

The background of the slide features a blurred image of a hand held palm up, with a network diagram of white nodes and connecting lines overlaid on it.

# **Best practice of Bavarian-Czech research cooperation:**

## **Landshut University of Applied Sciences and West Bohemian University of Pilsen**

Prof. Dr. Karl-Heinz Pettinger

Scientific Director | University of Applied Science Landshut, Technology Centre Energy

Wednesday, 21.

# Technology Centre of Energy – A research institution of the Landshut University of Applied Sciences

Battery experts at Landshut University of Applied Sciences under the scientific leadership of Prof. Dr. Karl-Heinz Pettinger



**10 years** of active battery research - Process-oriented and industry-related research on lithium-ion and redox-flow batteries.



**30 battery-related research projects** - From cell to the system: semi automated cell production, system optimization, battery management,...



**Project partners from approx. 20 countries** - Strong scientific and industrial networking, e.g. through research platforms.



**25 active scientists** working in 700m<sup>2</sup> office and 1.000m<sup>2</sup> laboratory space.



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# Best practice of Bavarian-Czech research cooperation – A short history



**Oct'19:**

**FSTORE Project  
Conference,  
*Krumau***



**July'20:**

**Positive  
Review from  
EC**



**March'17:**

**FSTORE research platform: A  
cooperation between NTC and TZE**



**March'20:**


**Horizon proposal  
preparation: Follow-up  
cooperation**



**October'20:**

**HyFlow project  
start**

# FSTORE



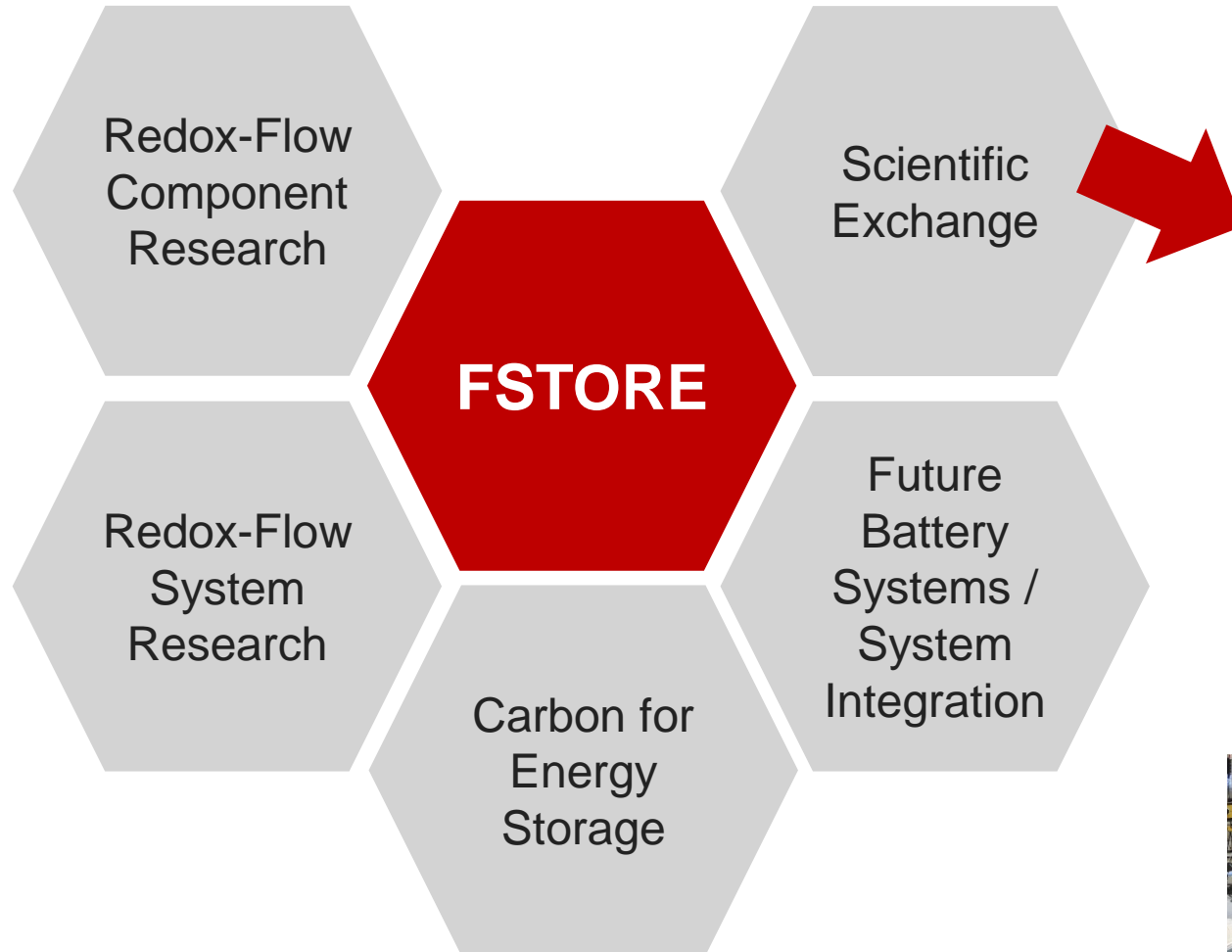
**Project FSTORE:** Cross-border platform for research on future energy storage systems and their integration



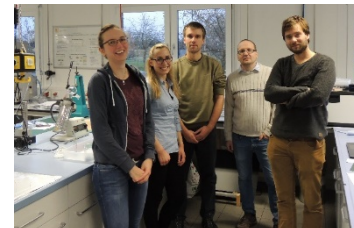
## Project **FSTORE**: Key Facts

- Project partners: UAS Landshut with TZE and UWB Pilsen with NTC
- Investments of the universities in the region funded by INTERREG V Free State of Bavaria – Czech Republic 2014 – 2020
- Investments in the fields of Technology and Manpower
- Investment volume: EUR 1.6 million, therefrom...
  - At the TZE: EUR 1 million
  - At the NTC: EUR 600,000
- Project duration: February 2017 – January 2020

# Project Content and Collaborations



- 12 **Invited lectures** on both institutes
- 7 **exchange visits** of researchers and students
- Several **project meetings** and discussions
- **Joint conference** visits and presentations of results



## Scientific goals:

- Establishing the platform for **permanent cross-border research** cooperation
- **Improved knowledge** for the use of flow batteries in the content of regenerative energies
- Evaluation of the potential for increase in efficiency and cost reduction of flow batteries
- Basic concept for hybrid storage systems (power/heat) with flow batteries

## Benefits for the region:

- Generating the requirements of working on cross-border research topics
- **Recruitment of young academics** for the research structure in the region
- **Improvement of the international visibility** of both partners
- FSTORE offers the **best conditions** for the initiation of **further research projects** for the region



**Project HyFlow:** Development of a sustainable hybrid storage system based on high power vanadium redox flow battery and supercapacitor – Technology



## Project **HyFlow**: Key Facts

- Key Facts:
  - 11 Partner
  - 7 countries
  - Project duration: 36 month
  - Project start: 01.11.2020
- Cooperation Highlights:
  - Project idea has been elaborated during one of the FSTORE project conferences.
  - Several external partners from FSTORE research platform are part of HyFlow.
  - Follow-up cooperation between TZE and Spin-Off from NTC



# Project Motivation

- Our international consortium, enabled through the EU project HyFlow, will
  - create a modern and sustainable, hybrid energy storage system following the goal of the European Union to decrease the global environmental impact.
  - focus on technological and ecological improvements of the components, the management systems and the interaction through the complete supply chain.
  - enhance components for optimal hybridization of systems, by improved material utilization and cell design, and develop high-level control algorithms.



# Cross border collaboration – Key Factors for Success

## Sustainable development of a cross border **research platform** between **Bavaria** and **Czech Republic...**

- Close scientific exchange
- Numerous networking and exchange events e.g. invited lectures, project conferences
- Expand research platform with international partners
- Good networking / contacts to other research groups
- Follow-up cooperation possibilities
- Scientific enthusiasm and collaborative thinking among the partners

# Funding Acknowledgments

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**Europäische Union  
Evropská unie**

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regionální rozvoj



**Ziel ETZ | Cíl EÚS**

Freistaat Bayern –  
Tschechische Republik  
Česká republika –  
Svobodný stát Bavorsko  
2014 – 2020 (INTERREG V)

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