

27 GENNAIO 2022



LiBER - Lithium Battery Emilia Romagna

liberproject.eu

Coordinamento progetto:

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CIRI-MAM

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In Europe, within this decade, where it is technologically and economically viable, **everything that can be electrified will be electrified**, thus making **battery technology** one of the **most important key enablers** for the **green energy transition** facilitating existing and new technologies.

European Commission - Strategic Research Agenda for batteries 2020

Contesto finanziamento



Value chain ERMES :
Emilia Romagna mobilità elettrica sostenibile

Partenariato LiBER



Collaborazioni/intersezioni

LR14 – 2019/1



i-LLBOX

Contenitore batteria in materiali compositi per veicoli ad elevate prestazioni

LR14 – 2019/2



E-BUS

Autobus elettrico ed ibrido basato su pacco batteria avanzato

Competence Centre I4.0

bi-REX
Big Data Innovation & Research Excellence



IPPSAL

Integrazione prodotto processo servizio per accumulatori al litio.

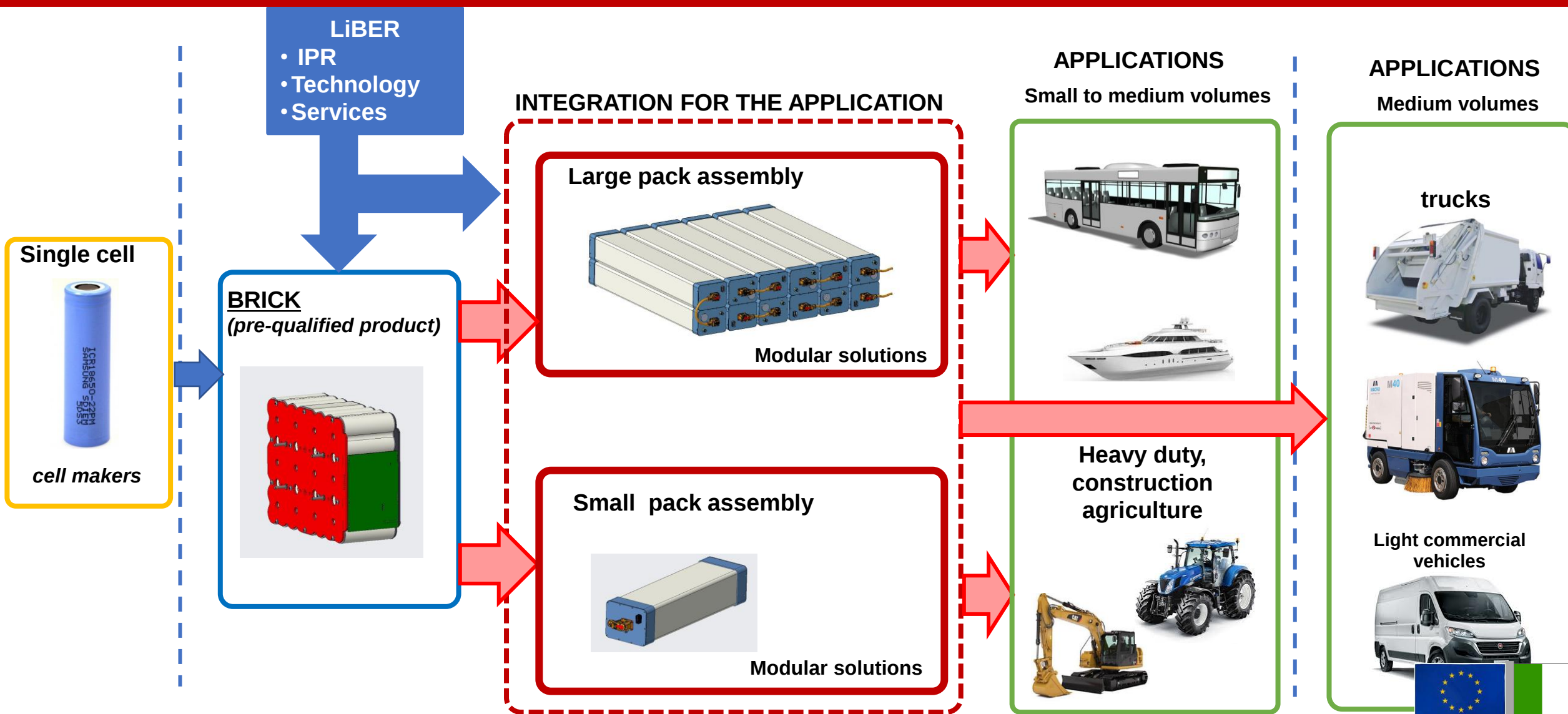
CEMI GROUP
Suzhou - China



KURU

Cloud computing and big data analytics for asset management in battery swap systems

2. LiBER - PRODUCT TO APPLICATIONS



3. LiBER INNOVATIONS

Container made of composite material



safety

cost

recycling

Tab-to-cell laser welding



Quality

Process cost

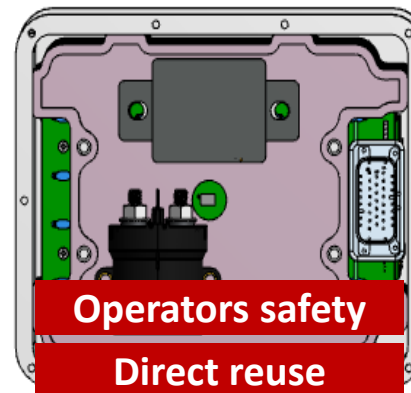
measurement of 100% of the cell's temperatures



Active safety

Cell monitoring

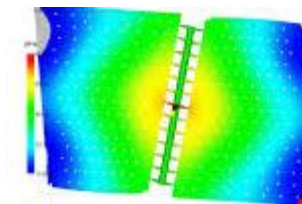
On-module control and protection



Operators safety

Direct reuse

Main parts designed for injection molding



Cost

High volumes

Wiring harness free solutions

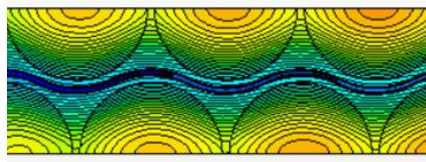


Quality

Reliability

Disassembly

Thermal conditioning

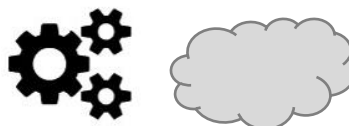


Flexibility

Performance

Cost

Distributed BMS edge and cloud computing

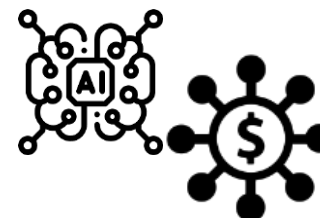


Active safety

Service cost

Reuse

AI



E - cert

Asset management

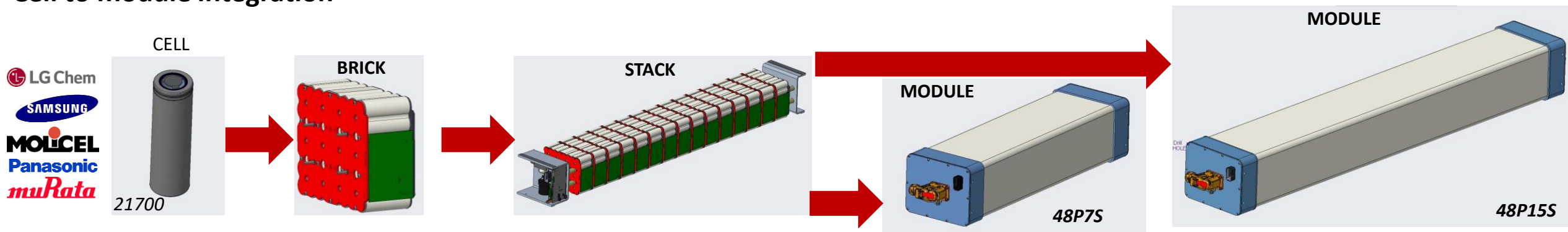
Reuse

PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

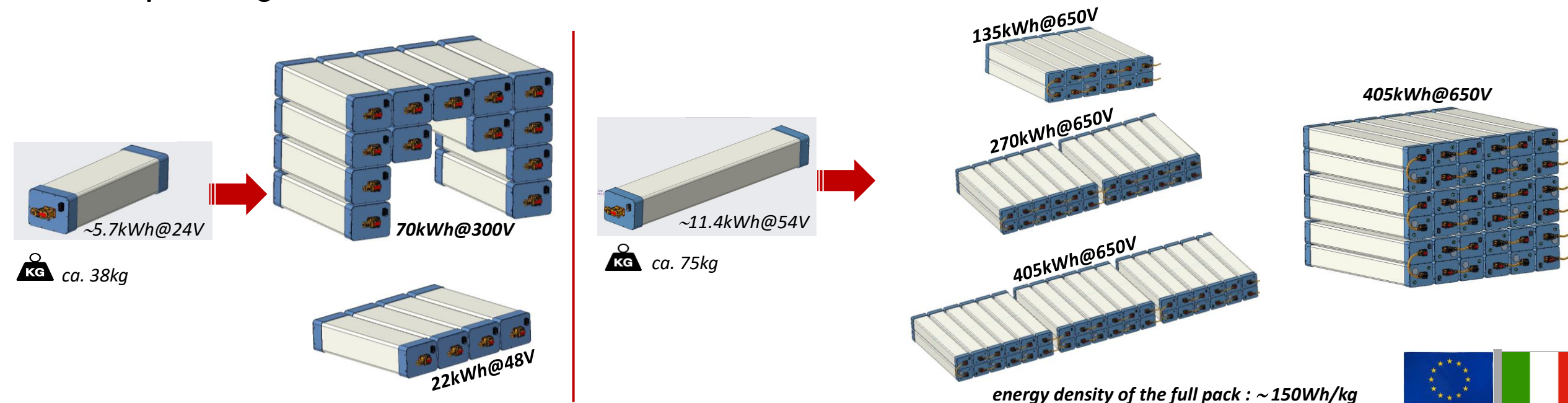


(10) International Publication Number
WO 2020/003059 A1

Cell to module integration



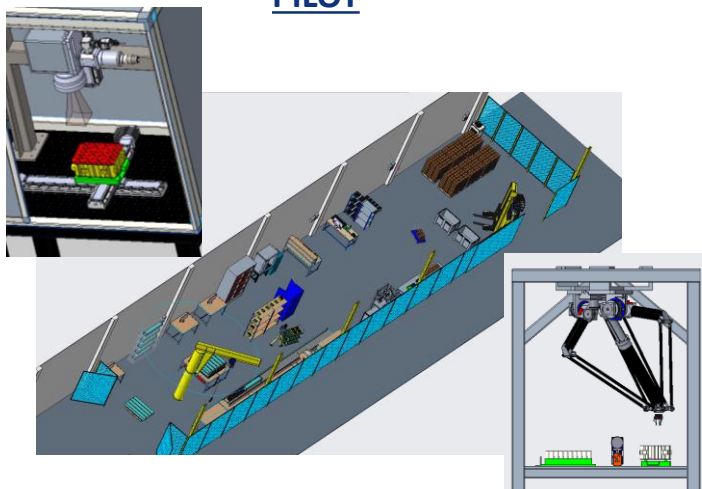
Module to pack integration



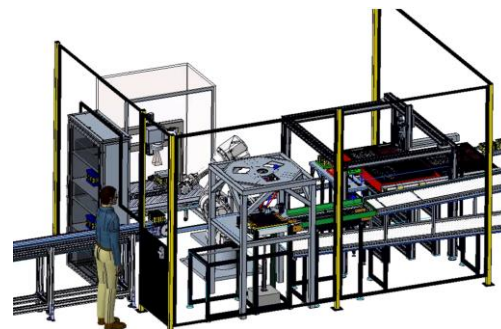
CELL-TO-BRICK integration

BRICK-TO-MODULE integration

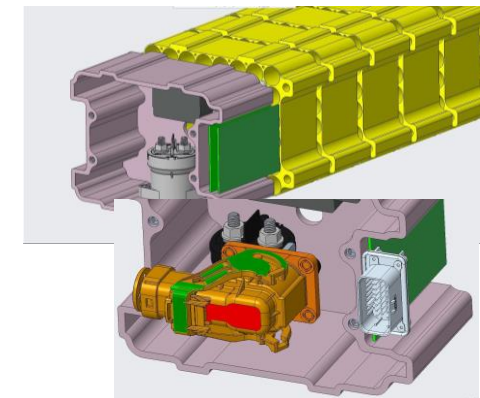
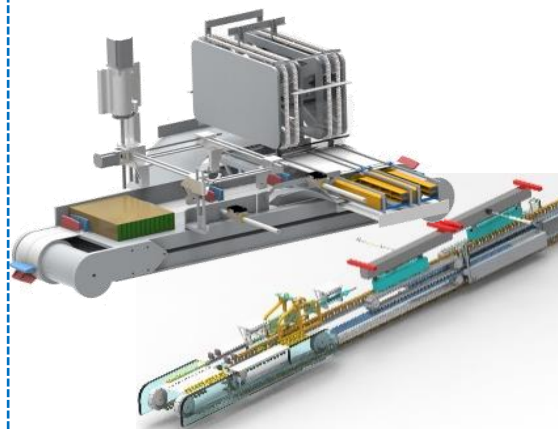
PILOT



ROBOTIZED



HIGH CAPACITY



PLANT	CAPACITY MWh/year (per shift)	parts acceptance	brick assembling	cell check	cell insertion	welding	brick validation	brick movements	Current state	assembling	qualification	Current state
PILOT	10	manual	manual	semi- automatic	automatic	automatic	semi- automatic	manual	Construction	manual	semi- automatic	Construction
ROBOTIZED	50	supply chain	automatic	automatic	automatic	automatic	automatic	automatic	Executive design	manual	automatic	Executive design
HIGH CAPACITY	500	supply chain	automatic	automatic	automatic	automatic	automatic	automatic	preliminary design	manual collaborative	automatic	preliminary design

6. LiBER - start up

2018 - Ondasolare

Emilia 4 - The winner of the American Solar Challenge 2018



17 kWh
battery pack
(experimental)

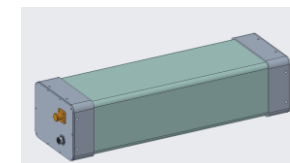


2022 - IIA



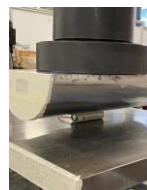
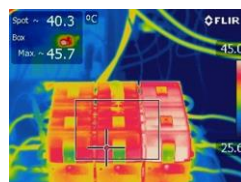
270 kWh @650V

2022 - DROVER



12+12 kWh @48V

2022
LiBER srl
spin off UNIBO



7. LiBER people

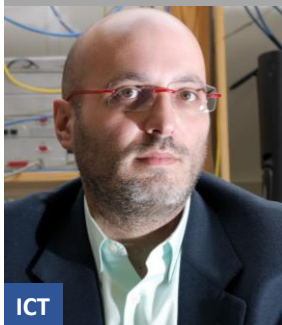
Beatrice Pulvirenti



Claudio Rossi



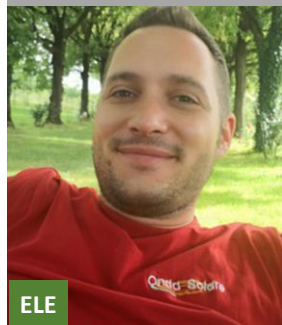
Giovanni Pau



Matteo Marano



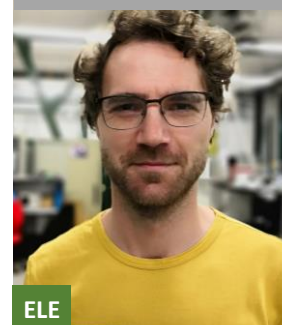
Davide Pontara



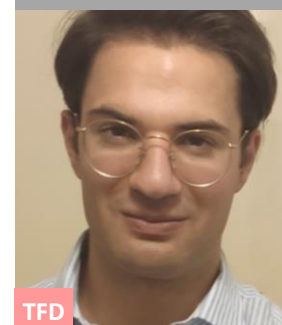
Carlo Falcomer



Alessio Pilati



Luca Muratori



Morena Falcone



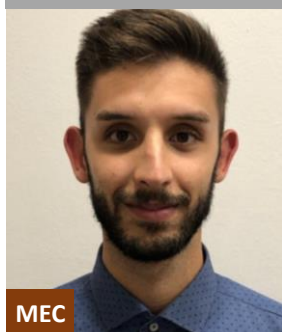
Andrea Zucchelli



Tommaso Brugo



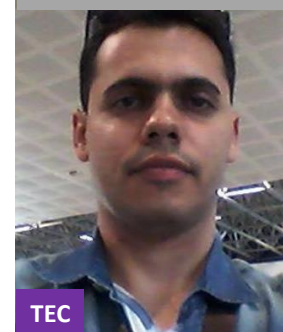
Luca Frigerio



Alessandro Fortunato



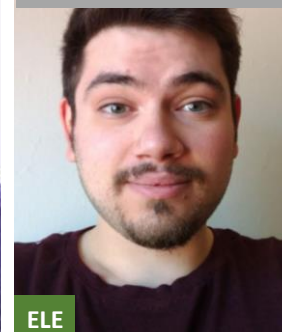
Eriel Pérez Zapico



Davide Aguiari



Alessandro Sacco





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Avanzata e dei Materiali**

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