

Overview

IK4-IKERLAN is the leading Applied Technology Centre in Spain in terms of technology transfer rate to the industry (60% of our 19M€ income was generated by contract research with industry). With a staff of over 250 people, IK4-IKERLAN offers its clients R+D services spanning the entire innovation cycle, from the idea or concept to the industrialization stage, combining and integrating different cutting-edge technologies.



100kVA Full SiC converter

European Dimension

Since 1985, we have been increasingly active in the European Union Framework Programmes for R&D. During the whole of FP7 and H2020, we have participated in 43 funded projects, representing a total volume of 18,8M€ in grants. These projects have allowed us to collaborate

with some of the finest research centres and universities in Europe, as well as with the most innovative companies, to jointly enhance the state-of-art in different fields of science and technology.

Power Electronics and Energy Storage

More than 30 full-time researchers (10 of them with a PhD) and 7 PhD students specialized in the design, development and materialization of power converters, electric machines and storage systems. With a clear solution-oriented and multidisciplinary approach (electrical, mechanical, SW, electronics, thermal engineering and control), the team has a vast experience on the design and development of customized solutions and systems integration for railway, elevation, renewable energy and power system industries. The main current research area is the multiparameter integration (reliability, availability, power density and cost) of:

- Power Electronics Converters: using latest semiconductors, such as SiC and GaN devices, and topologies.
- Magnetic Power Devices: medium-frequency medium-voltage transformers, inductive power transfer systems and permanent magnet synchronous machines.
- Electrical Energy Storage Systems: Li-ion battery and UltraCapacitor (UC) based systems (battery pack and BMS), including chargers, application-integration and control.



3kVA contactless battery charger

Some references

- Railway traction converters for 3kV/1.5kV and 750V catenary lines up to 1,5MVA (CAF)
- UC energy storage system for catenary-less tramways (CAF), elevators (ORONA) and Pitch system (GE)
- Up to 6MVA modular power converters for locomotives (CAF)
- 400kVA medium-frequency transformer (750V-3kV) for train-trams (CAF)
- Tramway converters using SiC devices (CAF)
- Li-ion energy storage system for grid-connected applications (CEGASA, ACCIONA)
- Grid-connected converters for electrical distribution enhancement up to 150kVA (ORMAZABAL)
- Traction converters for hybrid and full electric buses (VECTIA)
- Up to 50kVA contactless power transfer system (CAF)



6.5kV-750A IGBTs based Half Bridge module