

LIGHTWEIGHT HYDROGEN STORAGE SYSTEMS FOR RAIL VEHICLES



LIGHTWEIGHT SAFE EFFICIENT

HYDROGEN — **T**HE 21st CENTURY FUEL

Hydrogen is a clean and safe energy carrier that can be used as fuel for power in a wide range of applications. Compressed hydrogen gas stored in lightweight composite cylinders,

enables increased payload and large-scale storage and transportation.

HEXAGON LEADS THE WAY

Hexagon Composites has been pioneering filament-wound and composite technologies for more than half a century. That level of knowledge and experience makes Hexagon the leading supplier of innovative composite pressure vessel technology that is driving energy transformation and affordable fuels for environmental sustainability.

YOUR RELIABLE PARTNER

Over the last 20 years, we have been adapting our leading and proven Type 4 composite pressure tank technology for a wide range of mobility and storage applications in the hydrogen industry. As supplier of hydrogen storage systems to the world's first hydrogen powered commuter train, we are your reliable partner for customized gas storage systems for rail vehicles.



Coradia iLint from Alstom equipped with Hexagon 's hydrogen storage system

ADVANTAGES AT A GLANCE

Type 4 Technology

Our Type 4 composite high-pressure tanks made of full carbon fiber are able to store H2 up to a pressure level of 950 bar. The frames of our H2 storage system are made of high-strength steel or aluminium, depending on the individual requirements.

Customer benefits:

- Long distances without refueling or charging
- Zero emission and low noise
- Tailor-made installation solutions and size (roof, floor or side)
- Various international rail configurations
- Proven cycle performance and fatigue resistance
- Low life cycle costs
- Cylinder lifetime up to 30 years (according to the train's lifetime)

Safety & Reliability

- Pressure regulation to achieve a constant output pressure
- Approved according to rail regulation codes & standards
- Thermal and Pressure Relief Device (TPRD)
- Excess flow devices
- Line heat detection and venting
- Temperature and pressure monitoring
- Safety valves
- Hydrogen leakage detection
- Emergency release of gas

Service & Testing

- Reliable after sales service
- Service training capabilities for maintenance
- Comprehensive testing capabilities (inhouse and partners)
- Filling and simulation capabilities
- FEA & design







CUSTOMIZED TANK ASSEMBLY

Hexagon offers highly flexible solutions for various customer requirements. Our hydrogen storage system is adapted to individual conditions in terms of storage amount, pressure level, space and positioning inside the vehicle.

Iongitudinal roof-mounted cylinders

vertical cylinder orientation





Hexagon delivers safe and innovative solutions for a cleaner energy future. We are adapting our leading composite pressure vessel technology for a wide range of mobility and storage applications. The energy transition towards a low-carbon society is opening up exciting growth opportunities and Hexagon is ready to help customers position their products for success.

CONTACT US

Hexagon Purus

Otto-Hahn-Strasse 5 34123 Kassel, Germany Phone: +49 561 58549 0

5150 NW 40th Street Lincoln, Nebraska 68524, USA Phone: +1 402 470 5000

contact.purus@hexagongroup.com www.hexagongroup.com DRIVING ENERGY TRANSFORMATION