

# INFORMATION & MATCHMAKING EVENT: EU CALLS FOR PROPOSALS 2023 ON BATTERY AND HYDROGEN TECHNOLOGIES



TOMAS BATA UNIVERSITY IN ZLIN

VIERA PECHANCOVA

14 FEB 2023



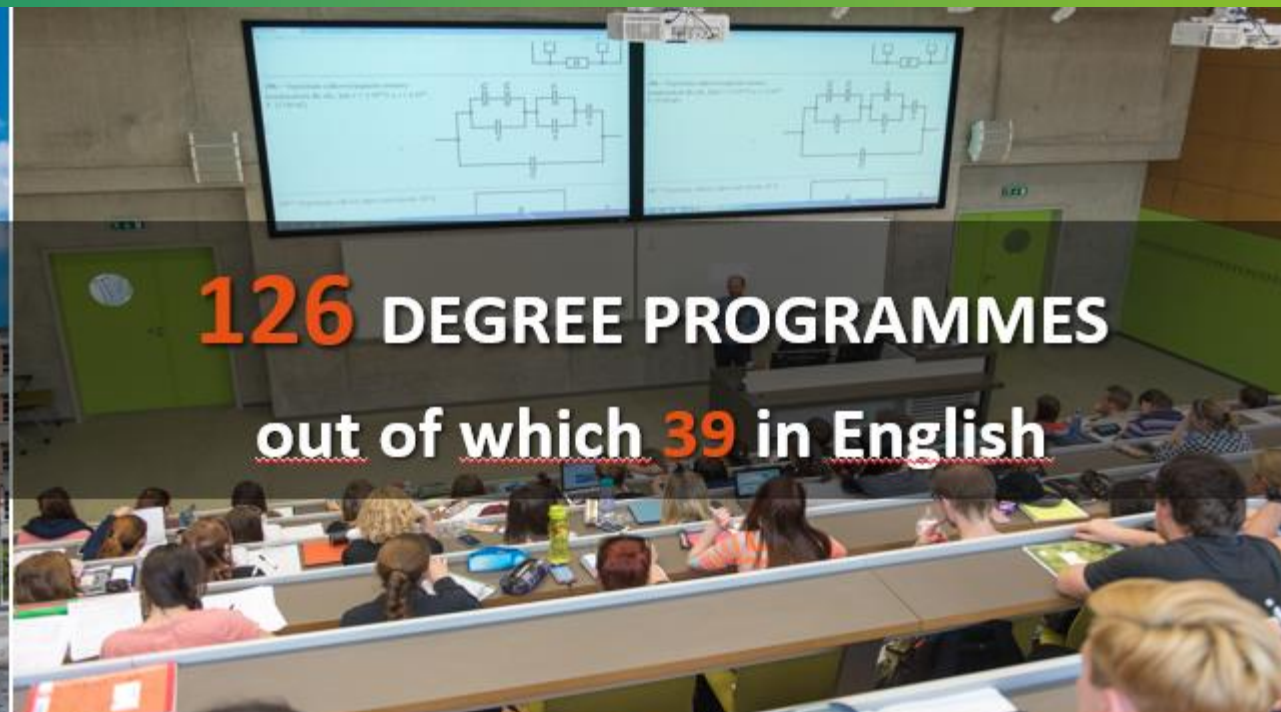
# TOMAS BATA UNIVERSITY







**6 FACULTIES**  
**+ UNIVERSITY INSTITUTE**



**126 DEGREE PROGRAMMES**  
**out of which 39 in English**



**9,910 STUDENTS**  
**out of which 1,115 international students**



**1,040 EMPLOYEES**  
**out of which 523 academics**



# CENTRE OF POLYMER SYSTEMS

**Overall Area:** 10,665 m<sup>2</sup>

**Energy materials and devices**

## Biology

Microbiology  
Cell and tissue cultures

## Chemistry

Synthesis  
Analysis

## Physics

Characterization and testing  
Physical preparation

## Technology – Heavy laboratories

Processing of plastics  
Rubber processing





## RESEARCH GROUP ENERGY AND COMPOSITE MATERIALS AND DEVICES

- **Advanced energy materials for Li-ion batteries and supercapacitors**
  - Environmentally friendly compositions
  - Self-healing and safety properties
- **Hybrid energy devices**
  - Supercapacitors integrated with battery
  - Mechanical energy harvesting
- **Inkjet-printed energy materials**
  - 2D-printed electrodes
  - Nano-printed energy materials
- **Sustainability and socio-economics**
  - Life-cycle sustainability assessment
  - Business models including economic, environmental and social aspects
  - Energy-SSH perspectives.



# RESEARCH PILOT LINE FOR FABRICATION OF LI-ION BATTERIES

Photos from trial procedures

Cutting



Stacking



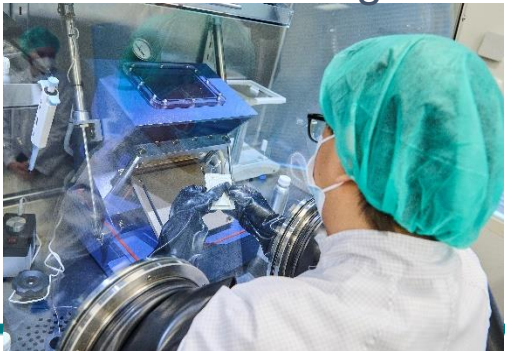
Tab welding



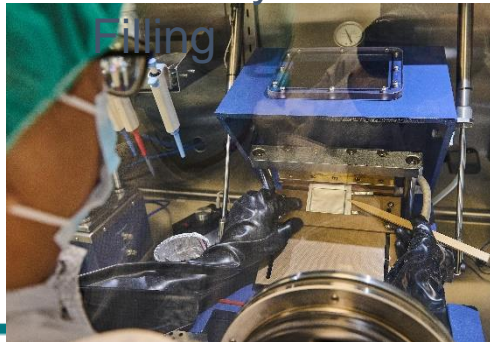
Case forming



Final Sealing



Electrolyte Filling



Controlled atmosphere



Primary sealing



# MEMBERSHIPS



**Task forces:** Levelised Cost of Energy Storage, Hybrid Storage Systems, Sustainable Batteries + task force State Aid support



**Centre of Polymer Systems (CPS)**



**Joint Programme Energy Storage**



Zlin region smart strategy specialization  
**RIS3**



Membership in the **European Composites, Plastics and Polymer Processing Platform**

**BEPA**



# PROJECTS



HORIZON  
EUROPE/COORDINATOR

**TwinNING FOR DEVELOPMENT OF  
WORLD-CLASS NEXT GENERATION  
BATTERIES**



IVI<sup>+</sup>  
**ERA.NET/COORDINATOR**  
Li-ion BAttery-SupErcapacitor Hybrid Device  
LiBASED



HORIZON  
EUROPE/BENEFICIARY

**SUSTAINABLE MANUFACTURING AND  
OPTIMIZED MATERIALS AND INTERFACES  
FOR LITHIUM METAL BATTERIES WITH  
DIGITAL QUALITY CONTROL**



**TECHNOLOGY AGENCY CZ**  
Next generation all-solid-state Li-ion  
batteries



HORIZON 2020/THIRD  
LINKED PARTY

**STORAGE RESEARCH  
INFRASTRUCTURE ECO-SYSTEM**





# TWIN



Techno-economic simulation tools, cost-benefit analysis, and business model innovation are needed to assess advanced battery technologies.

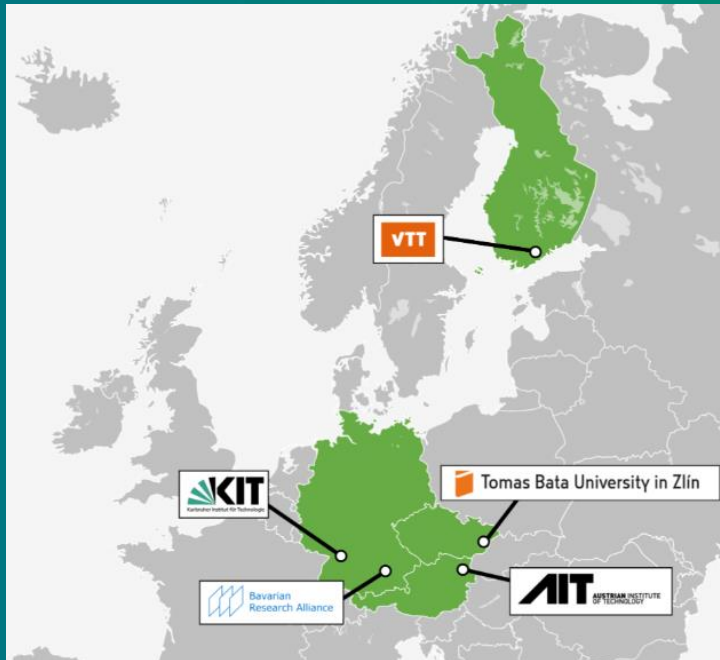
The EU-funded **TwinVECTOR** project will create a centre of excellence at the Tomas Bata University in Zlín (TBU), Czechia, focusing on next generation battery sustainable design, energy business models, and sustainability assessments.

The TBU aims to increase scientific expertise and capacity in these domains. The upgraded research and administration unit (RAU) will support the project by coordinating capacity building measures.

# VECTOR



# FACT SHEET



**Project number**

101078935

**Project name**

TWINNING FOR DEVELOPMENT OF WORLD-CLASS NEXT GENERATION BATTERIES

**Project acronym**

TwinVECTOR

**Topic**

HORIZON-WIDERA-2021-ACCESS-03-01

**Project starting date**

1 November 2022

**Project end date**

31 October 2025

**EU contribution**

€ 1 349 658,50

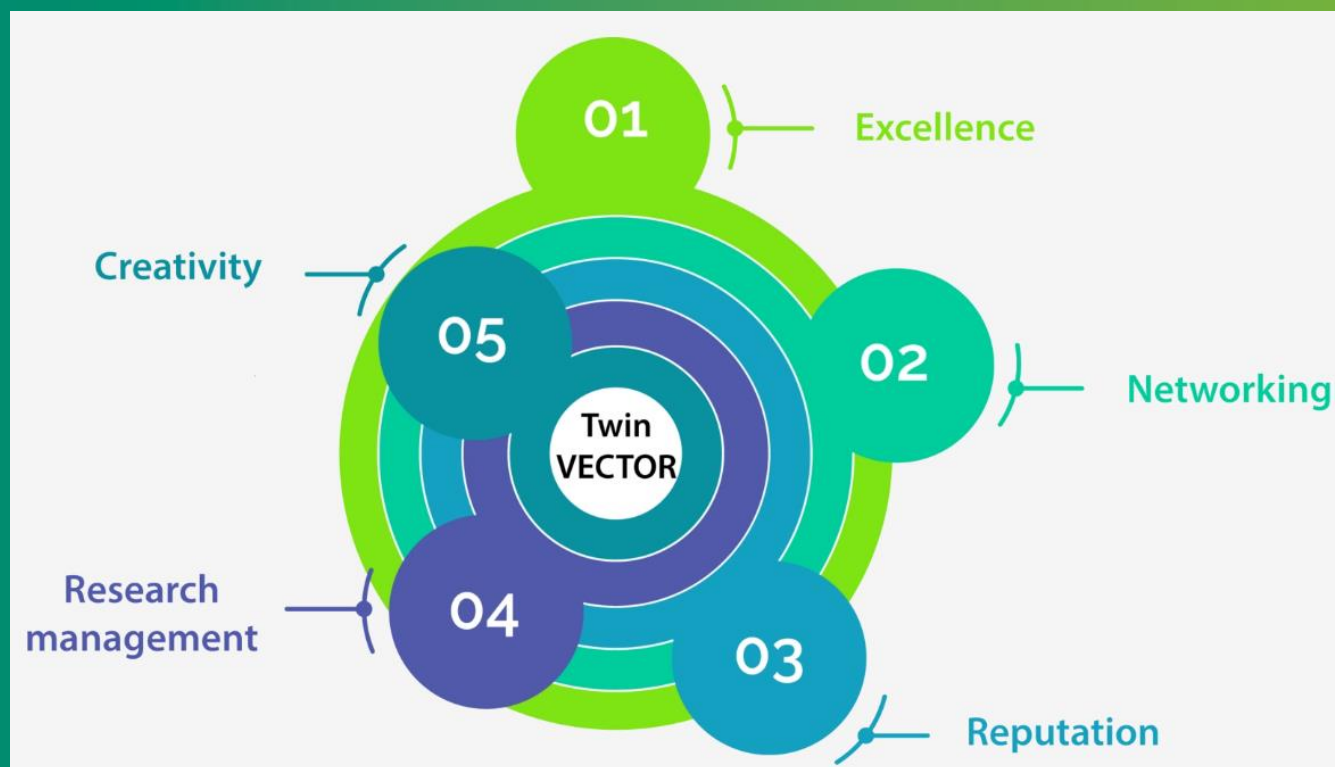
**CORDIS**

<https://cordis.europa.eu/project/id/101078935>





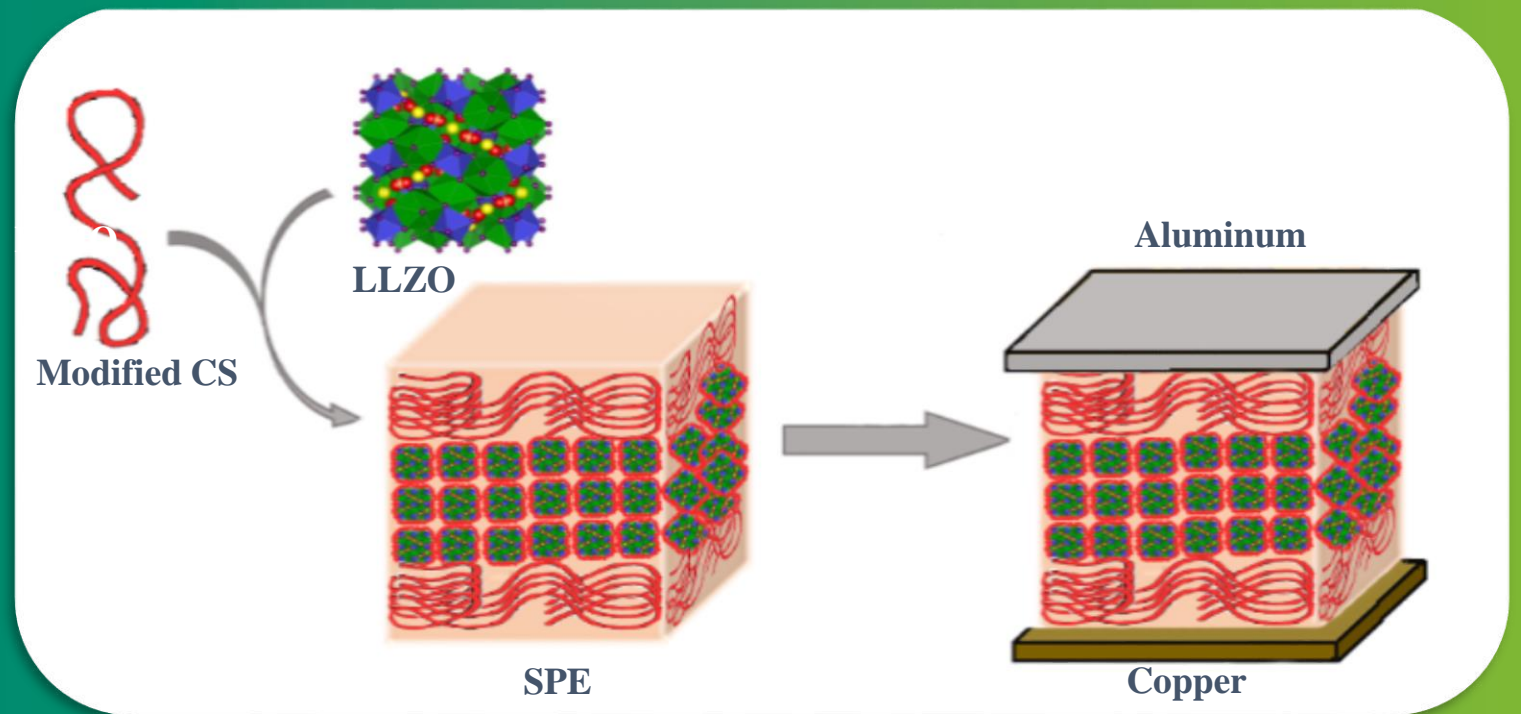
# OBJECTIVES



## RESEARCH COMPONENT



### GREEN BATTERY DESIGN AND SYNTHESIS OF SOLID-POLYMER ELECTROLYTE





# PARTNER ROLES



**twinvector.eu**

## BAVARIAN RESEARCH ALLIANCE, GERMANY

- **WP lead: Capacity building for institutional widening culture**  
Research Administration Unit at TBU
- **Dissemination, communication and exploitation** plan of TwinVECTOR
- BayFOR is actively involved **as project manager** of projects with Bavarian coordinators. It also offers training courses to project managers. In addition, BayFOR takes the role of preparing and leading **dissemination activities**



# PARTNER ROLES



**AIT – AUSTRIAN INSTITUTE OF TECHNOLOGY GMBH, AUSTRIA**  
COMPETENCE UNIT INTEGRATED ENERGY SYSTEMS AT THE CENTRE  
FOR ENERGY

- **WP lead: Boosting research capacity in techno-economic modelling**
- The thematic portfolio of the Centre for Energy is based on three central systems: Sustainable energy infrastructure, decarbonization of industrial processes and systems, and innovative technologies and solutions for urban transformation.
- In TwinVECTOR two research fields of AIT are providing a key expertise on energy economics and storage system integration:  
Integrated Energy Systems and Hybrid Power Plants





# PARTNER ROLES



**KIT – KARLSRUHER INSTITUT FÜR TECHNOLOGIE, GERMANY**  
THE INSTITUTE FOR TECHNOLOGY ASSESSMENT AND SYSTEMS ANALYSIS (ITAS)

- **WP lead: Boosting research capacity in sustainability assessments**
- The Institute for Technology Assessment and Systems Analysis (ITAS) is an interdisciplinary research institute at KIT covering technical, economic, environmental and social aspects of existing and emerging technologies.
- ITAS, with long experience in sustainability assessment and Life Cycle Assessment (LCA) as well as in risk assessment will support the TwinVECTOR in these fields.



# PARTNER ROLES



**VTT – TECHNICAL RESEARCH CENTRE OF FINLAND,  
FINLAND**

## **BATTERY TECHNOLOGIES**

- **WP lead: Boosting research capacity in battery assembly & prototyping**
- VTT will utilise their facilities, expertise and knowhow in battery manufacturing, assembly and characterization to ensure achieving the project goals and support the consortium in preparing battery demonstrators.
- VTT is also very active in EU projects and can thus support in project management related topics.





# THANK YOU

pechancova@utb.cz



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