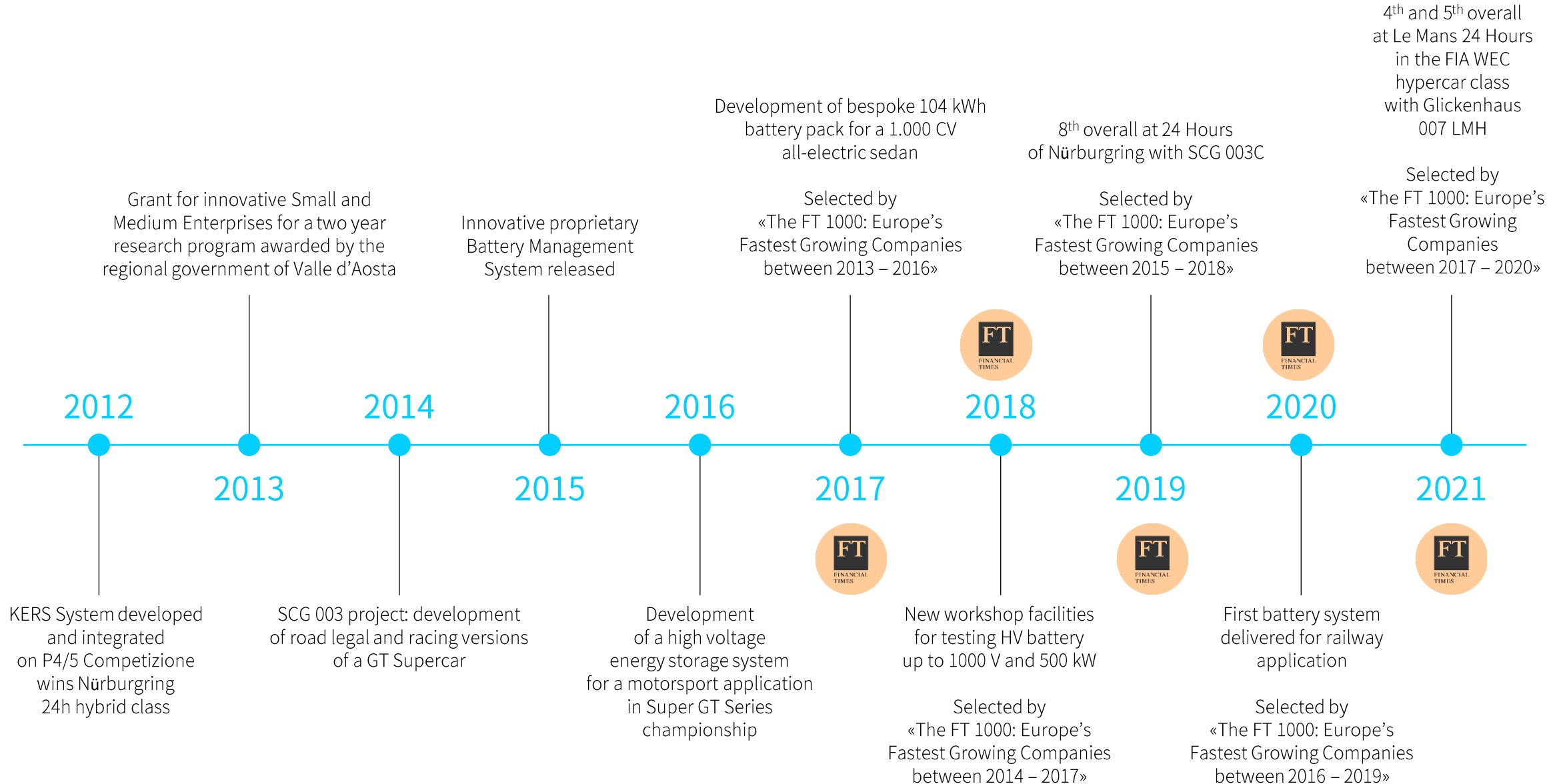






# History and key-facts





# Highlights

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## 2019

Delta Futurista ready  
for production (20 units only)



## 2020

First battery system delivered  
for railway application



## 2021

SCG 007 debuts in the new  
FIA WEC Hypercar class







Road cars



Battery  
systems



Racing cars  
& motorsport





# Battery systems



Proprietary BMS



Custom battery packs



Battery manufacturing



High voltage testing

High Energy Battery System  
Model: P064-HEBS  
Serial Number: 001  
Nominal Capacity: 5670Wh  
Nominal Voltage: 48V

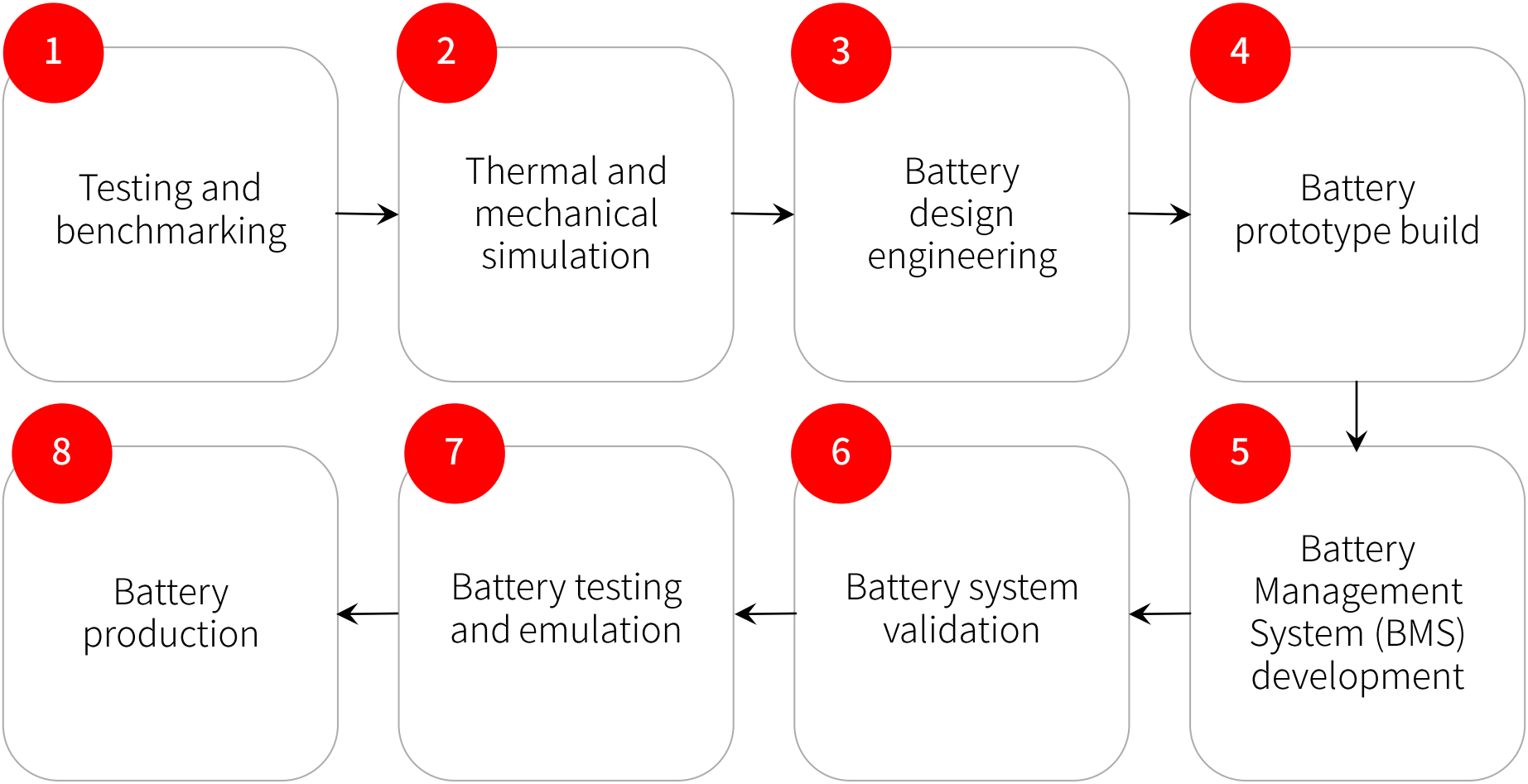
**PODIUM**  
ADVANCED TECHNOLOGIES  
www.podium-tech.com

**CAUTION:**  
1. Only apply for the specified Application.  
2. Do not crush, disassemble, short, heat above 55°C, inundate or incinerate.  
3. Do not use the product outside the range of its voltage and temperature specifications.  
4. Do not drop the battery and/or apply excessive mechanical stress to it.

Tel.: +39 0166 690983



# Podium Battery Development Process

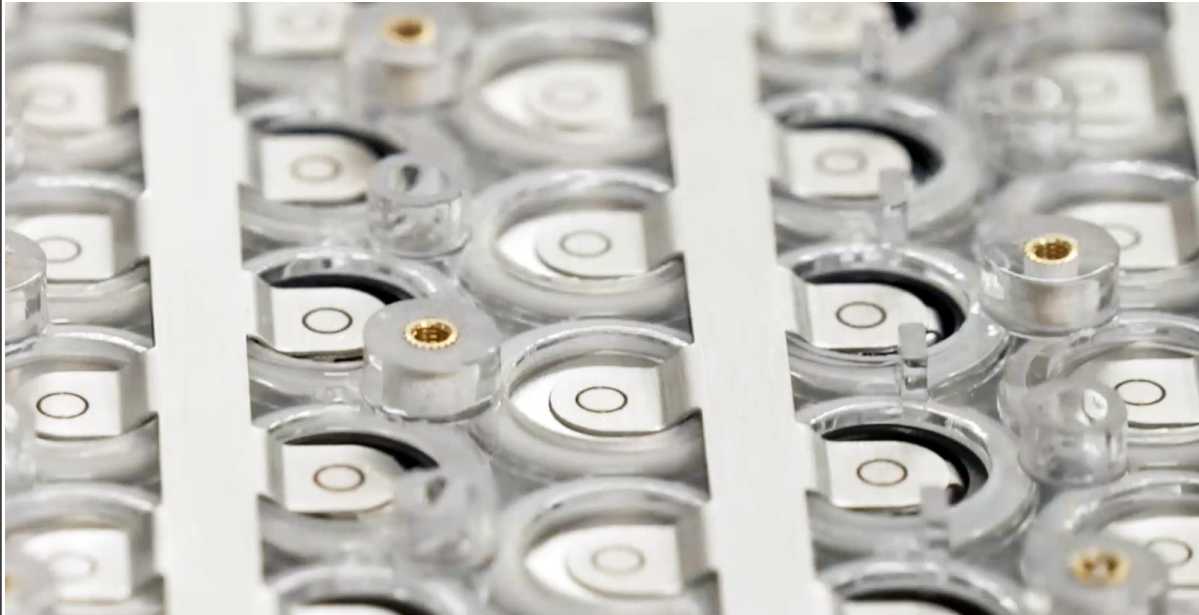
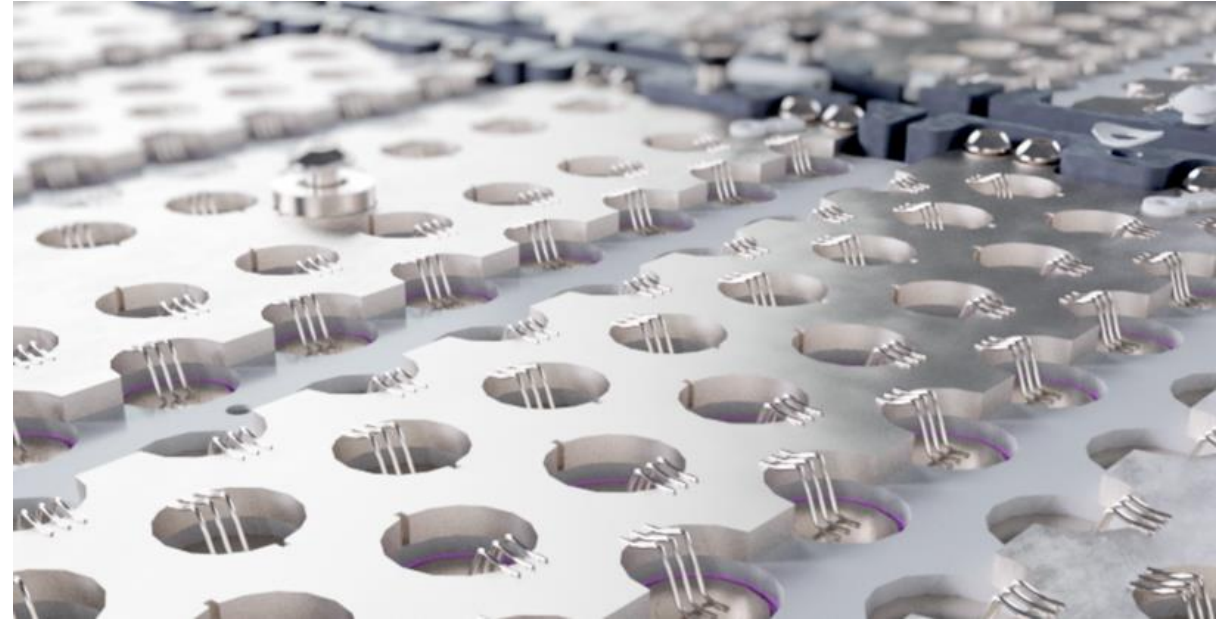




# Podium Battery Manufacturing

## Joining Technologies

Ultrasonic Wire Bonding



Laser welding







# Podium Wire Bonding Experience



## Motorsport Application & Leisure Boating

Bespoke module

Cylindrical Cell

Active thermal management system

## Base metal

Bus Bar Material: Al 1050 Nickel coating

Cell Material: Mild Steel – Nickel coating

Wire material: Al 99%







# Podium Laser Welding Experience

## Prismatic cells connection



### Urban light rail system

Bespoke module:

Prismatic Cell

Active thermal management system

Extreme long life: over 70% remaining capacity

after 20.000 cycles at 3C charge/discharge cycles 100% DOD

### Base metal

Bus Bar Material: Al 1050 Nickel coating

Bus Bar Thickness: 1 mm

Cell Material: Al 5052

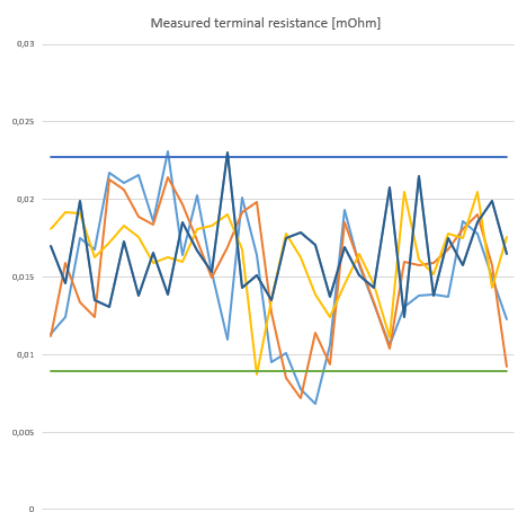
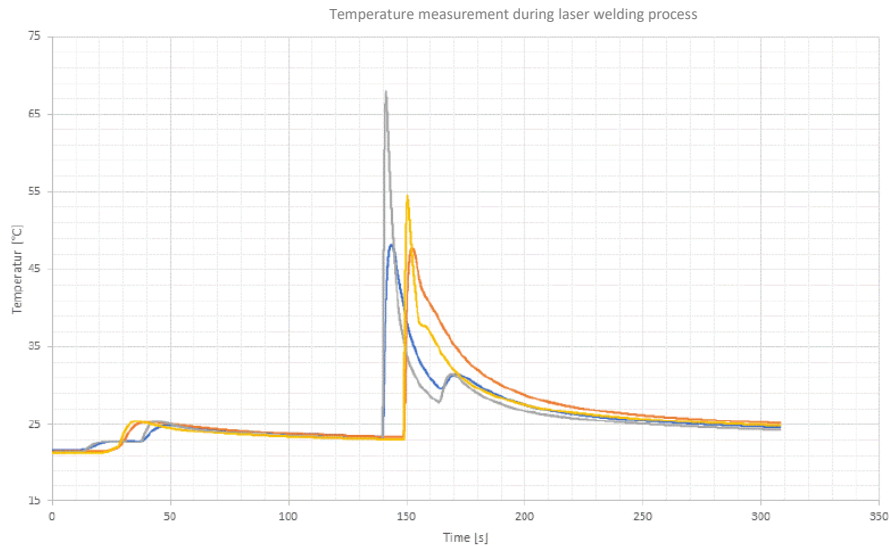
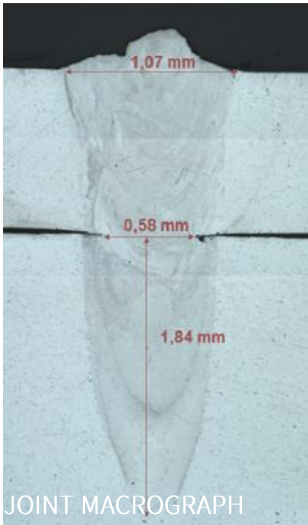
Cell Thickness: over 2 mm





# Laser Welding Development

## Prismatic cells connection



### Key joint requirements:

- Strict temperature limits
- Welding penetration
- Electrical resistance targets
- Shear force requirements





# Podium Laser Welding Experience

## Cylindrical cells connection



### Motorsport Application

Bespoke module

21700 Cylindrical cells

Dielectric fluid thermal management

Module energy density > 225 Wh/kg

Module power density > 3.000 W/kg

### Base metal

Bus Bar Material: Copper – Nickel coating

Cell Material: Mild Steel – Nickel coating

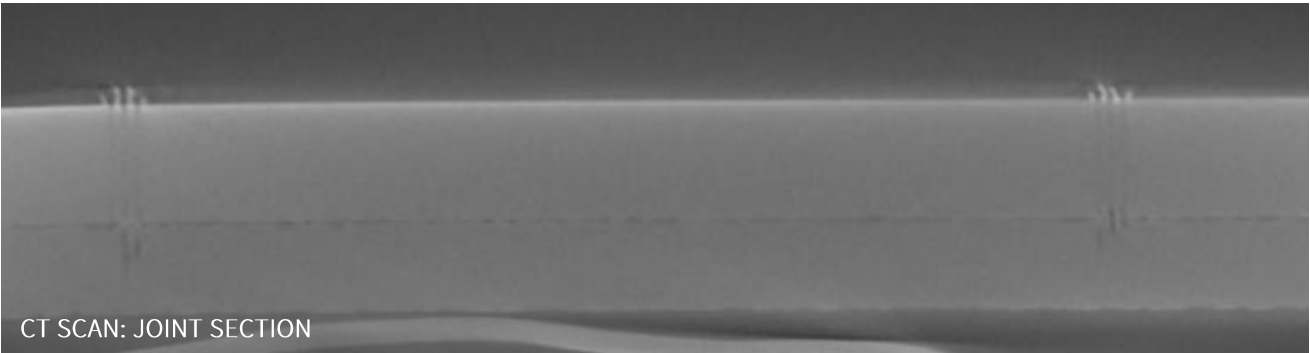
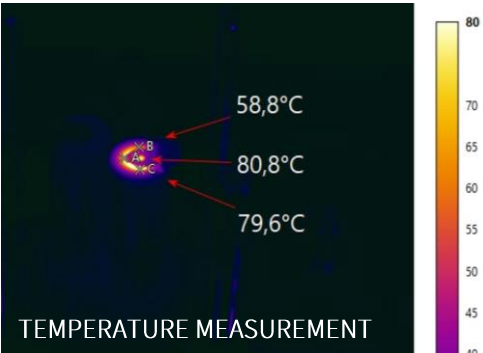
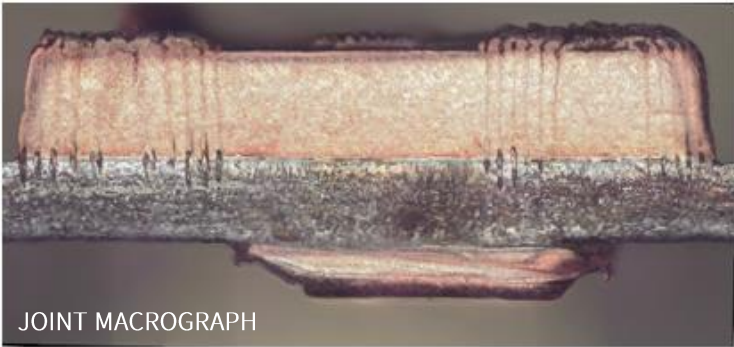






# Laser Welding Development

## Cylindrical cells connection



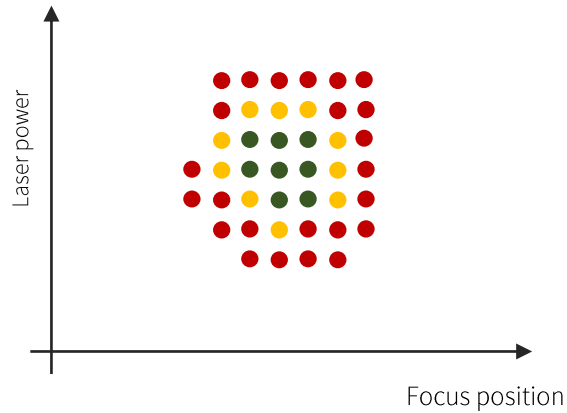
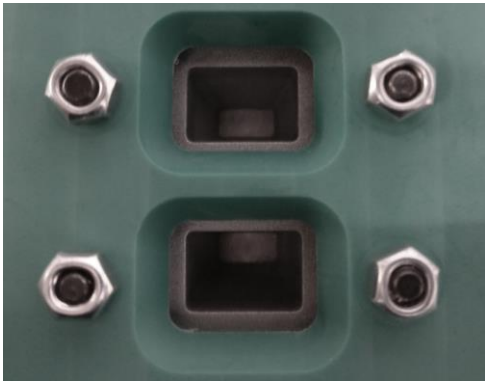
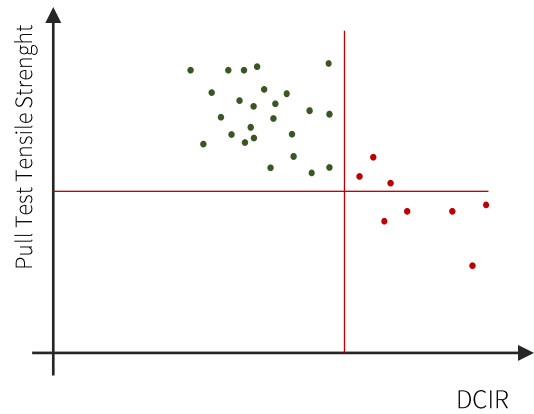
### Key joint requirements:

- Strict temperature limits
- Welding penetration
- Electrical resistance targets
- Peel/Pull force requirements
- Welding penetration





# Laser Welding Development



## Key Activities

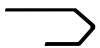
- Laser welding parameters optimization
- Power density and heat input control
- Process window definition
- Correct clamping and positioning
- Weld splatter generation control
- PullTest/Resistance diagram
- Joint surface cleanliness requirements definition





# Battery assembly

- New battery assembly facility composed of a series of individual highly flexible manufacturing stations with necessary automation to enhance product quality, guarantee traceability and prove the industrialization of bespoke battery systems
- Manufacturing stations with capabilities to handle cells with different chemistries and characteristics (cylindrical, pouch and prismatic)
- Podium can produce and test prototypes and battery systems in small series
- Laser system capable to achieve quality joints for bus bar/cell connections and sub module collectors
- Laser system capable to weld modules with cylindrical, prismatic and pouch cells
- Laser integrated in a machine with high level of flexibility
- Assembly area: 3000 m<sup>2</sup>
- Battery production annualized rate: 33,5 MWh
- Volume: up to 2500 battery packs per year
- Module dimensions: up to 1200 mm in length and 600 mm in width
- Pack dimensions: up to 2000 mm in length and 1800mm in width







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