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Ingenuity for life

Mireo Plus H

siemens.com/mireo

The Mireo Plus –

One platform for two hybrid technologies

Mireo Plus
All advantages of the Mireo platform

Mireo Plus B
A modular battery drive system

Mireo Plus H
A modular battery and fuel cell drive system

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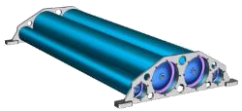
Our hybrid Traction kit –

Overview of innovations

HD8 next gen. fuel cell

- 50% higher power density
- Higher lifetime
- Low LCCs
- 5% improved efficiency rate

H_2 storage



- Modular concept
- +10% H2 storage capacity

Hybrid control SW

- Optimized operation by predictive E-Management
- ~ 5-15% energy saving

Powerful battery family

- LTO safe battery cell chemistry
- High-power charging
- 15 years life time

DC – DC chopper

- SiC Technology (compact, light @ low losses)

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Development overview of fuel cell system

Phase 1
Test & system optimization

- Modeling of key components and investigation of vehicle operation strategies
- System behavior investigation on a real system test set up (Co-operation)
- Deep dive view on improvement potentials

Phase 2
Modular traction system

- Definition of a vehicle concept based onto the improvement of the key components
- Development of a FC system of next generation
- Development and detail specification of the sub components

Phase 3
Vehicle integration & safety

- Development of mechanical designs & interfaces
- Development of a mission management vehicle control system
- Safety management & certification preparation
- Support by ext. studies

2017 **Funding project** **2020**

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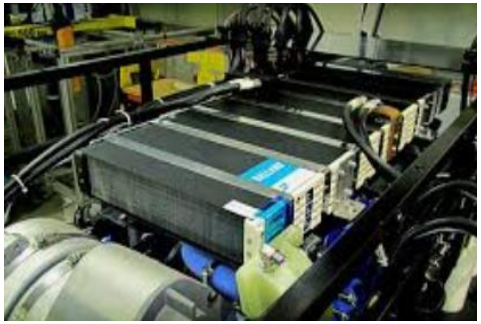
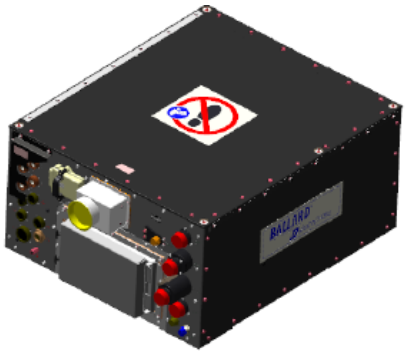
H2 Traction System Development

Fuel Cell System Design and Optimization Siemens - Ballard

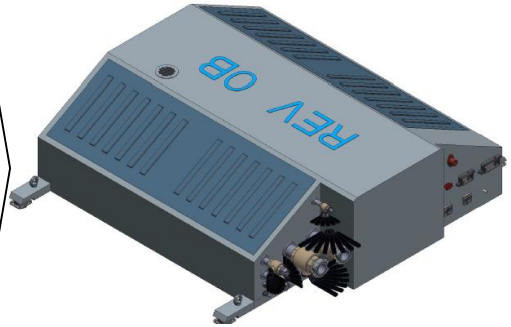
System design and preparation → **Concept design and system test** → **Integration and commissioning**



Transfer of system requirements



Transfer of train requirements



Hardware design

Concept device for system test

Prototype fuel cell for first train

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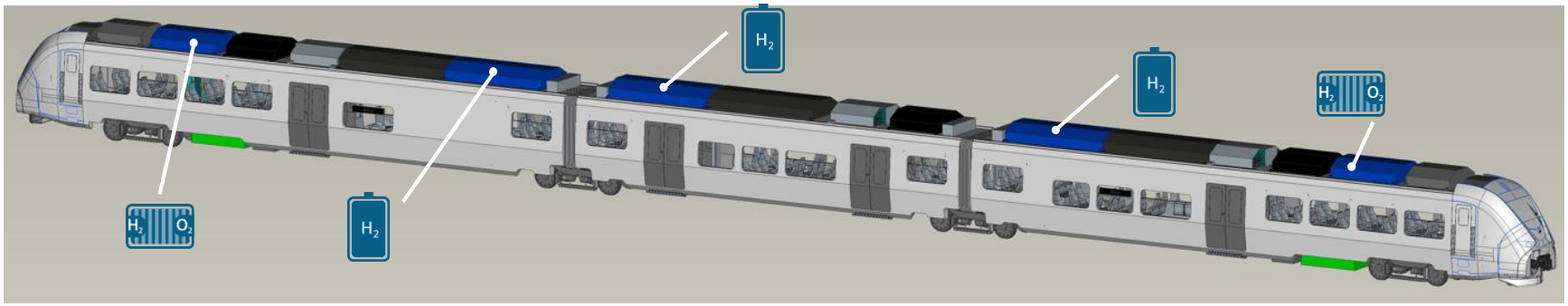
Mireo Plus H –
our solution for large scale networks

- H_2 fuel cells HD 8 next gen with storages of Type IV cylinders
- Optimized for large scale networks (> ~120 km) one time refilling per day
- Two configurations for different ranges and applications
  - up to 800 km range : 2-car train with 120 seats
  - 800 up to 1.000 km range: 3-car train with 165 seats



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