Powerized

Digitalization of Power Electronic Applications within Key Technology Value Chains

PROGRESS TO SUCCESS

UC1.2 Traction Converters

Ingeteam / INGETEAM POWER TECHNOLOGY

Universidad de Oviedo
Universidá d'Uviéu
University of Oviedo

Use Case objectives

Development of methods and tools for the design, sizing and optimization of Traction Inverters.

Design and construction of two Power Electronic Building Block (PEBB) intended for medium voltage/medium power applications.

Construction of a first prototype.

Development of digital twins aimed to improve reliability.

KPIs

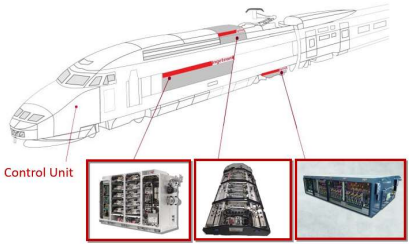
PEBB1 [based on XHP modules for 3L ANPC]:	Improvement the Power Density up to 1,5kW/L
	Improvement Efficiency in 10% (from 97,91%)
PEBB2 [based on XHP modules for 2L]:	Improvement the Power Density up to 1,3kW/L
	Improvement Efficiency in 10% (from 97,67%)

Main Obstacles

Existing components/devices have to be evolved for achieving the new goals.

Several PEBBs (UC1.2 and UC1.3) share components.

Versatility of the products is mandatory for roof, machine room and underframe location of the train converter.



Motivation

Today's technology for PEBB (Power Electronic Building Block) for power traction converters rely on IHV modules.

Widely used in the last decades, fit perfectly for high power solutions at higher catenary or equivalent voltages (1500Vdc/1800Vdc or 3000Vdc/3600Vdc).

Development of standardized, flexible and versatile solutions complying with the requirements for different functionalities (traction, line, ESS and auxiliary converters).

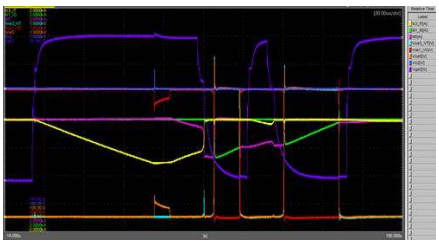
Relevance

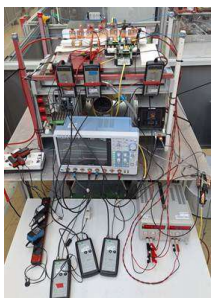
Very high relevance because the railway market is growing and demanding for complete/complex solutions including new energy storage functionalities.

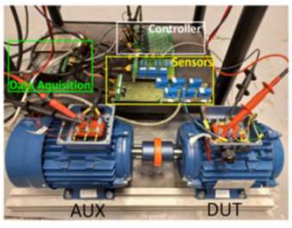
Markets

Medium power Europe market of regional trains.

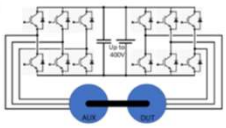
Real PEBB







Laboratory low scale



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