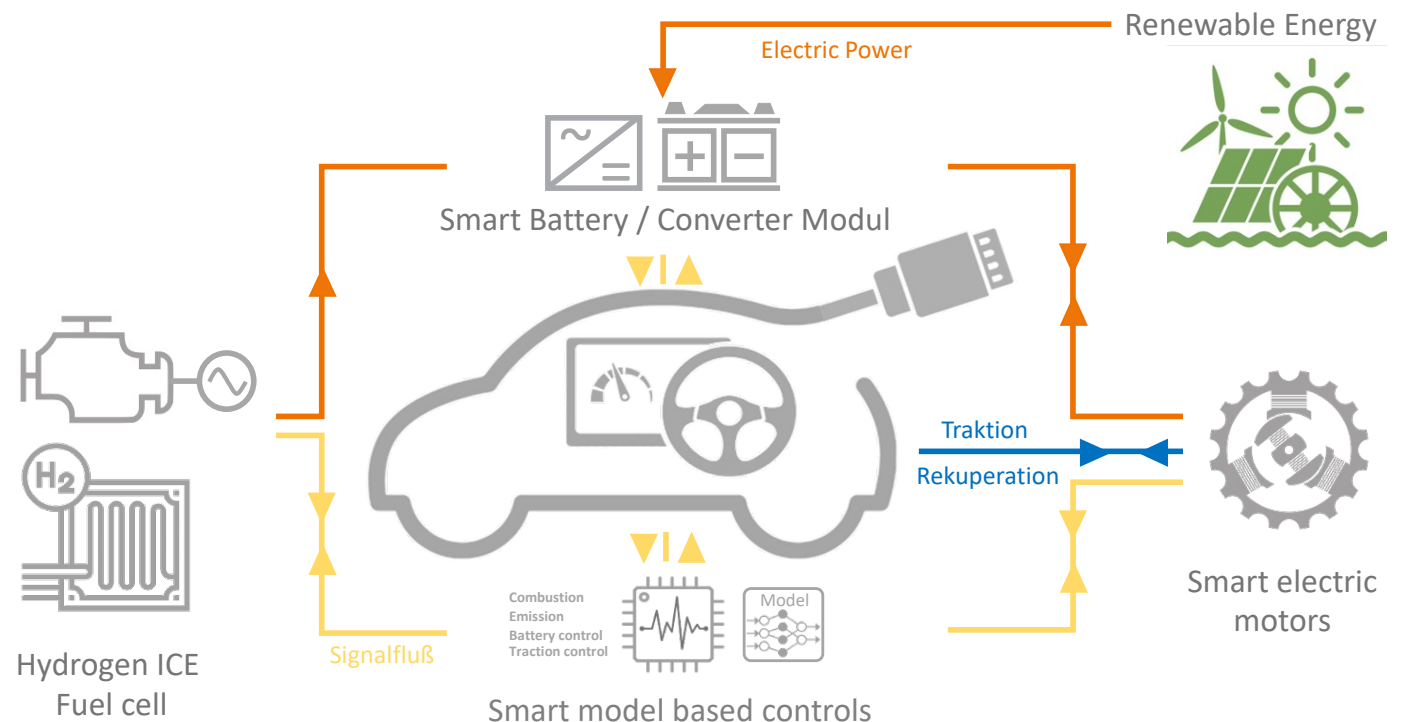
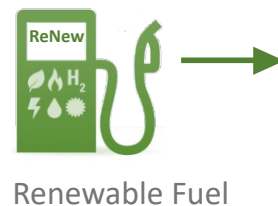


Unique combination of optimized fuel cells, smart batteries, multi phase electric motors and predictive model based controls.

For all types of vehicles – from city car to heavy duty equipment.

Components & controls - developed by MORE

Ready to drive in 2024



## Contact:



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