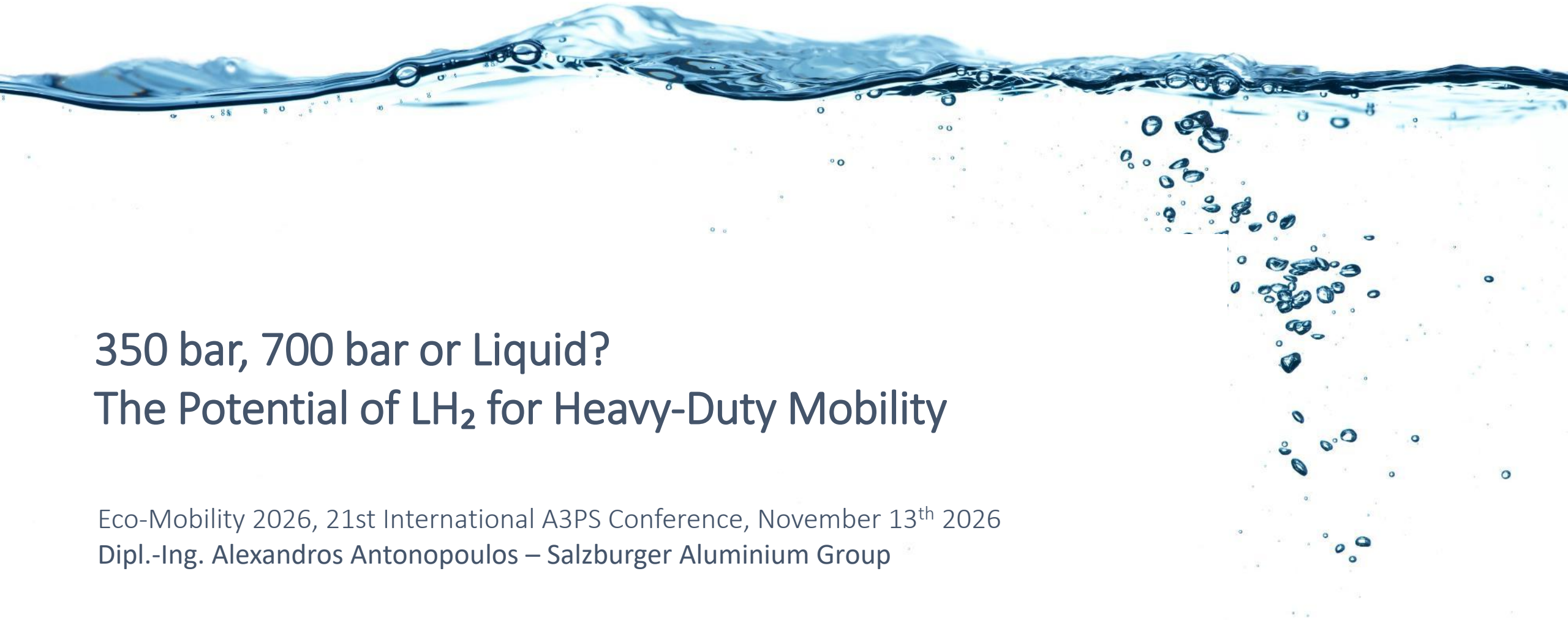
SAG
Progress in Aluminium



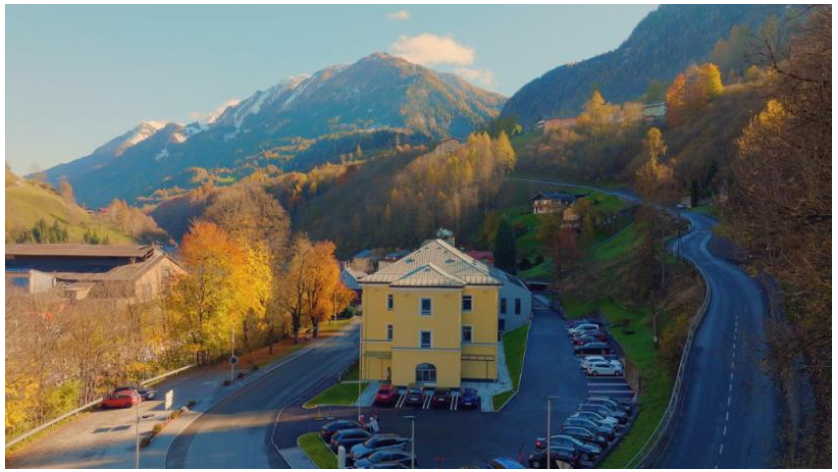
350 bar, 700 bar or Liquid?
The Potential of LH_2 for Heavy-Duty Mobility

Eco-Mobility 2026, 21st International A3PS Conference, November 13th 2026
Dipl.-Ing. Alexandros Antonopoulos – Salzburger Aluminium Group

Agenda

- Overview SAG Group
- Hydrogen Supply for the Mobility Sector
- Comparison of Hydrogen Storage for FCEV HDT
- SAG LH2 Hydrogen Storage System

Salzburger Aluminium Group



Industries	Commercial Vehicle | Automotive | Railway | Special vehicles
Market Leader	Global | Fuel Tanks | Hydraulic Tanks | HCV > 16 ton
Technology Leader	Global | Cryo Tanks | Rheocasting
Turnover	~160 Mio €
Employees	~950 FTEs
Headquarters	Lend | Salzburg | Austria
Production	Austria | Netherlands | Slovakia | Spain | Mexico



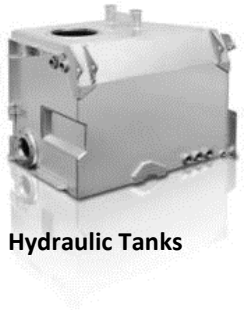
Fuel Tanks



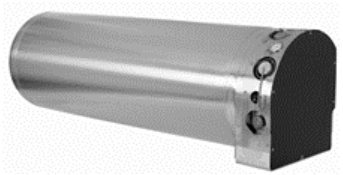
Air Pressure Tanks



Special Tanks



Hydraulic Tanks



Cryo Tanks (LNG and LH2)

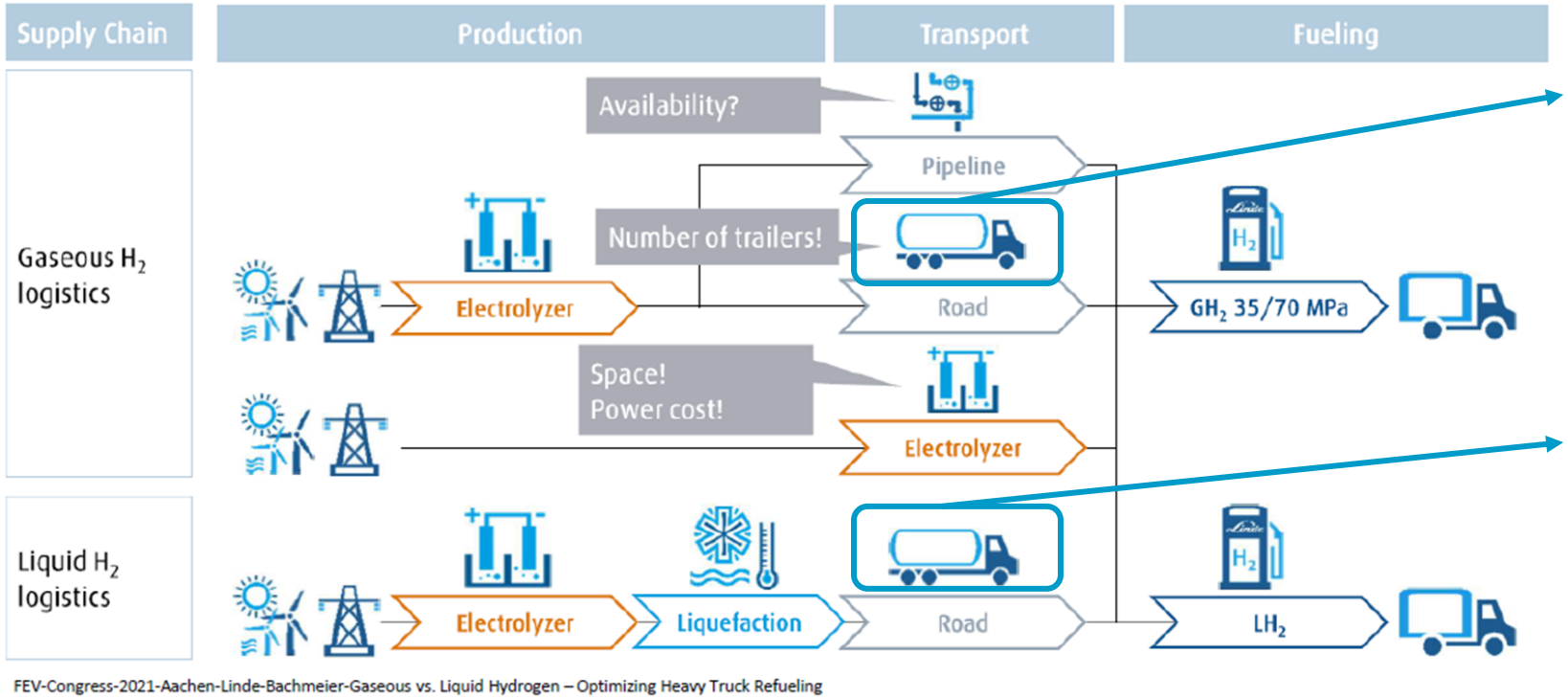


Rheocasting

**Production only in Austria*

HYDROGEN SUPPLY CHAIN – LH_2 BENEFITS

SAG
Progress in Aluminium



FEV-Congress-2021-Aachen-Linde-Bachmeier-Gaseous vs. Liquid Hydrogen – Optimizing Heavy Truck Refueling

Verteilung:



CONTAINER TRAILER

500 bar, ≈ 1,000 kg, ambient temperature



LIQUID TRAILER

1 – 4 bar, ≈ 4,000 kg, cryogenic temperature

Learning from the neighbours

2026 Funding call in Germany of stations and Trucks twice overbooked!

Subsidy Volume:

220 M€

(For Hydrogen Refuelling Stations and Trucks)

Applications:

>500 with a Volume of > 455 M€
71 Refuelling Stations
~900 Trucks

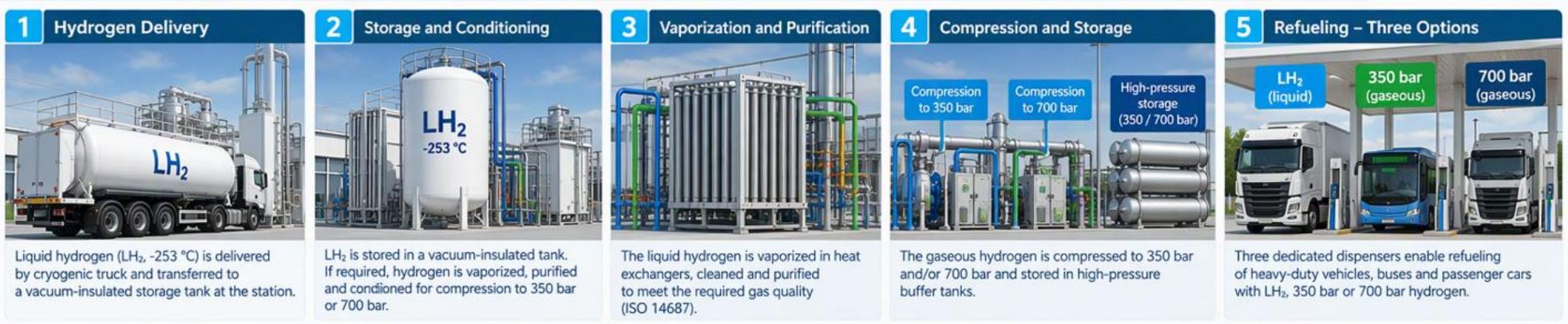
To be funded…:

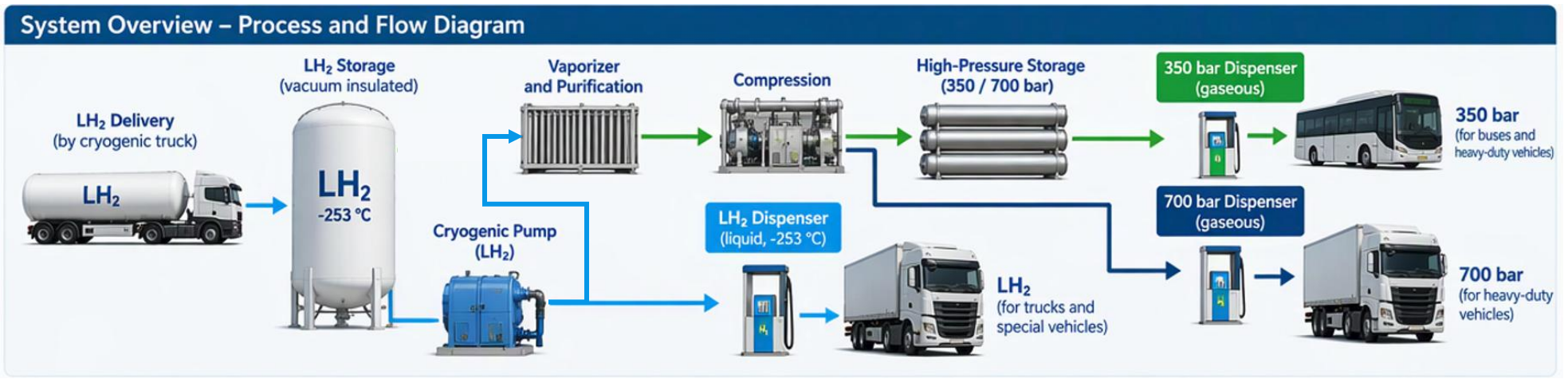
35 Refuelling Stations
~500 Trucks
Growing Trend towards Hybrid Refuelling Stations!

…according to German Minister of Transportation

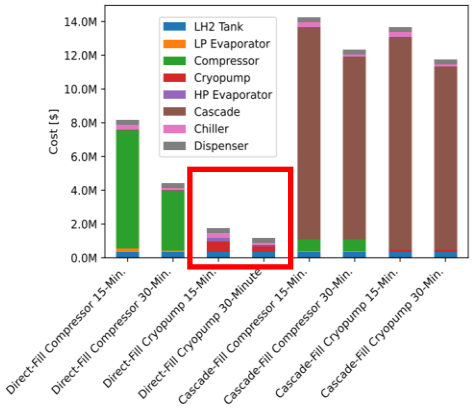
Hybrid Hydrogen Refuelling Station

350 bar | 700 bar | LH_2





AI generated



Source: Sandia report 2021

➔ **Direct LH_2 refueling** with cryogenic pumps instead of compressors significantly **lowers refueling station costs** and reduces the **required footprint**.

HYDROGEN STORAGE FOR FCEV HDT



Hyundai



Iveco



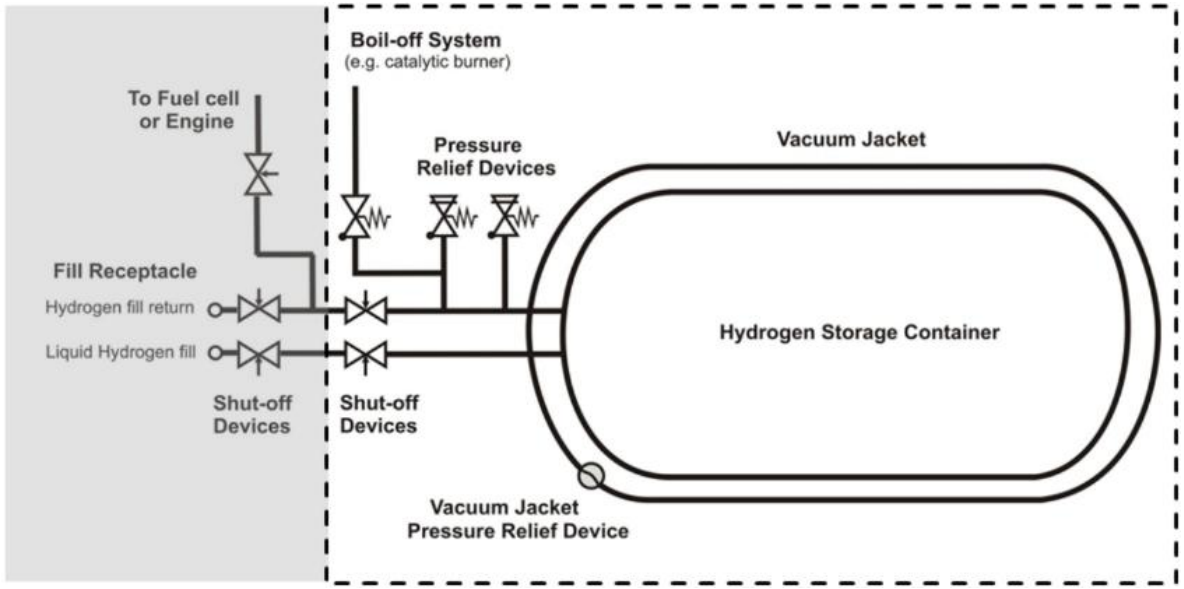
Daimler

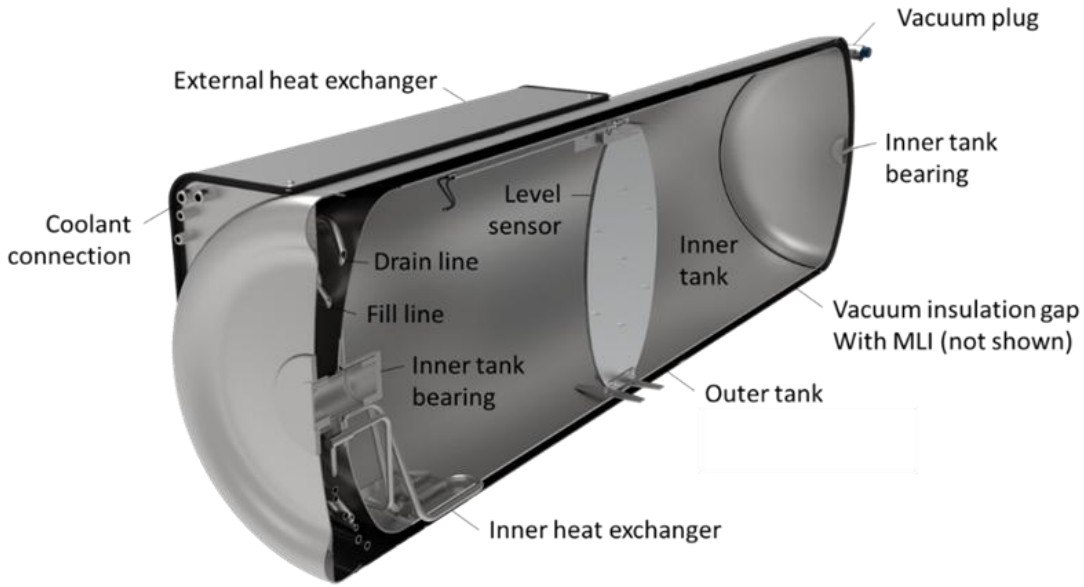
	Hyundai Xcient Fuel Cell	IVECO S-eWay Fuel Cell	Mercedes-Benz NextGenH2
Hydrogen storage	CGH2 350 bar	CGH 700 bar	LH_2
Hydrogen capacity / kg	32	70	84
Range / km	400	800	> 1050
Gross weight / t	19	40	40
Chassis	4x2 rigid truck	6x2 tractor	4x2 tractor
Storage System Weight vs. Storage Capacity	78.1kg per kgH2*	35.7kg per kgH2*	13.8kg per kgH2*

* SAG internal calculation

LH_2 Storage Tank Design

- Thermos flask principle: inner and outer vessel with thermal insulation in between
- High vacuum and multi-layer insulation (MLI) to minimize heat transfer
- Hydrogen stored at approximately **- 250 °C and at low pressure < 25 bar**
- Redundant safety valves to safely release hydrogen in the event of a failure, e.g. loss of vacuum
- Boil-off valve to limit pressure build-up in the system during extended periods of inactivity (several days)



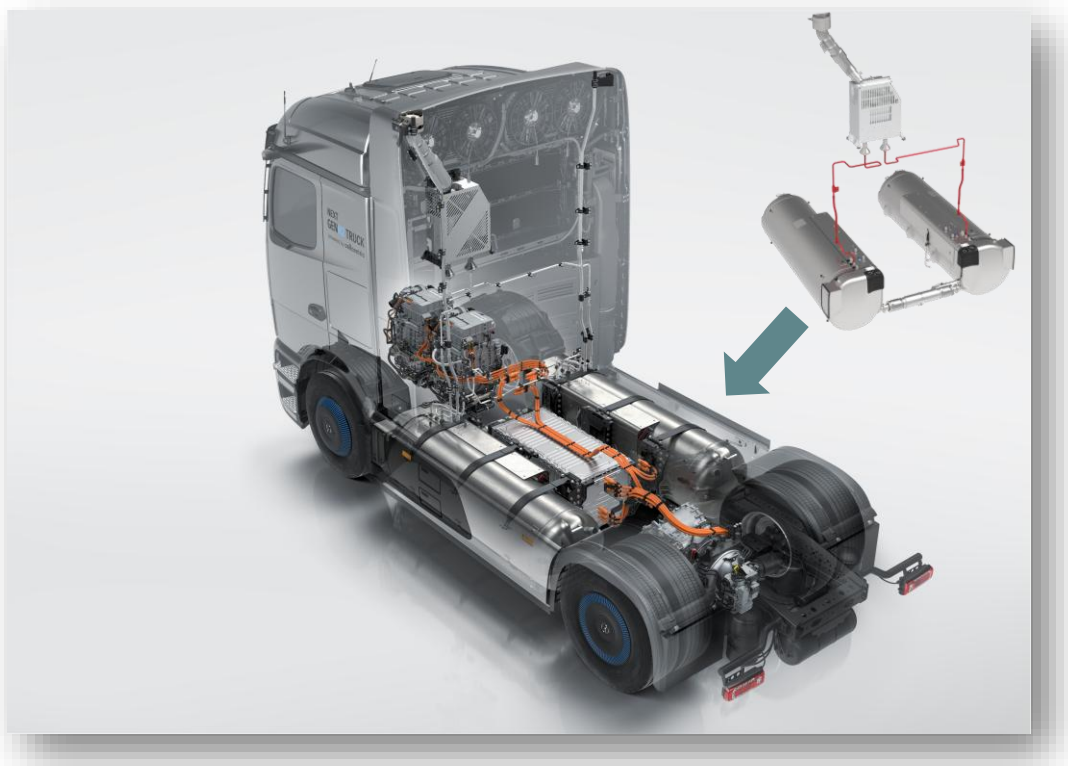


SAG sLH2 Storage System

SAG
Progress in Aluminium

Outer Tank Diameter	711 mm
Tank Length	2535 mm
Max. Operating Pressure	21 bar
Volume	ca. 1500 l
System Weight	ca. 1100kg
Hold Time at 50 % SOC	6 d
Storage Capacity	2 x 42 kg sLH2
Refueling Time 0-100%	15 min
Range	> 1050 km

EU type approval for on-road applications according to EU535



SAG LH2 tank system on the Mercedes-Benz NextGenH2

SAG
Progress in Aluminium

No Pressure – Stay Cool!

Liquid Hydrogen Tank Solutions by SAG

Thank you for your attention

Alexandros Antonopoulos
Head of R&D | SAG New Technologies GmbH
Aluminium@sag.at