



Hydrogen storage technologies Towards an emission-free future

Hydrogen-powered commercial vehicles are a key component in achieving the emission-free operation of commercial vehicles. Voith's hydrogen storage systems meet the highest safety and quality requirements, supporting a zero-emission future for the transportation sector.

Decades of experience in the automotive sector and composite component manufacturing form the foundation of our efficient development and production processes. Voith leverages this expertise to ensure uncompromisingly high standards.

Carbon4Tank

700 bar, 350-liters type IV hydrogen tank

With many years of experience in manufacturing CFRP rolls and components for the automotive industry, Voith has excelled in the series production of hydrogen storage tanks.

Carbon4Tank – the first certified tank in its class – is made with the in-house optimized towpreg winding process, which consistently delivers high quality while saving material and meeting all safety requirements.

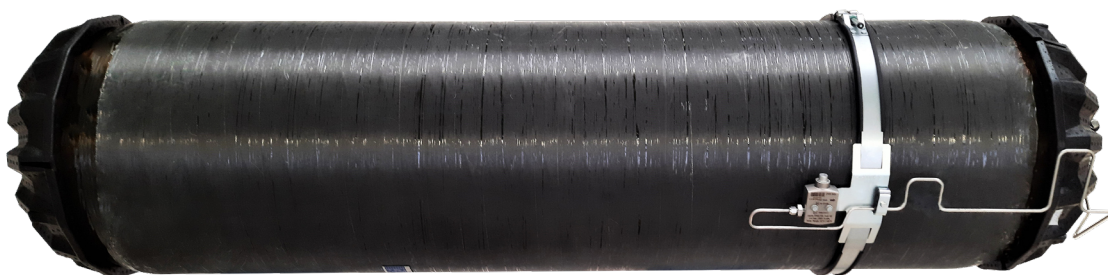
Key features

- Ready for the road – UNECE R134 certification in 2023
- Smart factory – fully digitized production
- Complete equipped – valves, pipes and safety elements
- Recycling concept – sustainability strategy since 2012
- Various sizes possible – depending on requirements

Technical data

Dimensions (L x D)	2 206 x 557 mm (86.9 x 21.9 inch)
Weight empty	218 kg (480.6 lbs)
Capacity	14.2 kg (31.3 lbs)
Volume	350 liter
Type of fueling	CHG
Material	towpreg
Liner	PA6 liner
Operating pressure	700 bar (10 150 PSI)
Design life	15 years
Operating temperature	-40°C to +85°C (-40°F to +185°F)
Number of cycles	11 000
Certifications	UNECE R134, HGV-2 ¹

¹planned



Voith Plug & Drive H₂ Storage System

Complete system from one source

The Voith Plug & Drive H₂ Storage System is specifically designed for heavy commercial vehicles. The modular technology platform is suitable for hydrogen combustion engines as well as for fuel cells.

The kit includes all relevant components, such as the control unit, tank nozzle, pressure reducer and pipes. It can be individually adapted to any application, allowing for a quick integration into a wide range of heavy-duty vehicles.

Technical data "H₂ Core Module"

Dimensions (H x L x W)	2350 x 2420 x 600 mm (92.5 x 95.3 x 23.6 inch)
------------------------	---

Capacity	56.8 kg (125.2 lbs)
----------	---------------------

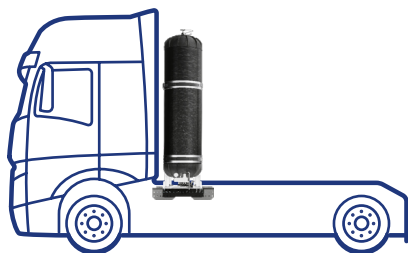
Operating pressure	700 bar (10 150 PSI)
--------------------	----------------------

Refueling time ¹	~10 min
-----------------------------	---------

Certifications	UNECE R134 (Part I + II)
----------------	--------------------------

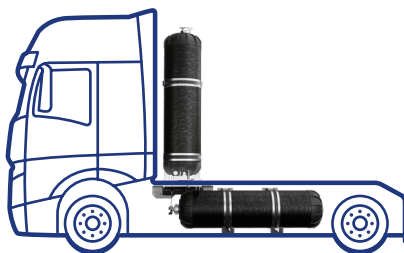
¹Depending on future refueling standard and infrastructure capabilities

Exemplary configurations



H₂ Core Module

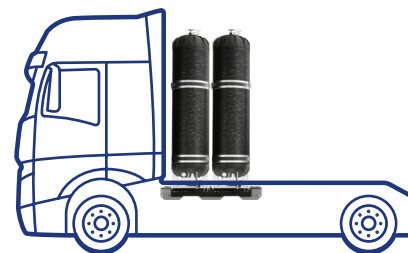
H ₂ capacity	56.8 kg
-------------------------	---------



H₂ Core Module + two side tanks¹

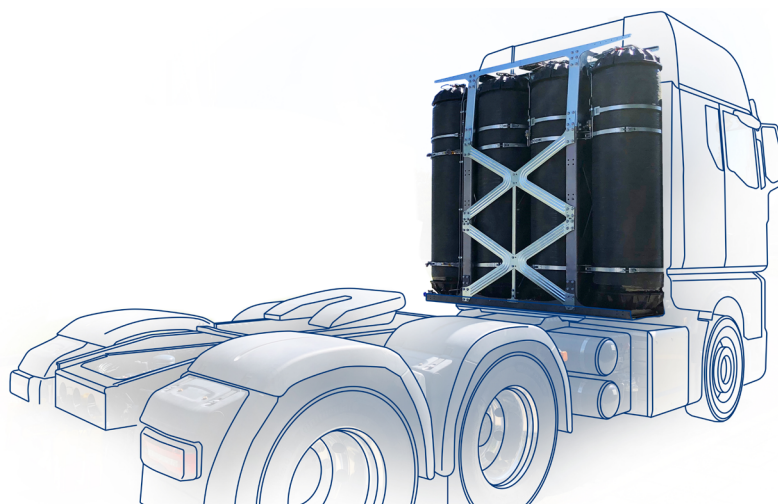
H ₂ capacity	76.7 kg
-------------------------	---------

¹One full scale tank and one small subscale tank



H₂ Double Core Module

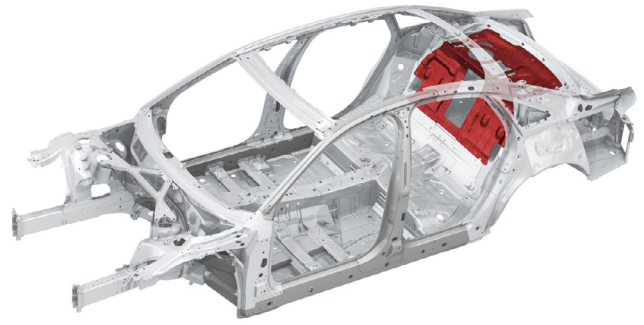
H ₂ capacity	113.6 kg
-------------------------	----------



References and expertise

Experience in the automotive and composites industry

We combine decades of experience and expertise from various industries in manufacturing automotive components and numerous CFRP series products.



Voith produces CFRP rear panels in fully automated series production according to the principles of Composite 4.0

Our partnerships

For an easy integration of hydrogen storage systems

Numerous truck OEMs, including MAN, KEYOU, Scania, and SinoTruck, have chosen Voith's hydrogen storage systems for their development phases. These customized storage solutions are currently being used in test drives and end customer vehicles.

Our customers benefit from Voith's extensive expertise and broad network within the hydrogen industry.



Voith HySTech GmbH
Daimlerstraße 27
85748 Garching (at Munich)
Germany

www.voith.com/hystech

Contact:
Phone +49 89 320010
hystech@voith.com



VOITH