

**Center of Competence HITMOBIL –  
Technologies for generation, storing and consumption of clean energy**

**Project № BG05M20P001-1.002-0014**

**Leading organisation:** Institute of Electrochemistry and Energy Systems „Acad. Evgeni Budevski” – BAS

**Partners:** Joint Innovation Center – BAS, Institute of Chemical Engineering – BAS, Institute of Catalysis – BAS, Institute of General and Inorganic Chemistry – BAS, Institute of Polymers – BAS, Central Laboratory of Solar Energy and New Energy Sources – BAS, Institute of Hydrogen Technologies - Bulgarian Hydrogen Society, South-West University „Neofit Rilski”, Association „Scientific Institute of Clean Technologies”

**Associated partners:** National Research Council – Institute for Advanced Energy Technologies „Nicola Giordano” (CNR-ITAE), Italy; Institute of Engineering Thermodynamics – German Aerospace Center (DLR), Germany; AMG Technology Ltd., Bulgaria; A Data Pro Ltd., Bulgaria

**The mission** of CoC HITMOBIL is to promote the development and accelerate the introduction of innovative technologies for renewable energy storage (RES) and efficient use in the household and industry, with a focus on electromobility. The Centre’s thematic area is directly linked to Bulgaria's commitments to implementing the European program for development of decarbonisation and accelerating the clean energy innovations. It is grounded on the Europe Strategy for the Development of a Low Carbon and Resource Efficient Economy (2020 and 2050), European Strategic Energy Technologies Plan (SET-Plan) and the priority area „Mechatronics and Clean Technologies” of the National Innovative Strategy for Intelligent Specialization (ISIS).

**The main objective** of the Center is building a research infrastructure for development, testing, optimization and industrial deployment of modern systems for mobility and energy storage unique on national and regional level.

CoC HITMOBIL will conduct **market-oriented research** and develop new technologies and systems in key areas covering the „green” energy cycle: RES (Solar/Wind/Biomass) - Storage (Batteries and Hydrogen) - Conversion and Consumption.

**The structure** of CoC HITMOBIL includes two technological modules and one module for transfer and dissemination of knowledge and applied scientific information.

**Module „Industrial Research”** is designed as an innovation incubator with four research laboratories for applied research, including:

- development of components and cells production technologies for new or improved batteries with increased service life for primary and secondary energy storage; development of reliable methods for diagnostics and assessment of the batteries state of charge and state of health; development of recycling technologies;

- technological research of highly efficient solar cells, new prototypes of photovoltaic modules, their testing and integration in energy storage systems; evaluation and certification of industrial products;
- developing and testing of innovative concepts for fuel cells, hydrogen generators and reversible regenerative systems, including monitoring and diagnostics;
- hydrogen production from biomass and waste reforming using innovative processes and technologies.

**Module „Experimental development“** consists of two laboratories that will, if necessary, work with some of their components as „field“ demonstration laboratories. The activities are focused on the scaling of laboratory prototypes, testing and validation of pre-industrial energy conversion and storage systems; participation in demonstration and pilot projects; preparation of harmonized tests and protocols, instructions and recommendations for real operation.

**Module „Knowledge Management and Technology Transfer“** includes horizontal activities to ensure the efficient integration and functioning of CoC HITMOBIL as a distributed research infrastructure, including electronic science, intellectual property, security technology, knowledge dissemination and technological transfer.

***Expected benefits of the project***

- Formation of expert potential and a society that promote the development of „green“ energy technologies;
- Strengthening the „science-education-business“ relationship with a focus on the practical component of the education cycle;
- Participation of Bulgarian scientists and innovative companies in large demonstration projects (European and national), which is a prerequisite for accelerated introduction of modern energy technologies into the economy and everyday life;
- Creating a new economic niche with a positive impact on the environment, which in long term will have a beneficial effect on human health and quality of life;
- Enhancing private investment in applied research with a focus on the technological development and innovations;
- Assistance to the state authorities in the establishment of regulatory framework necessary for commercialization of the new energy technologies;
- Contribution to the implementation of the national targets for reduced harmful emissions and efficient use of renewable energy set in the Integrated Plan for Energy and Climate of Bulgaria (2020-2030).