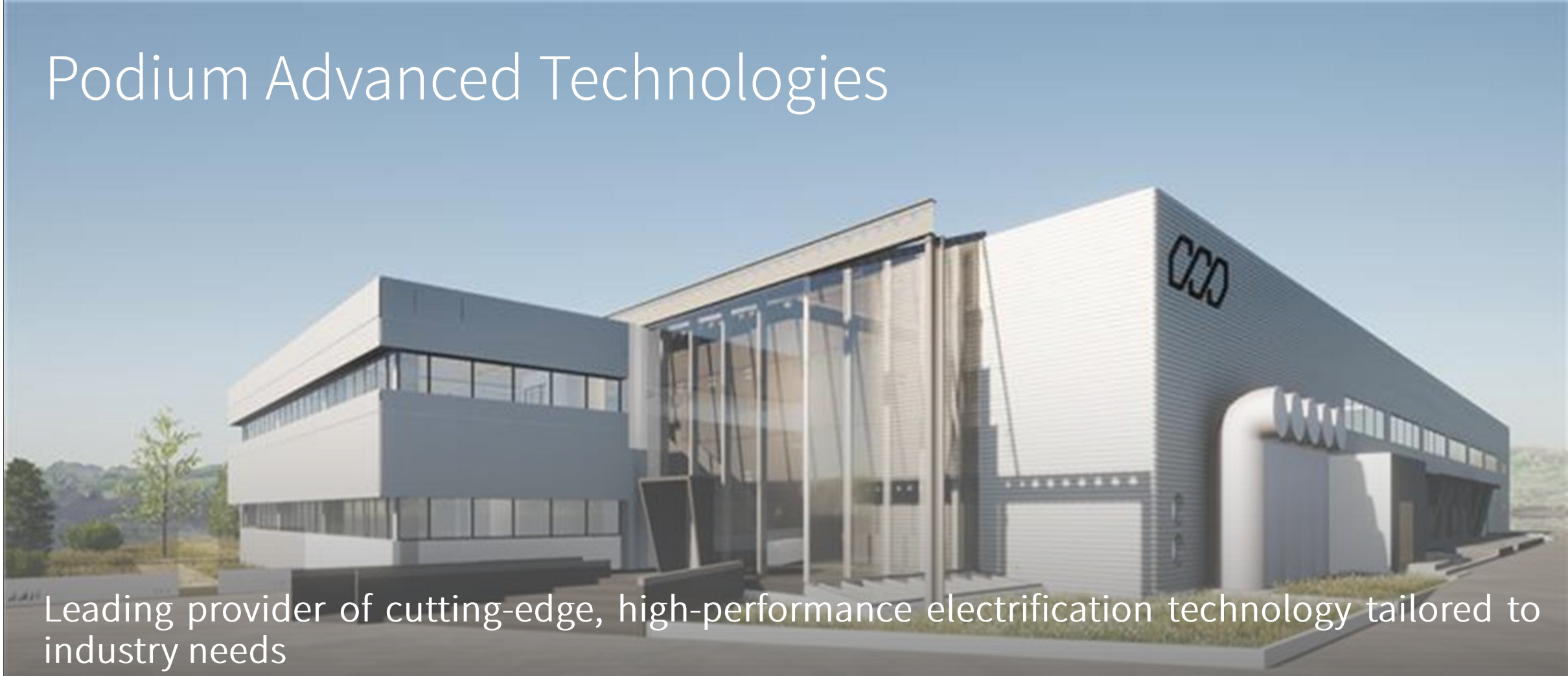
PODIUM

ADVANCED TECHNOLOGIES

Progetto, sviluppo e assemblaggio sistemi batteria

Sempre + CLEVER / GREEN MOBILITY - 21 February 2023

Podium Advanced Technologies



Leading provider of cutting-edge, high-performance electrification technology tailored to industry needs

Based in northern Italy and backed by 10+ years of experience, Podium is an innovative and multidisciplinary engineering service provider, dedicated to deliver top quality products by working closely with a unique set of market leaders. More than 80 engineers develop battery systems and integrate electric powertrains for the most demanding applications.
Our proprietary Battery Management System (BMS) ensures optimal performance and reliability, and our expertise in vehicle and powertrain design allows for seamless integration into a wide range of applications, including automotive, railway, energy storage, and marine.

History and key-facts

2012
KERS System developed and integrated on P4/5 Competizione wins Nürburgring 24h hybrid class

2013
Grant for innovative Small and Medium Enterprises for a two year research program awarded by the regional government of Valle d'Aosta

2014
SCG 003 project: development of road legal and racing versions of a GT Supercar

2015
Innovative proprietary Battery Management System released

2016
Development of a high voltage energy storage system for a motorsport application in Super GT Series championship

2017
Development of bespoke 104 kWh battery pack for a 1.000 CV all-electric sedan

Selected by «The FT 1000: Europe's Fastest Growing Companies between 2013 – 2016»

2018
New workshop facilities for testing HV battery up to 1000 V and 500 kW

Selected by «The FT 1000: Europe's Fastest Growing Companies between 2014 – 2017»

2019
8th overall at 24 Hours of Nürburgring with SCG 003C

Selected by «The FT 1000: Europe's Fastest Growing Companies between 2015 – 2018»

2020
First battery system delivered for railway application

Selected by «The FT 1000: Europe's Fastest Growing Companies between 2016 – 2019»

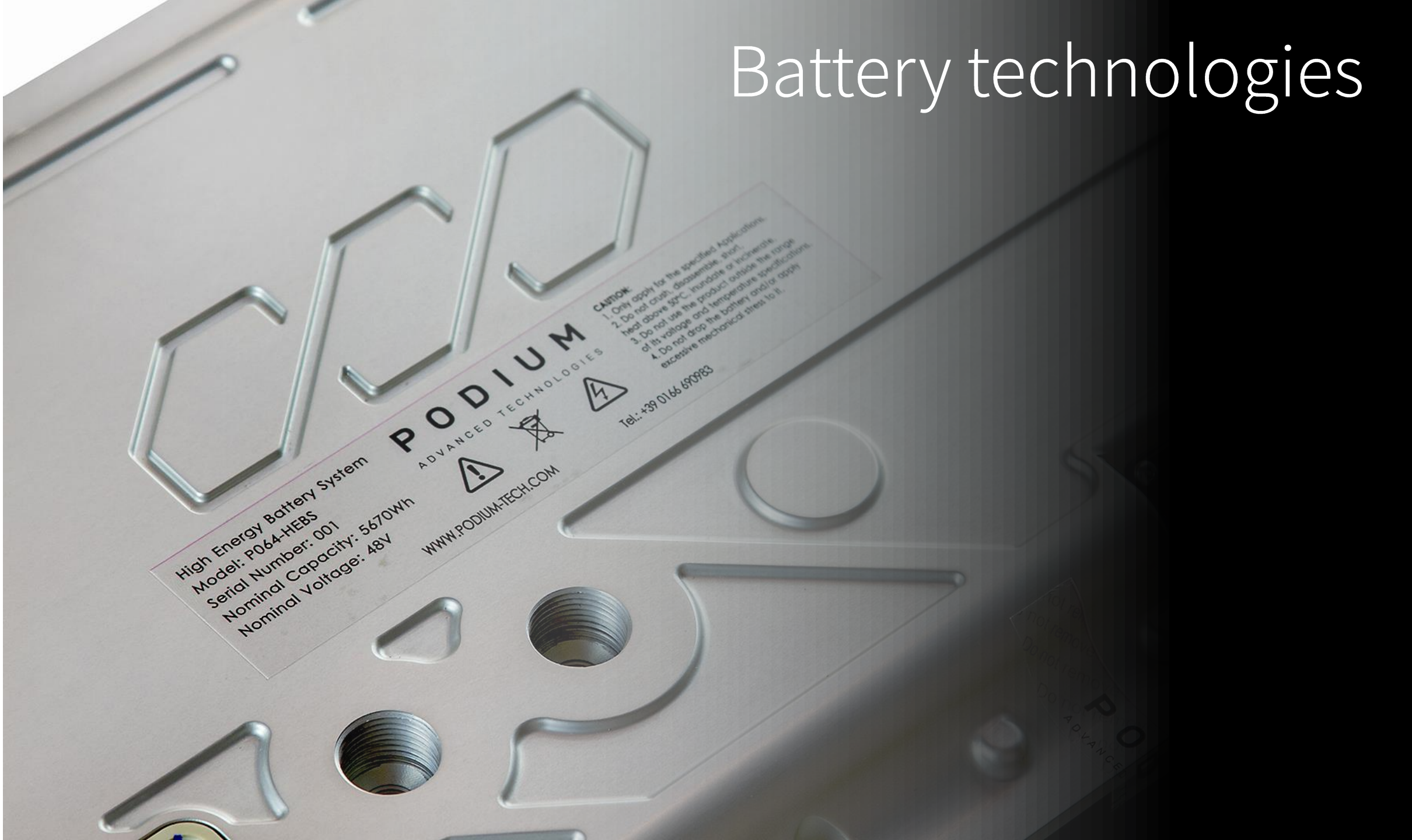
2021
4th and 5th overall at Le Mans 24 Hours in the FIA WEC hypercar class with Glickenhaus 007 LMH

Selected by «The FT 1000: Europe's Fastest Growing Companies between 2017 – 2020»

2022
Ducati Battery Development partnership announced

Selected by «The FT 1000: Europe's Fastest Growing Companies between 2018 – 2021»

Battery technologies



Proprietary BMS

- Podium proprietary BMS is a complete, scalable and reliable solution to manage any energy storages system
- Voltage level from 400 up to 800 V and beyond
- Compact dimensions, low power consumption, high measurement accuracy and high refresh rates

Custom Battery Pack

- Podium offers an integrated service, ranging from concept to design, development and production of bespoke high performance battery systems
- Podium custom battery systems boast exceptional weight efficiencies and leading edge cooling technologies

Manufacturing

- Podium offers to OEM customers the possibility to design the most efficient assembly process and run pilot production batches
- Manufacturability is built in at the design stage, incorporating quality control features with a fully debugged process design

Battery Testing

Podium testing equipment allows to test and qualify a wide spectrum of e-traction components up to 250 kW, 1kV

- The testing facility includes a full set of Device Under Test (DUT) conditioning system, as well as high precision laboratory sensors for current, voltage, thermography, flow rate

Distinctive know-how

Cells selection and characterization

For each application we select from our internal cell database the most suitable solution. This solution is characterized on test bench to extract the data needed to calibrate the proprietary battery model

Proprietary models and state-of-the-art CAE software

Deployment to set energy storage and system specifications that guarantee the powertrain and vehicle global performances

Detailed energy cooling storage design and bespoke BMS integration

Production (prototype and small volumes), testing and EOL on battery test bench

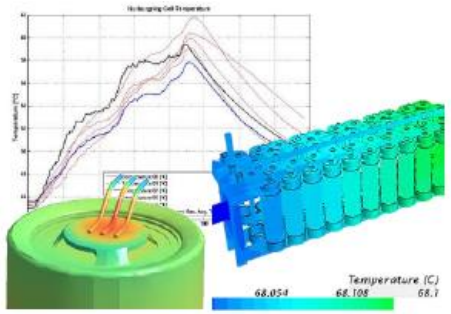
Battery design is supported by extended simulations in all phases of cell selection, cooling design and BMS controls

A comprehensive approach

Podium offers an integrated service, ranging from concept to design, development and production of bespoke high performance battery systems.

R&D

Podium Lab and Engineering R&D team continuosly improve design and validation process for safety, reliability, performance and cost.



Cell Technology

Podium is widening cell worldwide supplier partnership with different chemistries and format (**pouch, prismatic and cylindrical**) with potential new technology under development. NCA, NMC, LFP, LiC & LTO chemistries supported

Supply Chain

Podium has a fully system level knowledge and is currently improving a vertically integrated supply chain

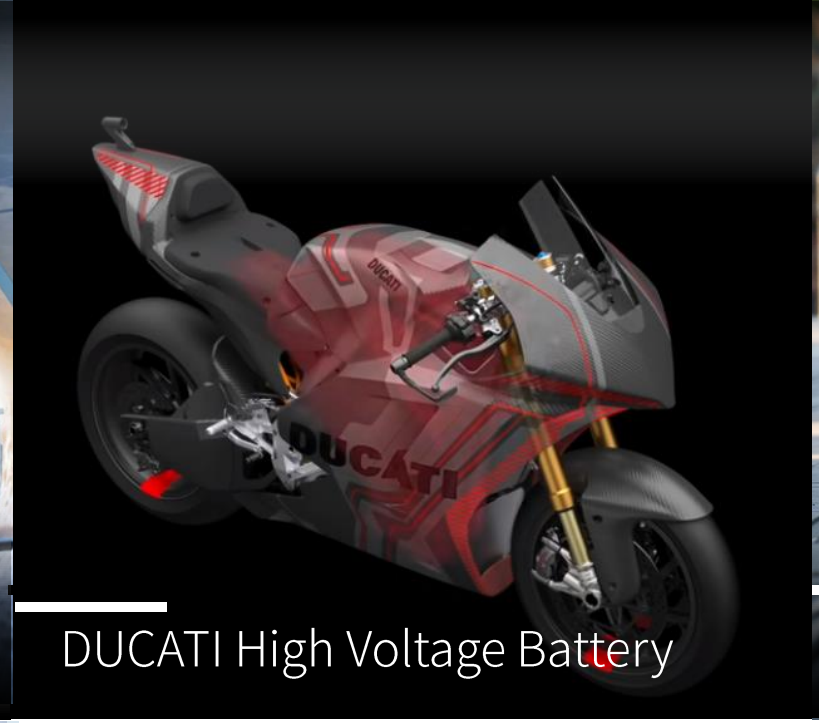
Product Portfolio – Turnkey project

Podium support customer providing a complete service starting from concept development to production

Our clients

Applications

TEMBO Mining Vehicle Electric Kit

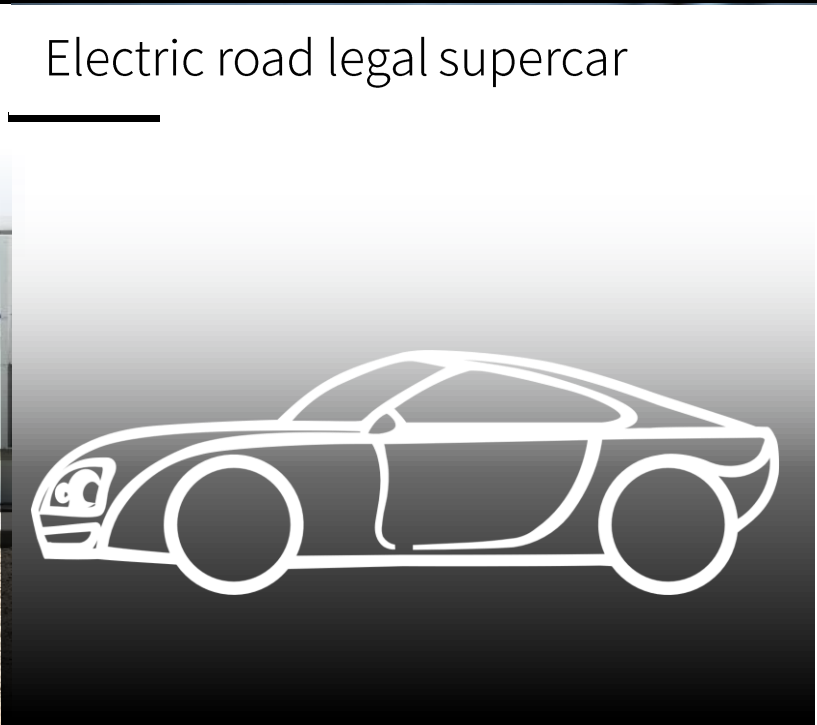


DUCATI High Voltage Battery

HITACHI Urban light rail Battery

RIVA Eliseo Battery

Energy Storage System BMS



Electric road legal supercar

Hybrid & electric powertrain

- Podium specializes in designing and engineering hybrid and electric powertrain systems, integrating motors, gearboxes, power electronics, and chargers to meet all vehicle requirements and customer specification
- Podium develops control algorithms that comply with the strictest requirements
- Podium offers hydrogen powertrain solutions utilizing fuel cell technology.

Electric Platform development

- Podium's deep expertise in chassis, suspensions, powertrain, and vehicle dynamics makes us the perfect partner for car manufacturers looking to develop electric vehicle platforms.
- Podium's specialized knowledge in integrating battery packs is a unique advantage in the industry.

Race cars

- Podium's expertise includes managing the complete design and validation process for top level race cars,
- We offer small series vehicle assembly and turn-key "ready to race" service
- We provide comprehensive race support including mechanics, tools, and spare parts coordination to manage our customer's factory racing programs

Full Vehicle

- Podium’s vehicle technology team is fully equipped to engineer any kind of high performance small series and road legal applications (EU, US and China homologations)
- Podium's engineering capabilities include complete vehicle testing and validation activities
- Podium has the capability to handle all aspects of vehicle assembly, from prototype build to small series production

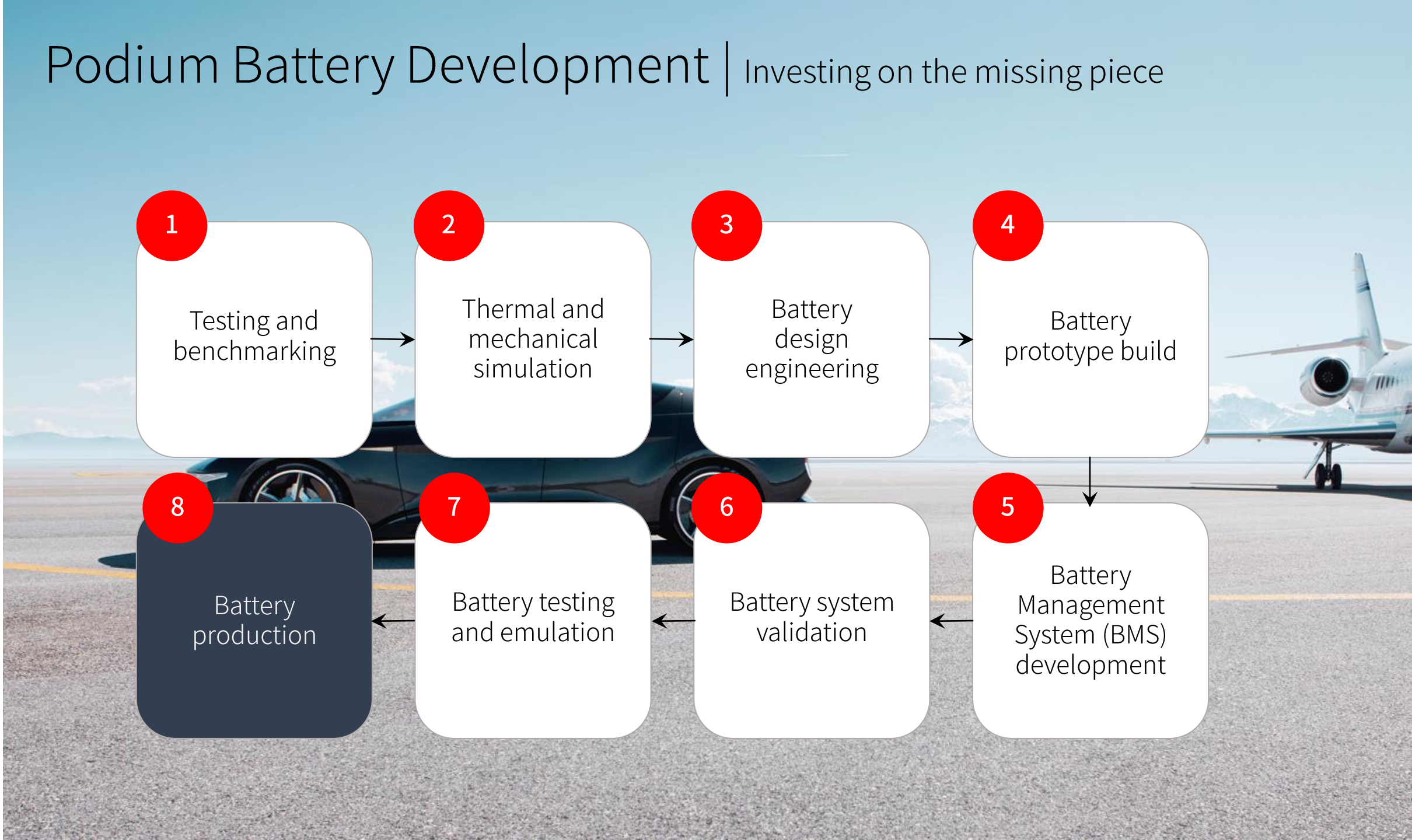
Leading the Way to build a Sustainable Future

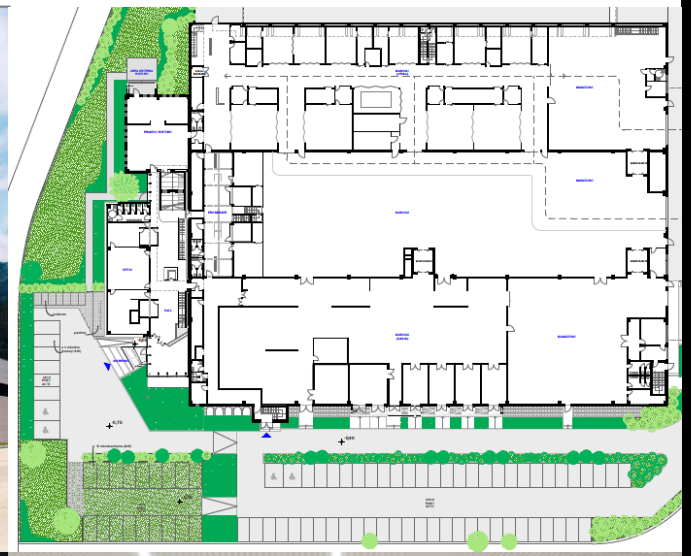
Vision

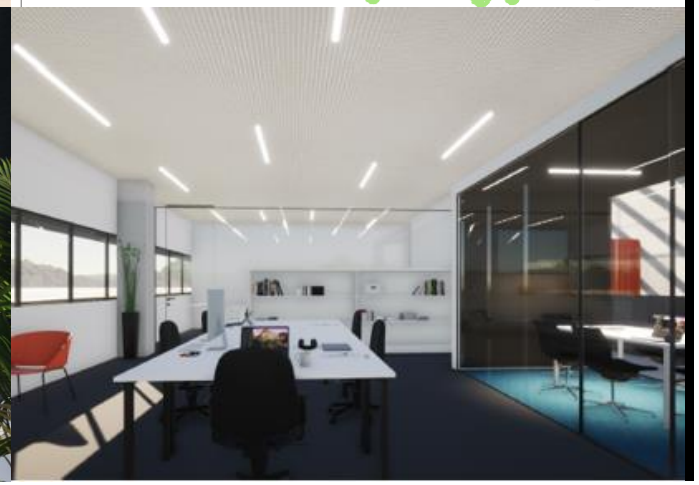
| To be a leader in the development and manufacturing of high performance battery packs and electrification solutions for niche markets.

optimizing the performance, manufacturability, and quality of laser-welded battery connections is essential to ensure the reliability and safety of battery packs for electric vehicle and energy storage applications. Proper optimization of laser parameters, streamlined manufacturing processes, rigorous testing, and a focus on battery specifics will lead to the creation of high-quality, high-performance battery connections that can handle the demands of automotive e-traction applications.

Podium Battery Development | Investing on the missing piece







- 2023 Q2 **New Headquarter**: the 16.000 sqm new premises featuring a automated battery assembly line and dedicated areas for Offices, Labs, Prototype area for vehicle and battery assembly.

- 2023 Q4 Podium's automated battery assembly line ready to start up series production

- 2024 Q1 **Podium's BMS new generation** developed as ISO 26262 (ASIL D) out of context Exportable to easily be compatible with (Rail Functionsal Safety EN 50128 - Naval regulations - Industrial Functional Safety IEC 61508) ISO21434 Cyber Security ready. The project is developed in collaboration with NXP ®

- 2025 Q2 Podium standard module SOP Flexible solution for off highway high performance application ready for recycling and second use target

2023-2025 3-years plan

Battery assembly line

PRODUCT DEVELOPMENT

- Lab for testing
- Dedicated secluded areas
- Walk in Climatic Chamber
- Test bed for cell and modulde
- 600kW – 1200V Testing system -

PRODUCT ASSEMBLY

- Battery Storage Area 1800 m2
- Assembly area: 3000+ m2 (5500m2 available for capacity increase)
- Module dimensions: up to 1200 mm in length and 1200 mm in width

PRODUCTION CAPABILITIES

- Pack dimensions: up to 2000 mm in length and 1800mm in width
- Volume: up to 1000 battery packs per year
- EOL for modules and Battery
- Volume cylindrical cells based modules: 2sec/1cell (240 kWh/shift max)
- Battery production annualized rate: 50 -100 MWh
- Flexible manufacturing stations can be replicated for higher volumes

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