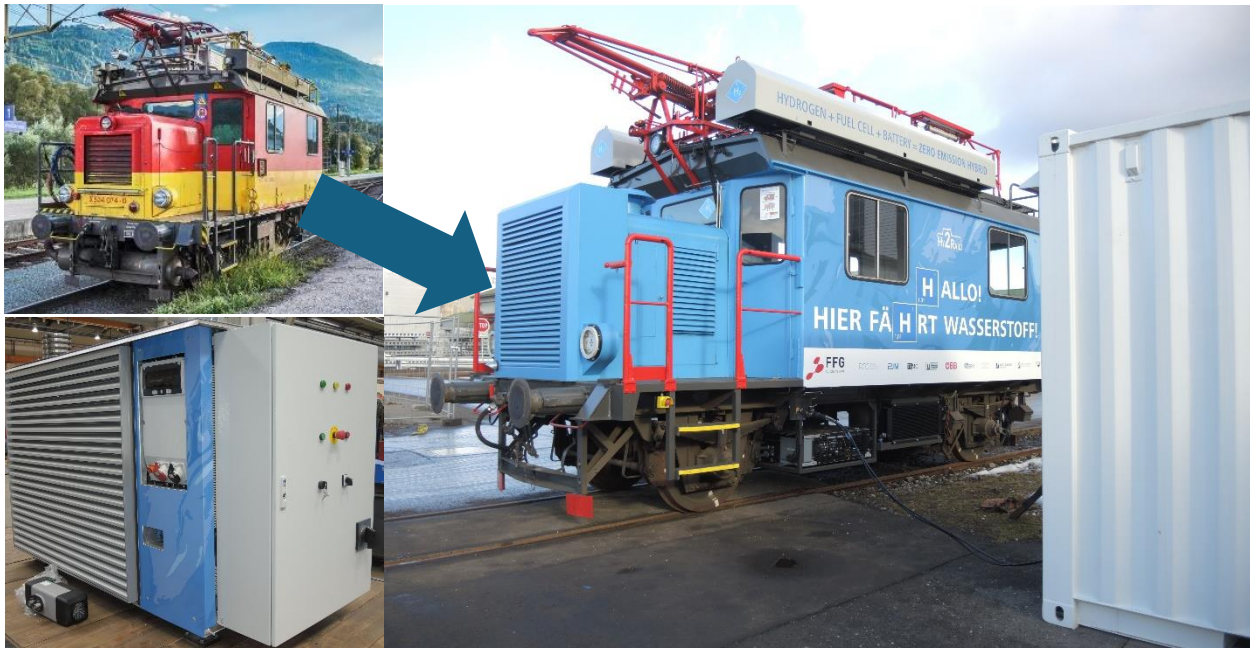
Project Fact Sheet

Hydrogen Hybrid Power for Rail



Short Description of Project:

Development of Hydrogen/Fuel Cell based Demonstrators for Rail Vehicles and Mobile Stationary Generators

Project Facts

Duration: 2019 – 2023

Total Budget: Total Cost: € 2.8 Mio. , Total Grant: € 1.3 Mio.

Project Coordinator: RCC Railway Competence and Certification GmbH

Engineering Lead/Fuel Cell & Hybrid Technology: m.ZERO OG

Conversion Manufacturing: ÖBB Technical Services GmbH

Hydrogen Fuel Technology (On-board & Refueling): Worthington Industries

Vehicle & System Control including Software: Thomas Wiener, Engineering Consultant

Key Deliverables

- **Demonstrator OTM X534 with Hydrogen Fuel Cell Hybrid Dive**
- **Hydrogen On-board Storage System**
- **Mobile Hydrogen Refueling Station**
- **Prototype Mobile Hydrogen Fuel Cell Generator**
- **Fuel Cell System & Balance of Plant**
- **Simulation Suite**

Project Supported by FFG (Austrian Research Promotion Agency)
Grant Agreement No: 871528

Original Specifications X534.064

Diesel Generator	122kW Max. 500VDC
Vehicle Drive:	BBC – WD641a Series wound DC-Motor 95kW @1010min-1 with integrated gear dive 1:4,67
Weight	21t
Max Tractive Effort	17.3kN
Maximum Speed	80km/h
Diesel Fuel	220l
Typical Range	1200km
Control	Resistor Network

Hy2Rail Vehicle Specifications X534

Fuel Cell System as PPU	Cummins HD40 in 3s1p configuration 120kW max., integrated via DC/DC to match Battery Voltage 620-740VDC
Battery	Webasto HD Battery 2x35kWhin 2s1p (max Theoretical Max. Voltage 800VDC Usable Capacity due to peak voltage limits approx. 60kWh
Total Peak Power Hybrid	332kW (max. 10s)
Vehicle Drive:	BBC – WD641a Series wound DC-Motor 95kW @1010min-1 with integrated gear dive 1:4,67 Supplied via VVVF Inverter (Medha)
Weight	21,5t
Max Tractive Effort	17.3kN
Maximum Speed	80km/h
Hydrogen Capacity	21.4kg H2 @ 35MPa corresponding to 353kWh Battery capacity
Typical Range	450-800km
Control	Full Digital Safety Oriented Rail VCU (Knorr Selectron) with new software

For more information contact:

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