


ONLINE PUBLIC DEMONSTRATION

17th November 2020, 10:00-12:00 CET



InteGrated and PHysically Optimised Battery System for Plug-in Vehicles Technologies

 This session is being recorded

1

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This project has received funding from the European Union's Horizon2020 Programme for research and innovation under grant agreement No.770019.



Agenda

TOPIC

PRESENTER

Welcome & Project targets



Basic Unit Concept Overview

Housing Manufacture, Base Unit System
Validation at lab level

Power PCB

Sensor-less temperature measurement

Battery cooling

Assembly of the Basic Unit & electrical tests

Conclusion & outlook

Questions & answers

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Dr. Andreas Könekamp, AVL

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Basic Unit concept overview

Dr. Andreas Könekamp



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GHOST Basic Unit - overview

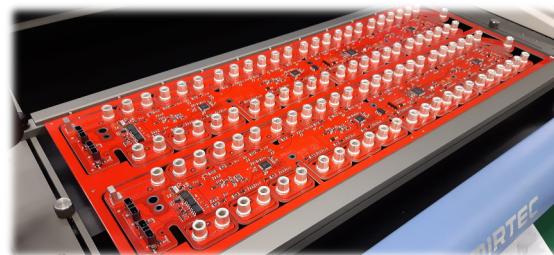
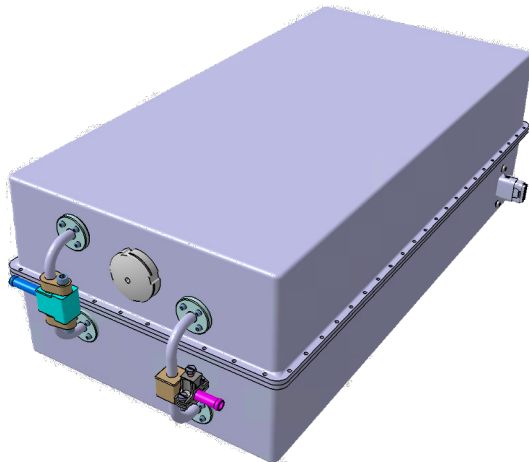
7,6 kWh

75 kW

108,2 kg

70,29 l

SCiB LTO



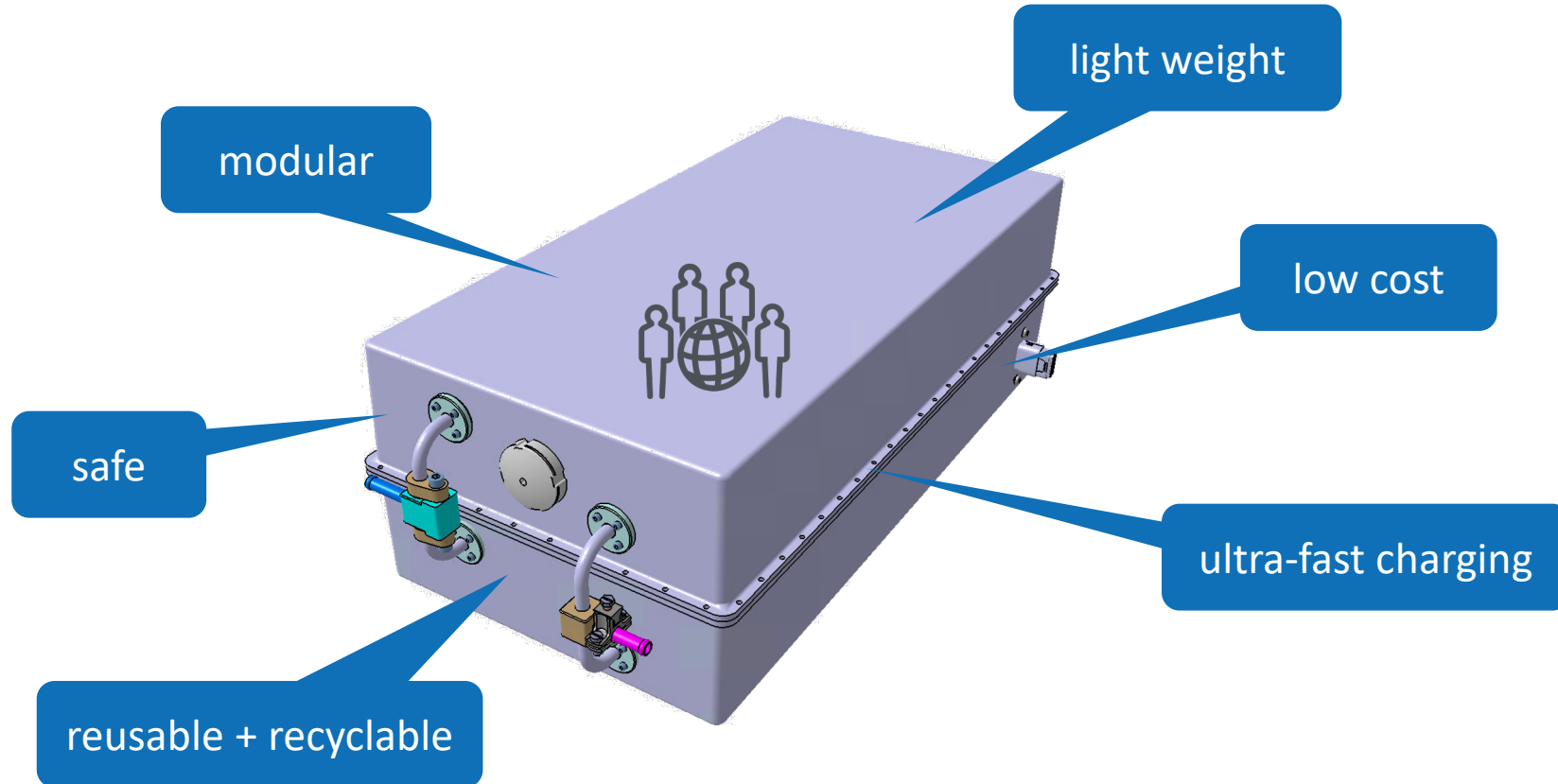
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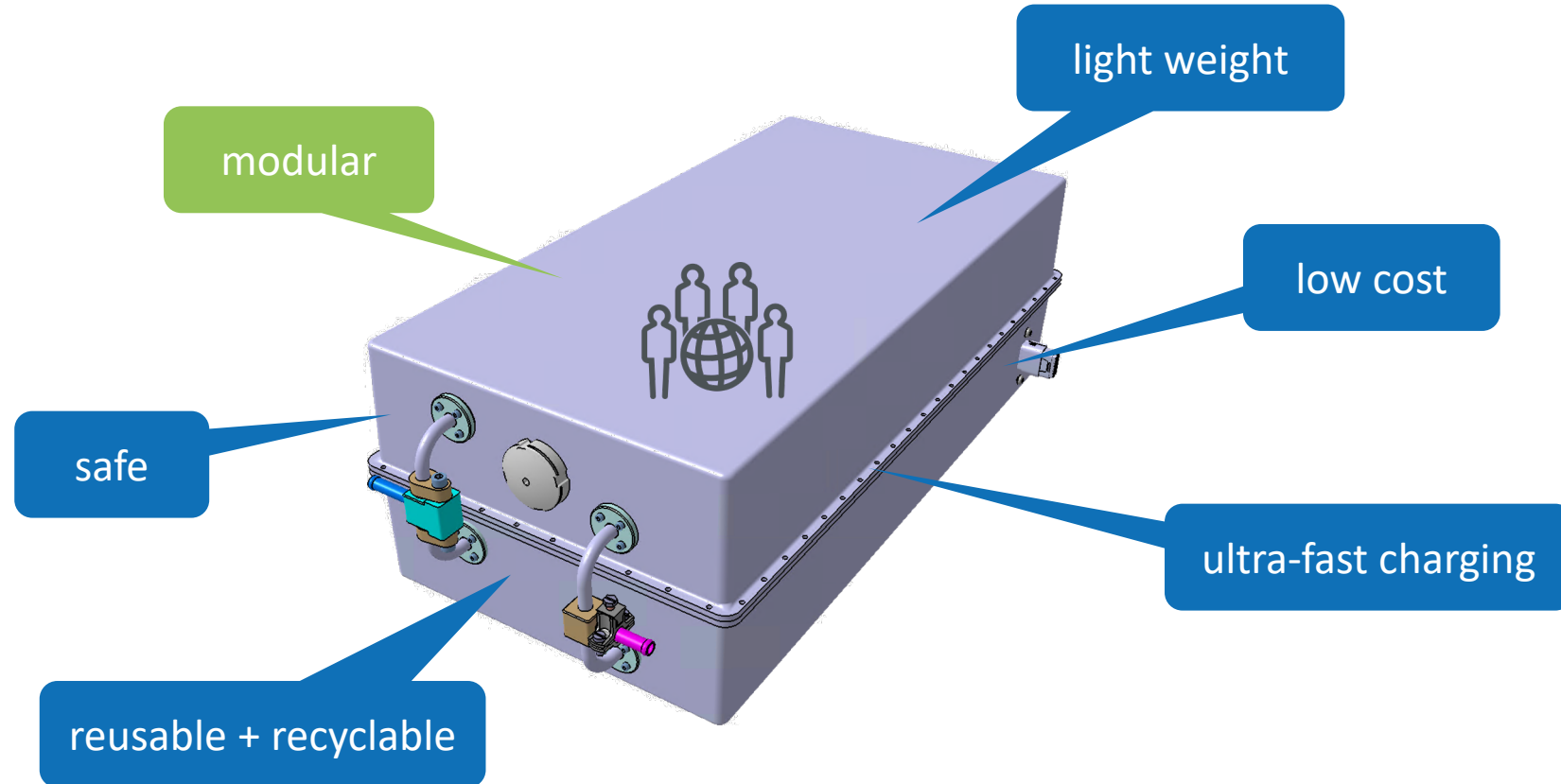
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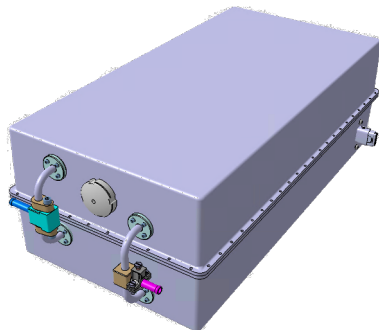
GHOST Basic Unit



GHOST Basic Unit



Modular

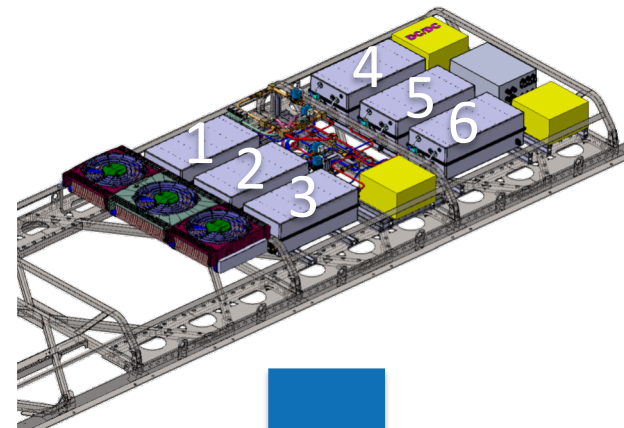
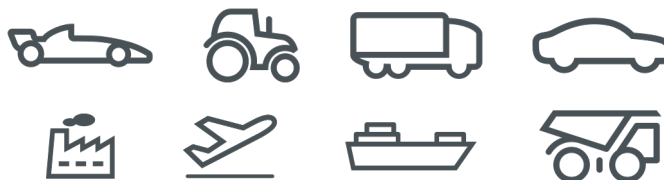


Energy: 7,6 kWh
Power: 60 kW
Water-glycol-cooled

400 V & 800 V

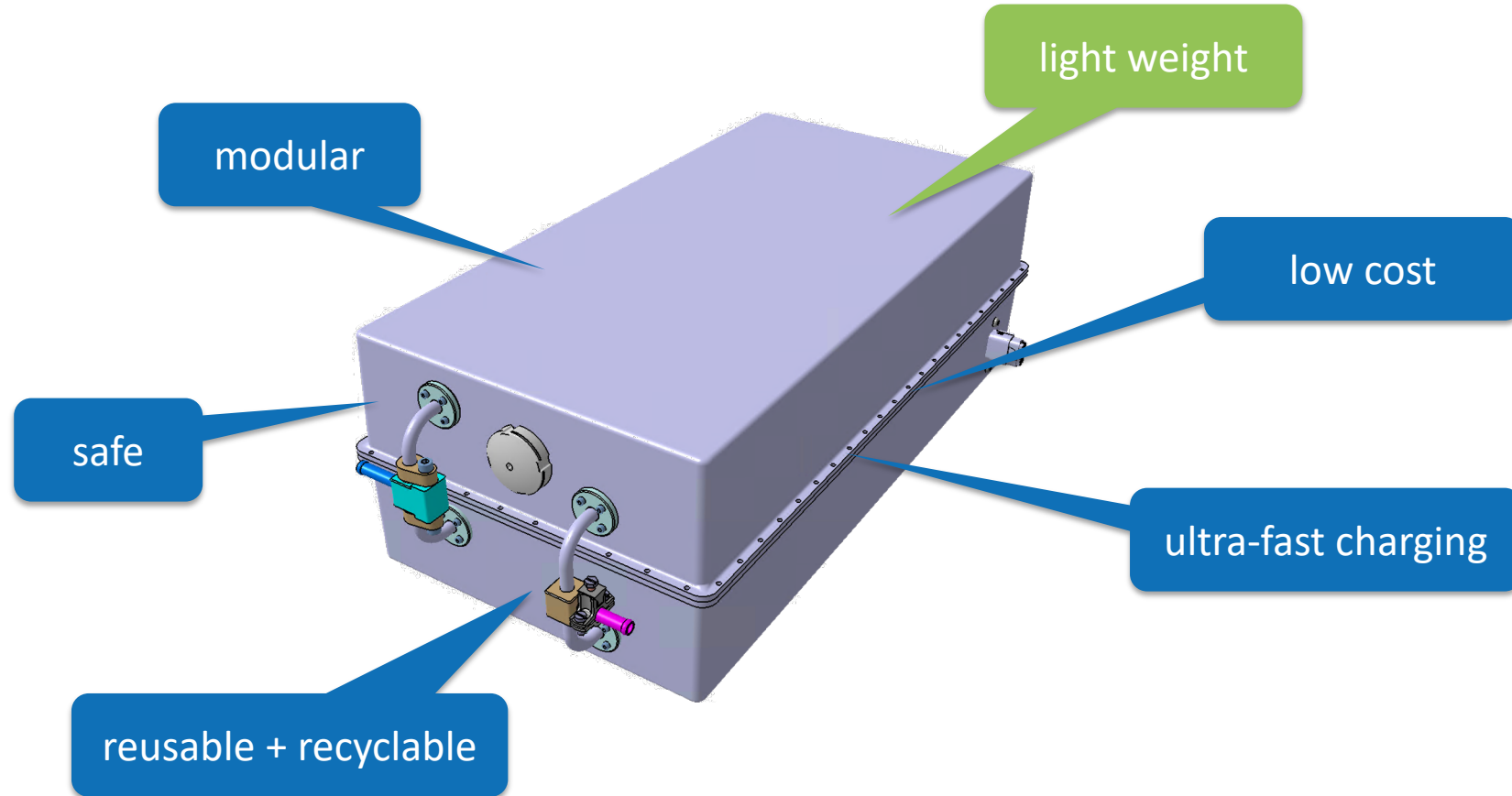
serial & parallel

Scalable



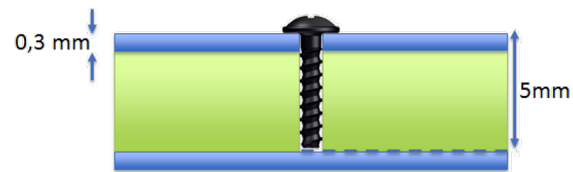
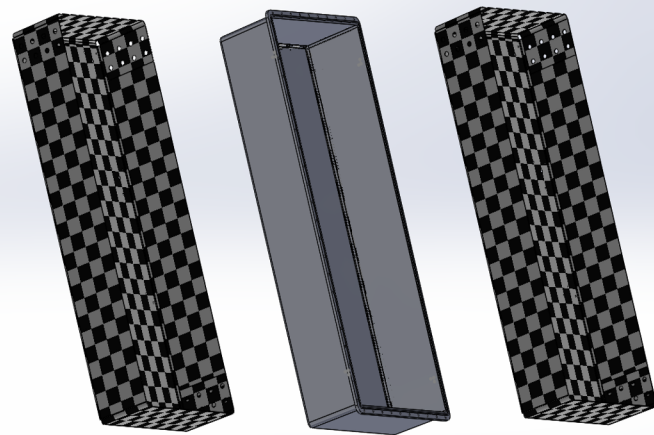
Energy: 45,6 kWh
Power: 360 kW
Refrigerant-cooled

GHOST Basic Unit



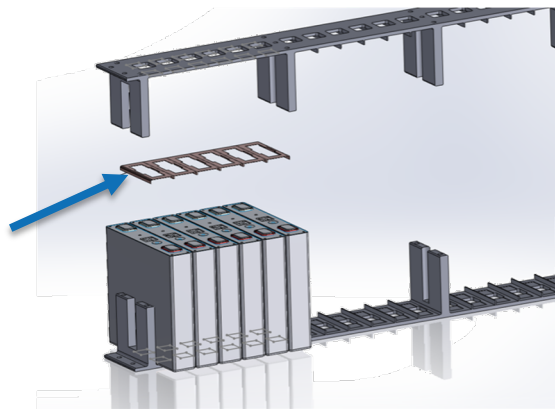
light weight

Sandwich-molded housing



CFRTP Facesheet
Polymer Foam Core

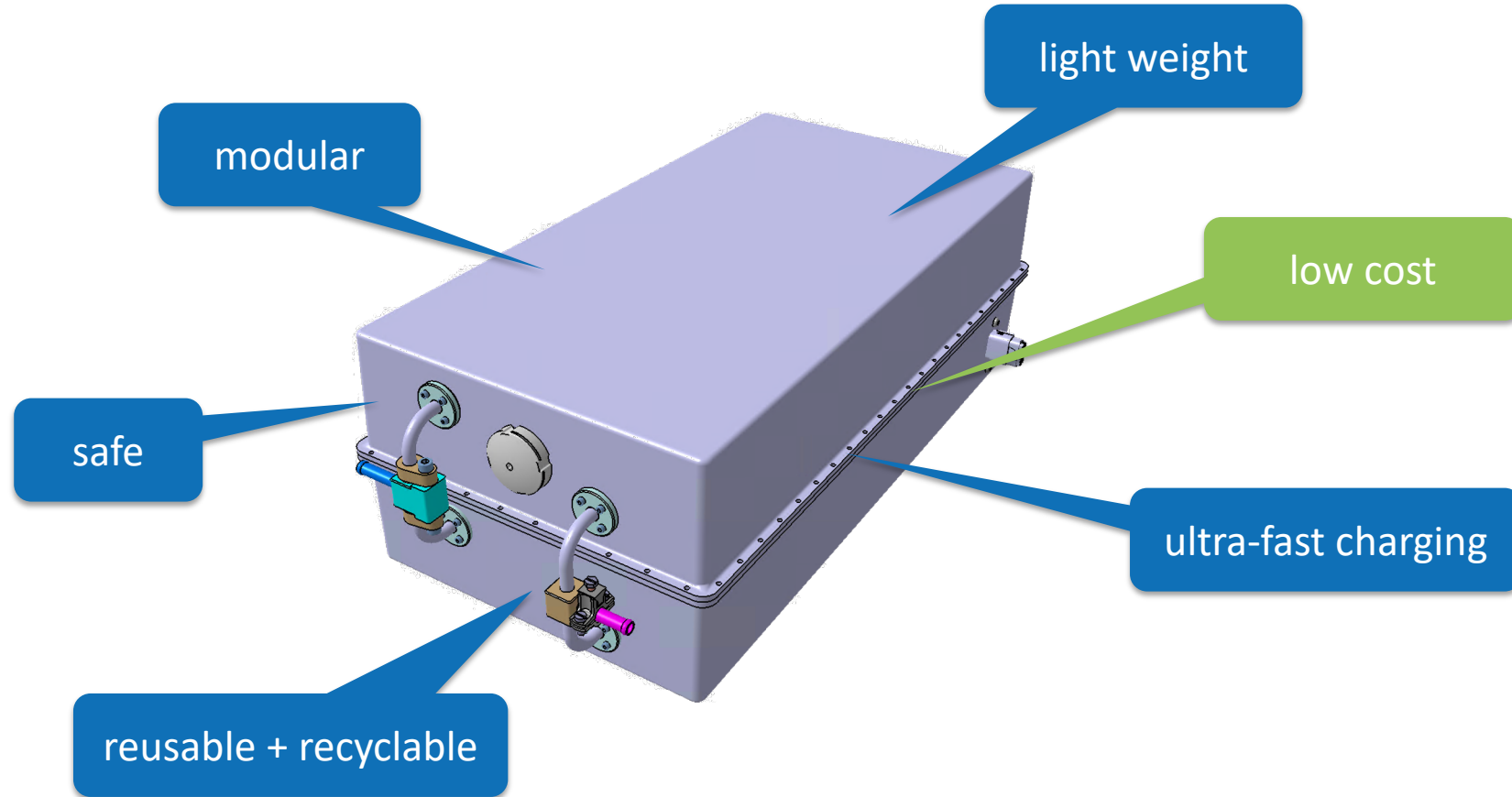
Cell retaining structure integrated



Package efficiency

	<u>Cell weight</u> Pack weight	<u>Cell volume</u> Pack volume
GHOST Basic Unit	73%	54%
Benchmark:		
Tesla Model 3	64%	33%
Mitsubishi Outlander	61%	41%
Jaguar I-PACE	55%	35%

GHOST Basic Unit

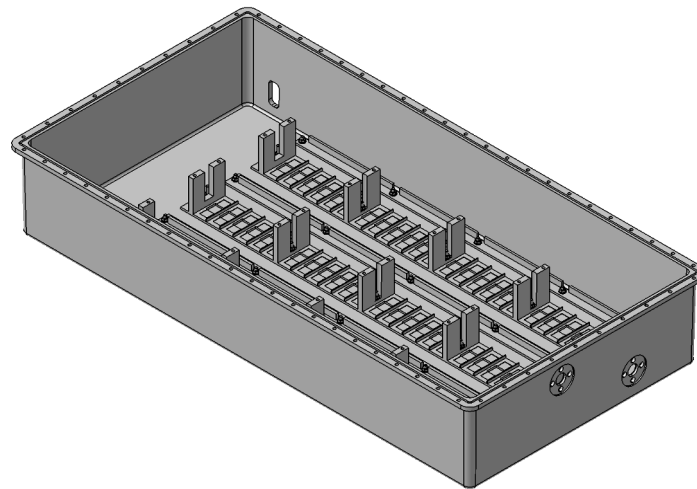


low cost

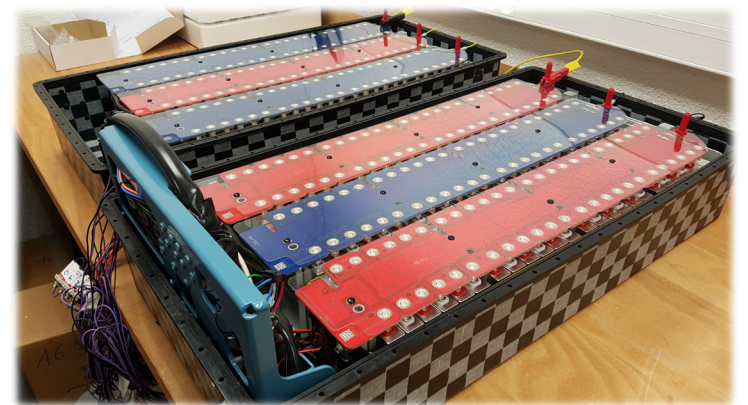
Glass-fibre, foam
injection molding



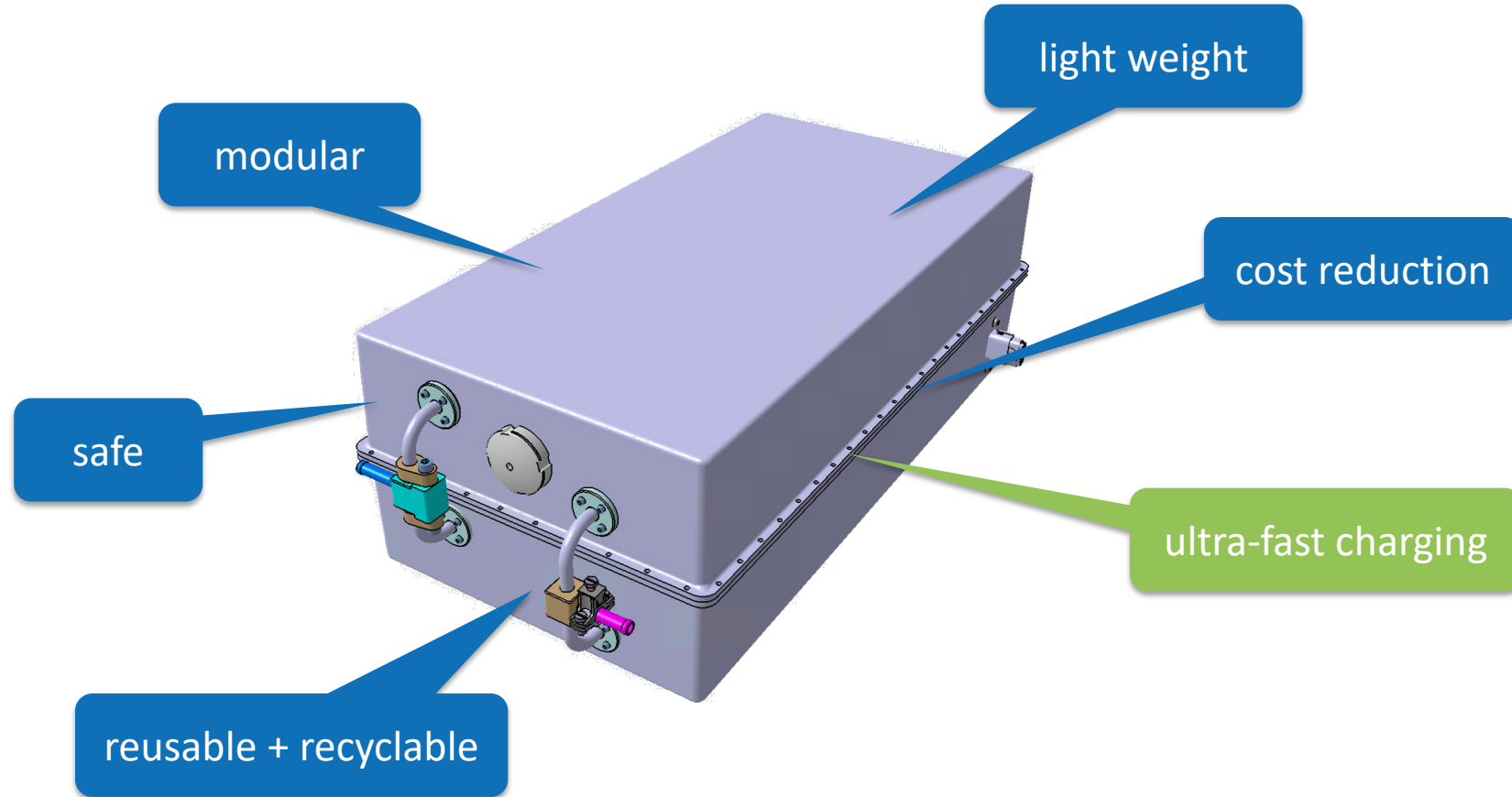
Integrate structure /
Cell2Pack



Electrical
integration



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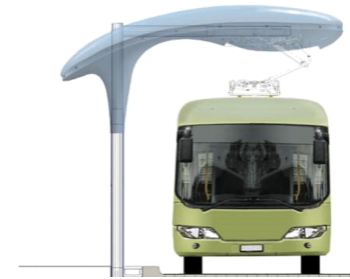
ultra fast charging

- 3,6 kW cooling performance achieved
- ΔT 3K cell2cell @ 3,6 kW

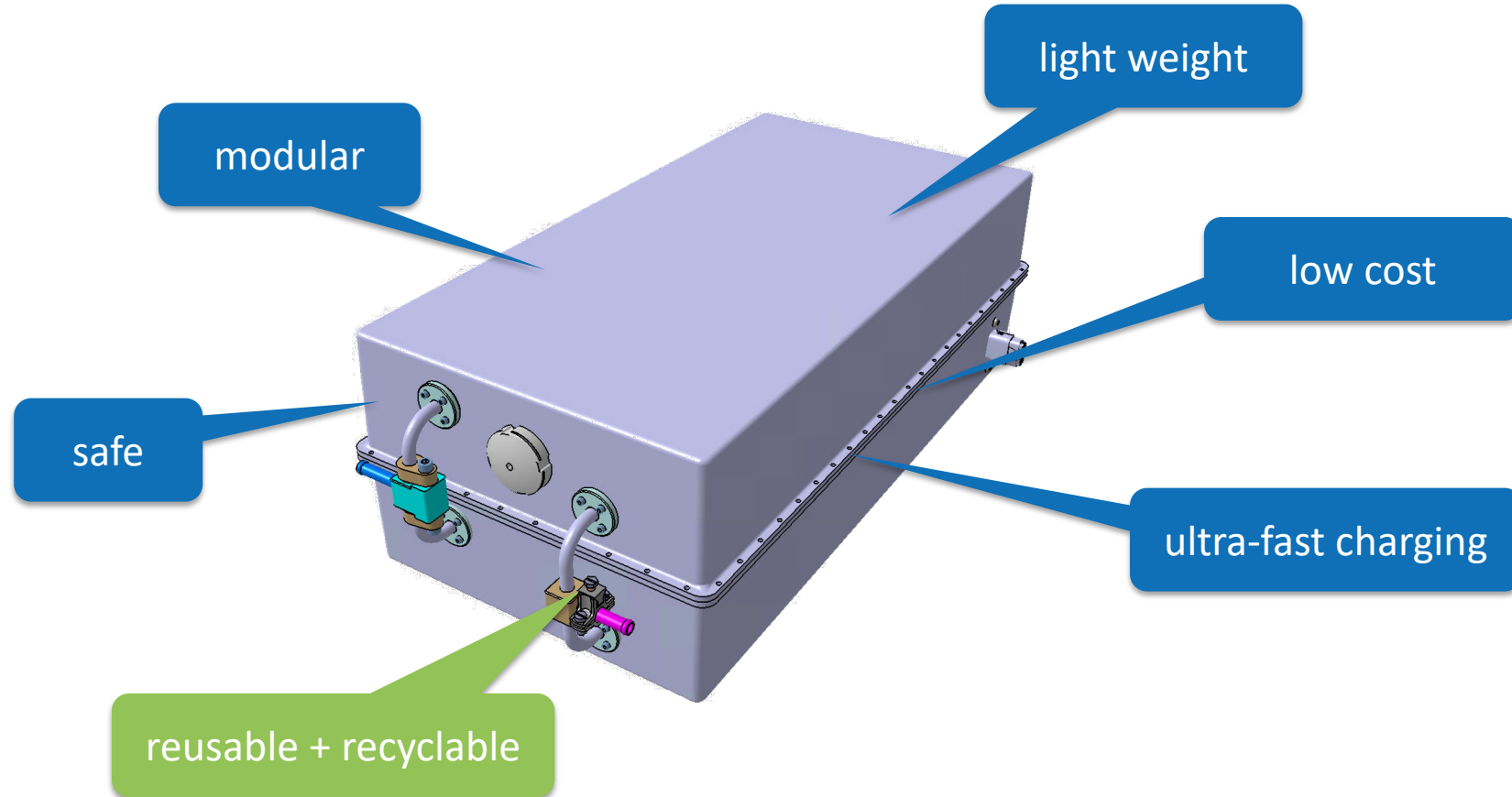
- Optimized cell-to-cooling plate connection
- Direct refrigerant cooling



250 kW opportunity
charging of E-bus



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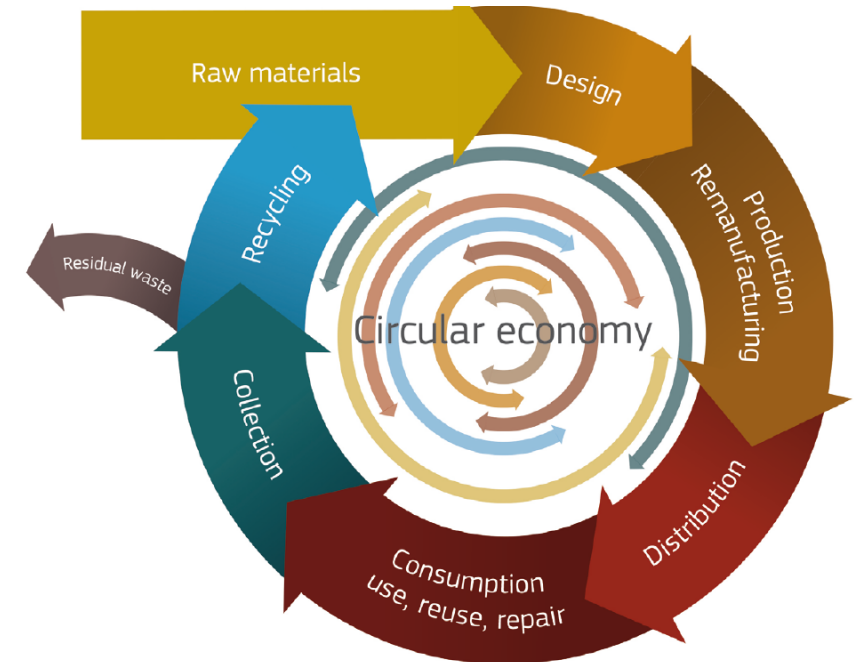
Reusable + recyclable

Reuse:

- all components serviceable + reusable (modular)
- cells exchangeable
- disassembly supported

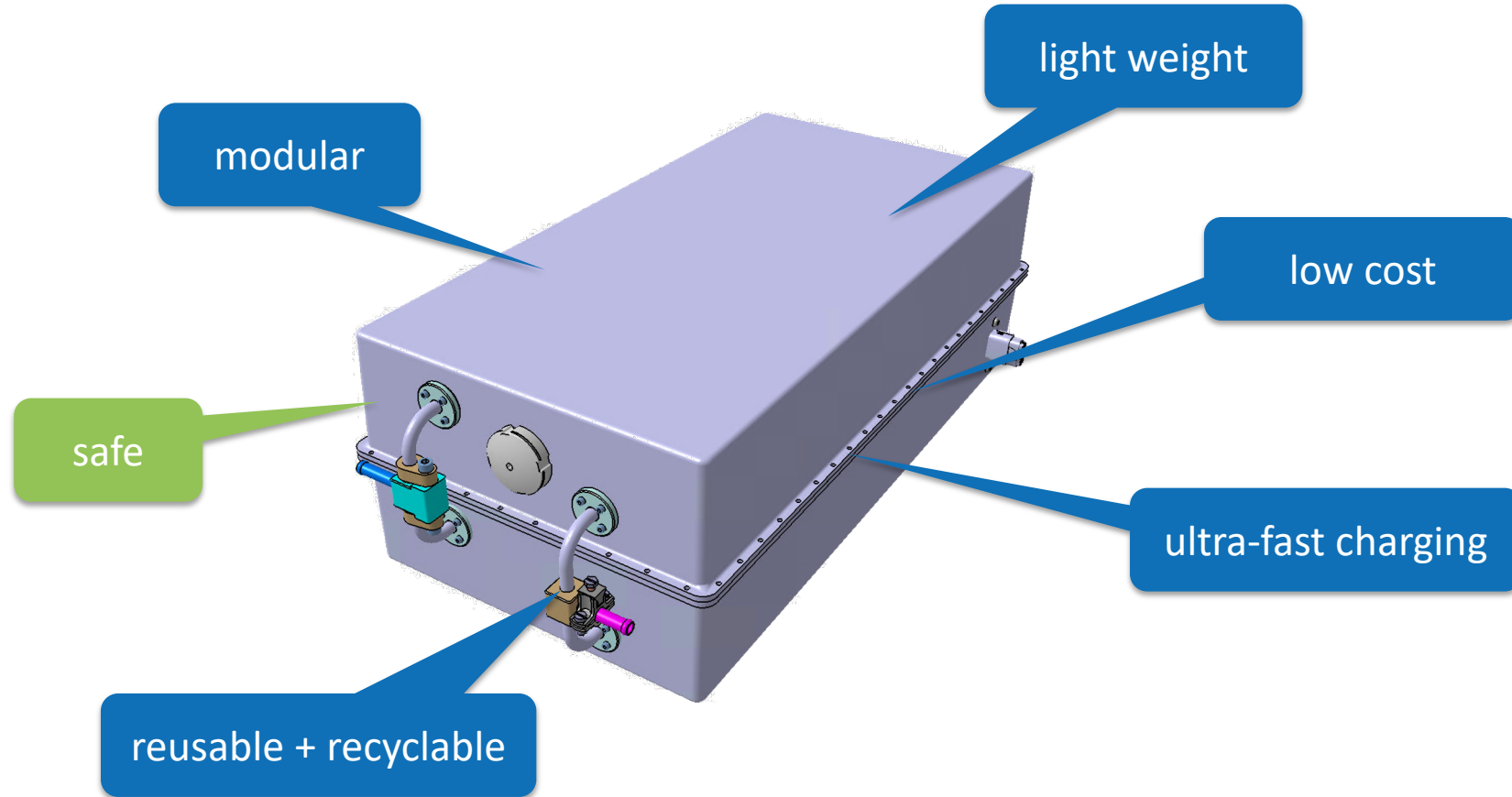
Recycling:

- all components recyclable
- material recycling of housing feasible:
 - only thermoplastics used, enabling pure fractions for recovery
 - in future with reasonably high production volume, high level specific recycling process feasible



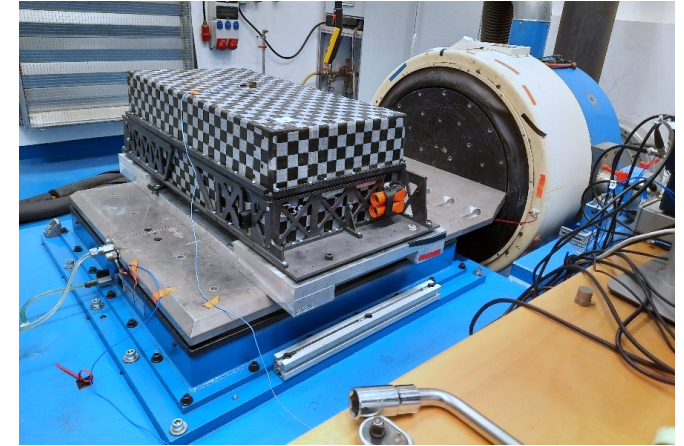
Source: EU-COM (2014) 398, Towards a circular economy, 2.7.2014

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safe  

- Multi-concern safety analysis performed
- isolation tested
- vibration and shock tested
- Sensorless temperature estimation of every single cell
- Fire resistant housing



Thank you



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Consortium



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AUTOMOTIVE TECHNOLOGY
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