



NPROXX Hydrogen Business

From Start-Up to series production – High pressure
storage systems

08.03.2023

NPROXX – who we are

High Pressure Hydrogen Storage Solutions for stationary and mobile applications.

50/50 Joint Venture between  and 

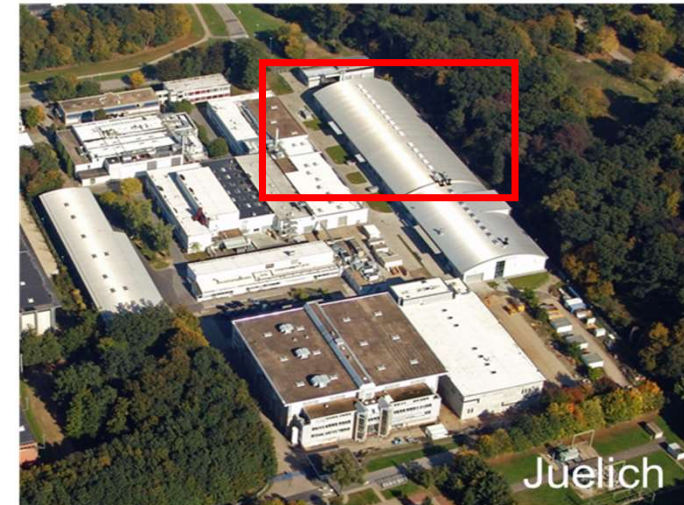
Core competence is the manufacturing of lightweight carbon fiber enforced H₂ – pressure tanks and tank systems.

Founded by Enrichment Technology based on 40 years of experience in carbon fiber product manufacturing processes.

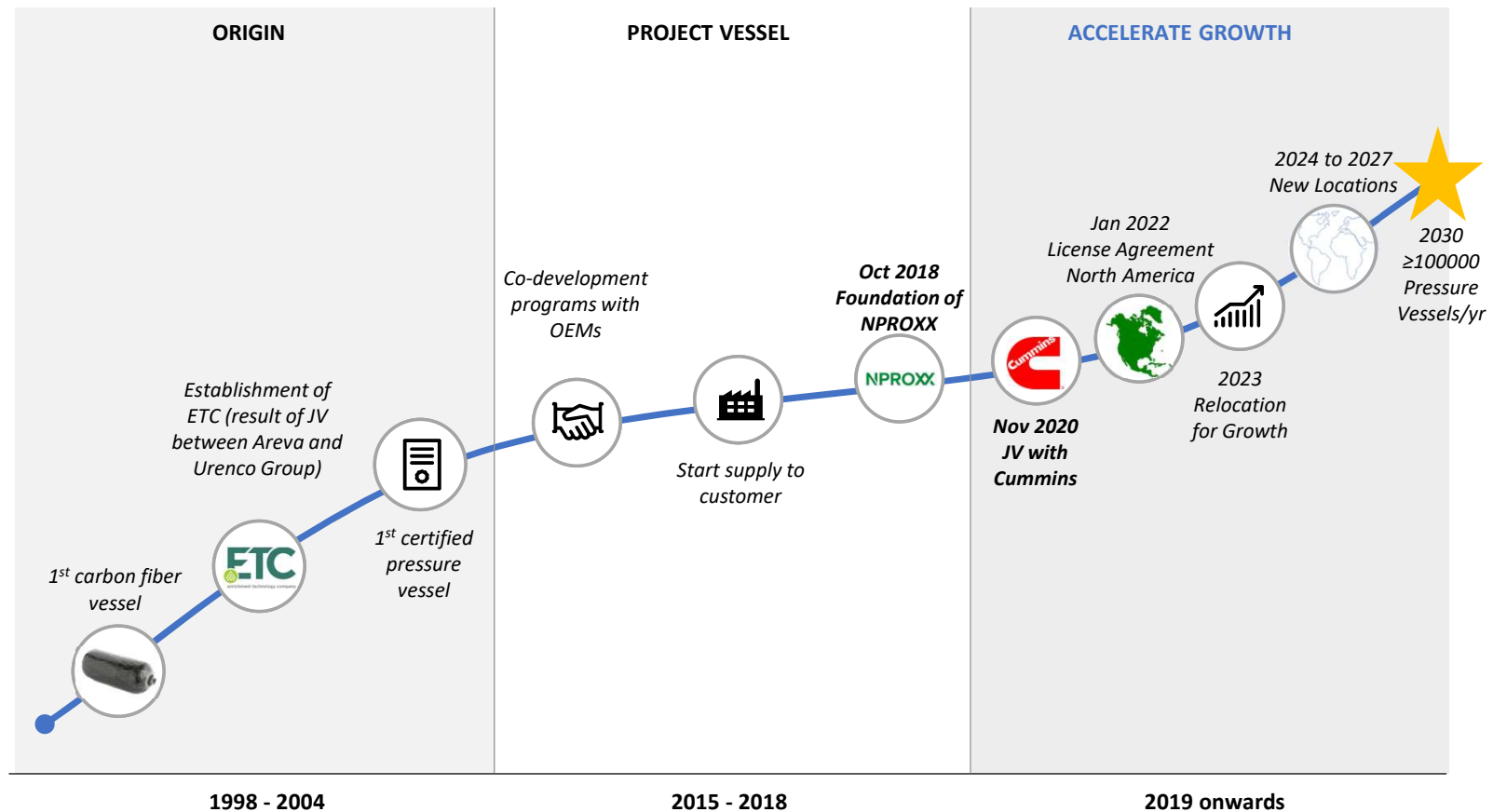
HQ + R&D: Heerlen, Niederlande
Production + Labs: Juelich, Germany

people growing >100 in 2022

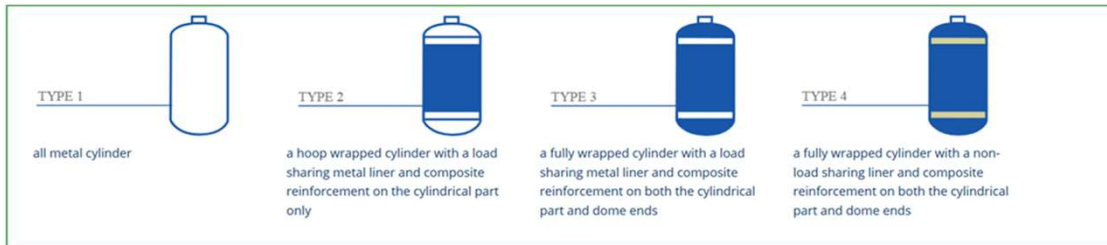
Share Capital: €60m
Planned turnover 2022: €30m



NPROXX – History and Ambitions



Type IV Pressure Vessels – Core Competence



Thermoplastic Liner

- HDPE or PA
- Functions:
 - Sealing the pressure vessel
 - Core for wet winding process
 - Connecting the metallic bosses to the tank interior

Metallic Boss

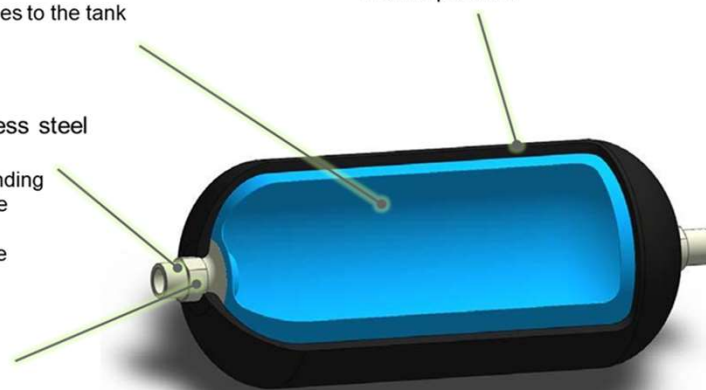
- Aluminum (anodized) or stainless steel
- Functions:
 - Mechanical connection to winding machine and holder in vehicle (optional)
 - Connection to hydrogen valve

Sealing system

- EPDM or NBR O-rings
- Functions:
 - Sealing between liner and boss
 - Sealing between valve and boss

CFRP Laminate

- Carbon fiber with epoxy resin
- Function:
 - Withstanding the load due to the internal pressure



NPROXX Technology

- Burst capacity up to 1800 bar
- Tank length up to 6m
- Tank diameter up to 900mm
- 30 years of lifetime in rail application
- 10 year inspection interval in transport applications

NPROXX Capabilities

We produce pressure vessels for stationary and mobile applications:

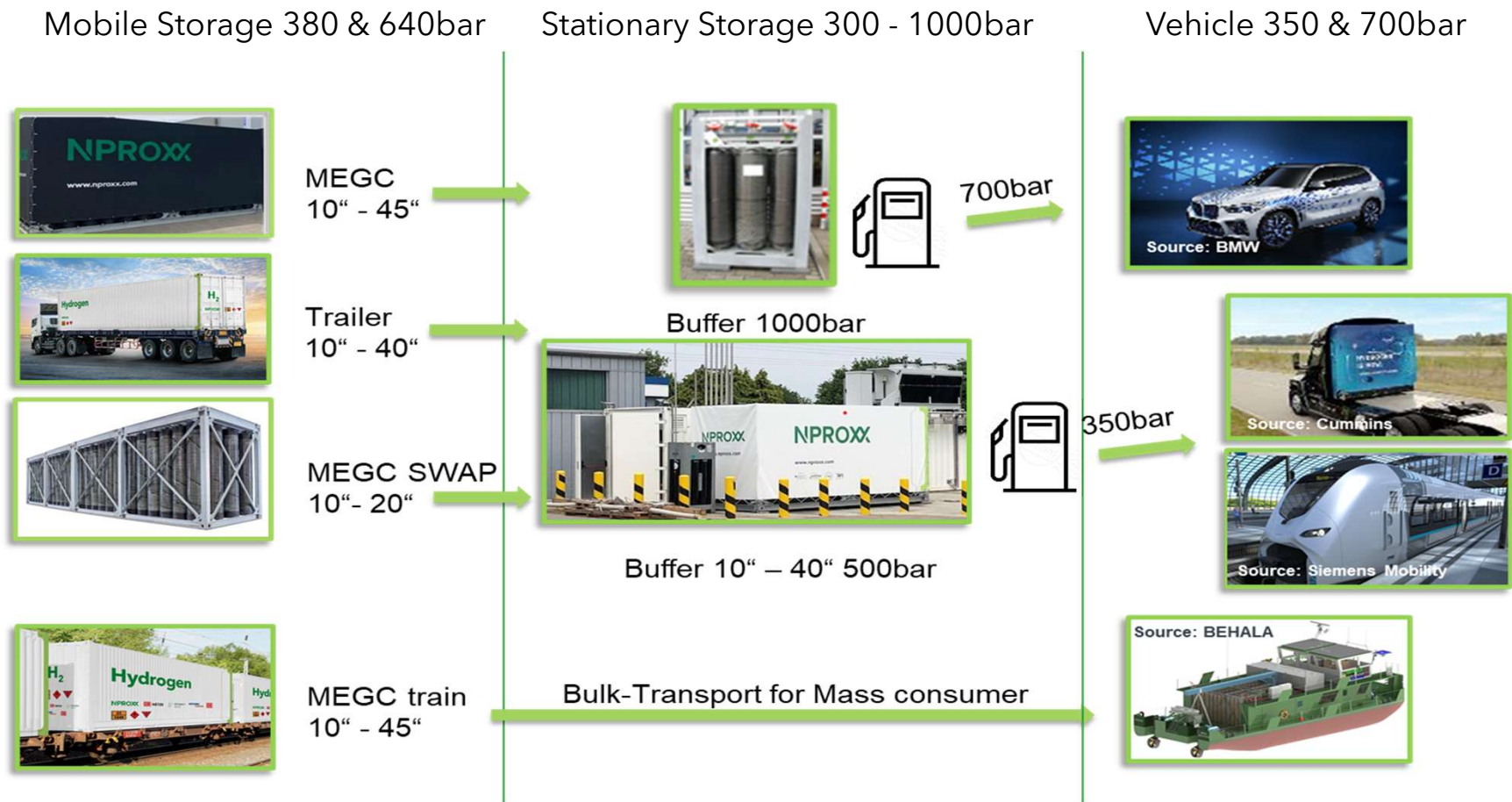
- Hydrogen storage infrastructure
- Hydrogen transport to filling stations
- Hydrogen-powered rail vehicles
- Hydrogen-powered buses, trucks and other vehicles
- Hydrogen-powered cars.

Our Type IV CFRP composite pressure vessels offer obvious advantages over other pressure vessels.

- The carbon fibre reinforced structure produces a superior strength/stiffness to weight ratio, allowing a potential weight reduction of 450 kg for gas storage systems in buses and trucks.
- This significantly reduces fuel consumption and underlines the economic arguments in favour of hydrogen propulsion.
- This also increases the number of vehicles and applications in which these containers can be used.
- Other advantages of CFRP pressure vessels include durability, chemical resistance, X-ray transparency and non-existent thermal expansion.

The development and certification of tanks and tank systems as well as the simulation of crash loads and (de-)filling scenarios can be mapped with in-house tools.

We do understand the chain from storage to vehicle tank



Commercial in Confidence / © NPROXX BV 2022

4 Tank DD System



AH500-35

- 350 bar system 28 kg H₂ capacity
- EC79 certified
- Frame as load-bearing component of the bus structure

NPROXX

Truck System 700bar R134



AH710-70

- 700 bar tanks with up to 25 kg H₂ capacity
- SOP/Certification beginning 2024
- UN ECE R134 Certification
- Available as option for side pocket or behind the cab systems

Q&A

Thank you for your attention.
I will be happy to answer your questions.

Philipp Breuer
+31 648 063 584
philipp.breuer@nprox.com
NPROXX B.V.
Vogt 21
6422 RK Heerlen
Netherlands