

HYDROGEN
ECOSYSTEM
NORTH ADRIATIC
CONFERENCE



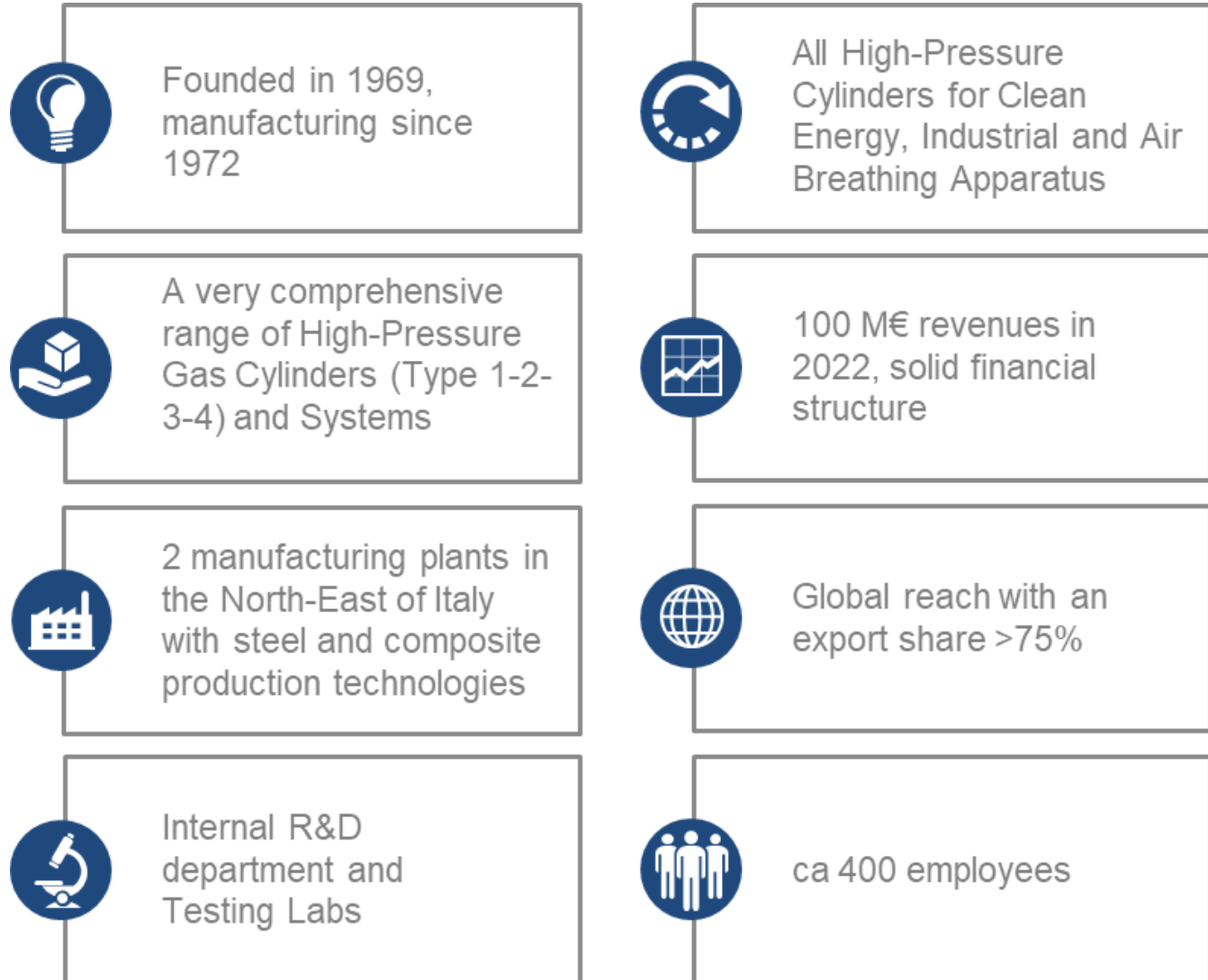
Developing innovative solutions
for safer and more economical
hydrogen transport

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Who is Faber









Faber is a Leading Supplier of High-Pressure Gas Cylinders and Systems







The challenge: Affordable and safe Hydrogen transport

Faber produces a very comprehensive range of all types of cylinders, each one standing out for superior lightness, reliability and safety. Product offering includes also complete systems for different applications.

























CYLINDERS

Type 1	Type 2	Type 3	Type 4
			
Steel liner only	Steel liner hoop wrapped with carbon/glass fiber	Steel liner fully wrapped with carbon/glass fiber	Plastic liner fully wrapped with carbon fiber
			

SYSTEMS

<h4>Bundles</h4> 	<h4>Vehicle Racks</h4> 
<h4>H2 Buffer</h4> 	<h4>Virtual pipeline/Trailers</h4> 

Hydrogen

Our solution: Advanced high-capacity cylinder for economical hydrogen transportation

Faber is working on a pilot project as part of the NACHIP initiative, complementing our ongoing work in the NAHV. In the NAHV testbed project, Faber is developing a high-performance cylinder to maximize hydrogen load in truck transport, aiming to support large-volume and long-distance needs.

To address the growing demand for economical hydrogen solutions, the NACHIP pilot focuses specifically on reducing capital expenditure (CAPEX) per kilogram of transported hydrogen. Through innovative composite cylinder designs, we're aiming to deliver a cost-effective yet reliable vessel, optimized for various transport scenarios.

Pilot Goals and Key Activities

The NACHIP pilot aims to create a more economical yet efficient hydrogen transport solution by focusing on key aspects of cylinder design:

- **Optimized Service Pressure:** Identifying the ideal pressure to maximize flexibility and compatibility with available filling infrastructure
- **Cost-Effective Materials:** Exploring alternatives to carbon fiber, such as new-generation glass fiber or carbon/glass blends, to reduce costs without compromising quality
- **Increased Cylinder Volume:** Expanding cylinder capacity to over 1,000 liters for easier trailer integration, with fewer fixation points and pressure connections
- **Contamination Control:** Implementing procedures to maintain low contamination levels, such as residual humidity and other impurities
- **Efficient Production Line Development:** Designing a streamlined assembly and testing line to support efficient and scalable production
- **Prototype Testing:** Conducting rigorous tests to validate and demonstrate the prototype's performance



Path to Scale-Up

First Phase :

- Feasibility study to finalize specifications for both the trailer and the vessel, along with adjustments needed in our production processes.
- Production and testing of 10 prototype units, analyzing their performance under key stress tests (like burst pressure and temperature extremes) to validate our design choices.
- Techno-economic analysis which will lead to the development of the business plan for the second phase

NOTE: only this phase will be executed within the NACHIP project

Path to Full-Scale Production:

- Based on first phase results, we plan to set up a dedicated production line for full-scale manufacturing. This will involve new equipment specifically designed for the large vessels, including machinery for liner production, composite reinforcement, and testing.

Next steps

Resources Needed:

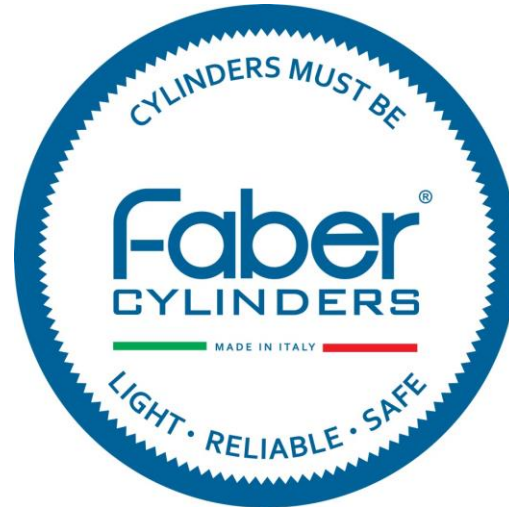
- Additional funding to scale production and procure specialized equipment.
- Partnerships for design optimization and production scale-up.

Partners Sought:

- Technological development and validation partners.
- Commercial partners for expanded distribution in international markets.

QUESTIONS?

Thank you.



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