

Supercapacitors are considered important energy storage devices that can complement batteries for various applications. While currently the electric double-layer capacitors (EDLCs) still dominate the market, their low energy density cannot satisfy the ever increasing demand. The HEDAsupercap project aims at developing high energy density asymmetric hybrid supercapacitors consisting of two dissimilar EDLC-type and battery-type electrodes. The improvement of energy density will be accomplished through the asymmetric cell design and developing novel materials and components, including electrode materials, ionic liquid electrolytes and current collectors. Sustainable, environmentally-friendly, and cost-effective synthetic approaches will be employed to ensure the elimination of critical raw materials (CRMs) usage and the minimisation of environmental impact during the components production. Supercapacitor cells and modules comprised of newly developed components, along with innovative management system, will be developed and demonstrated in electric scooters for last-mile mobility as well as in hand warming gloves for sport & leisure. Comprehensive techno-economic and value chain analyses will be carried out, and a business case and exploitation strategy will be developed by the end of the project to roadmap future commercialisation of the HEDAsupercap technology. The HEDAsupercap consortium comprises three research & technology organisations, two universities, and three leading companies in the automotive, energy and engineering sectors. This will allow the developed technology to be quickly taken up and adopted in the market. The HEDAsupercap project will promote widespread deployment of high energy density hybrid supercapacitors in mobility and consumer goods sectors. The project results will be disseminated to different stakeholders, raising their awareness of the latest development of this new technology.