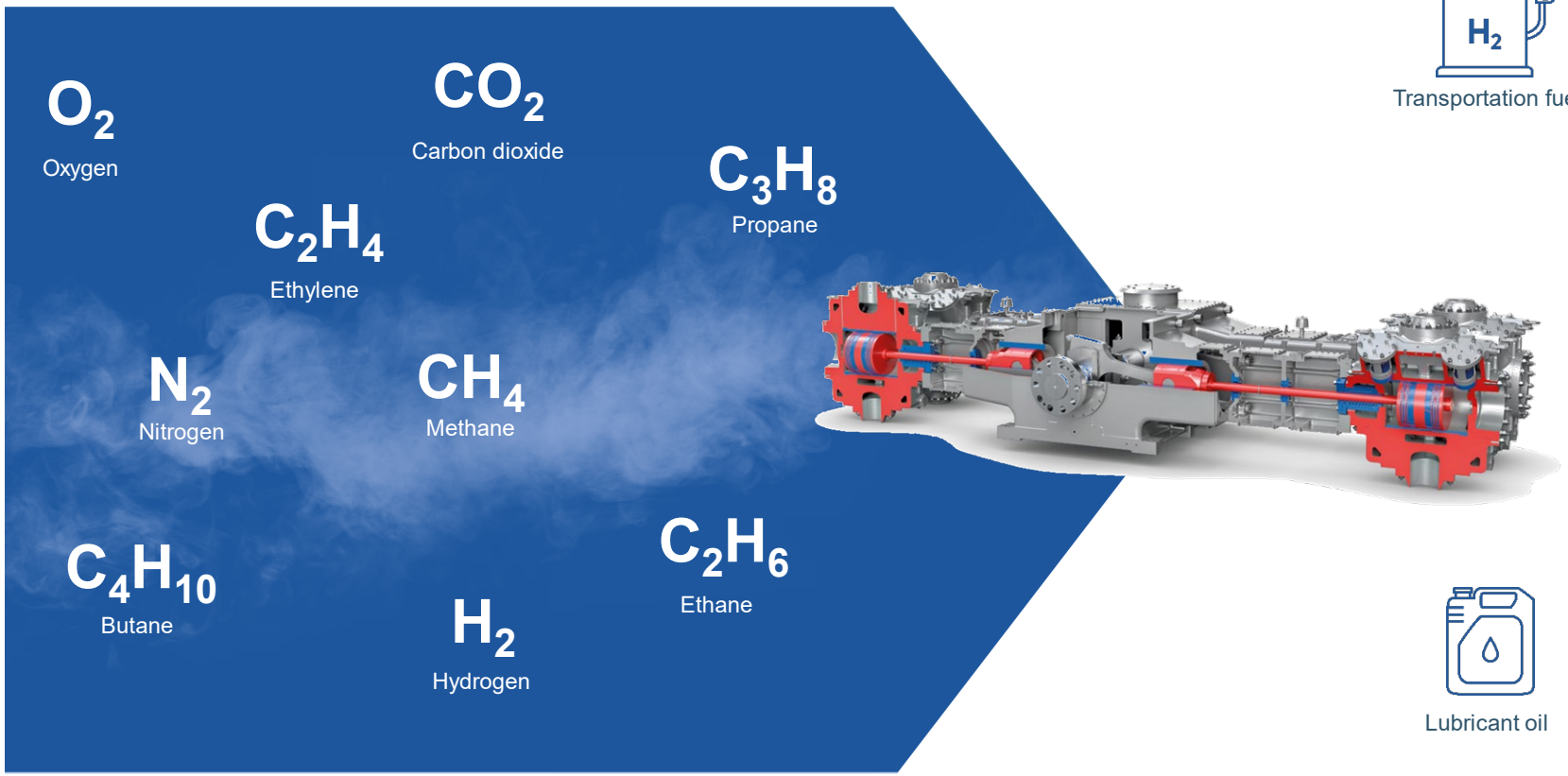
Burckhardt Compression

SCHWEIZER WASSERSTOFFKOMPRESSOREN FÜR DIE WELTMÄRKTE

APRIL 09, 2024

We support the manufacture of essential products with our reciprocating piston compressors



Transportation fuel


Cosmetics


Automotive parts


Pharmaceuticals

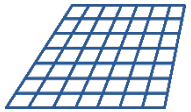

Electrical power


Industrial plastic

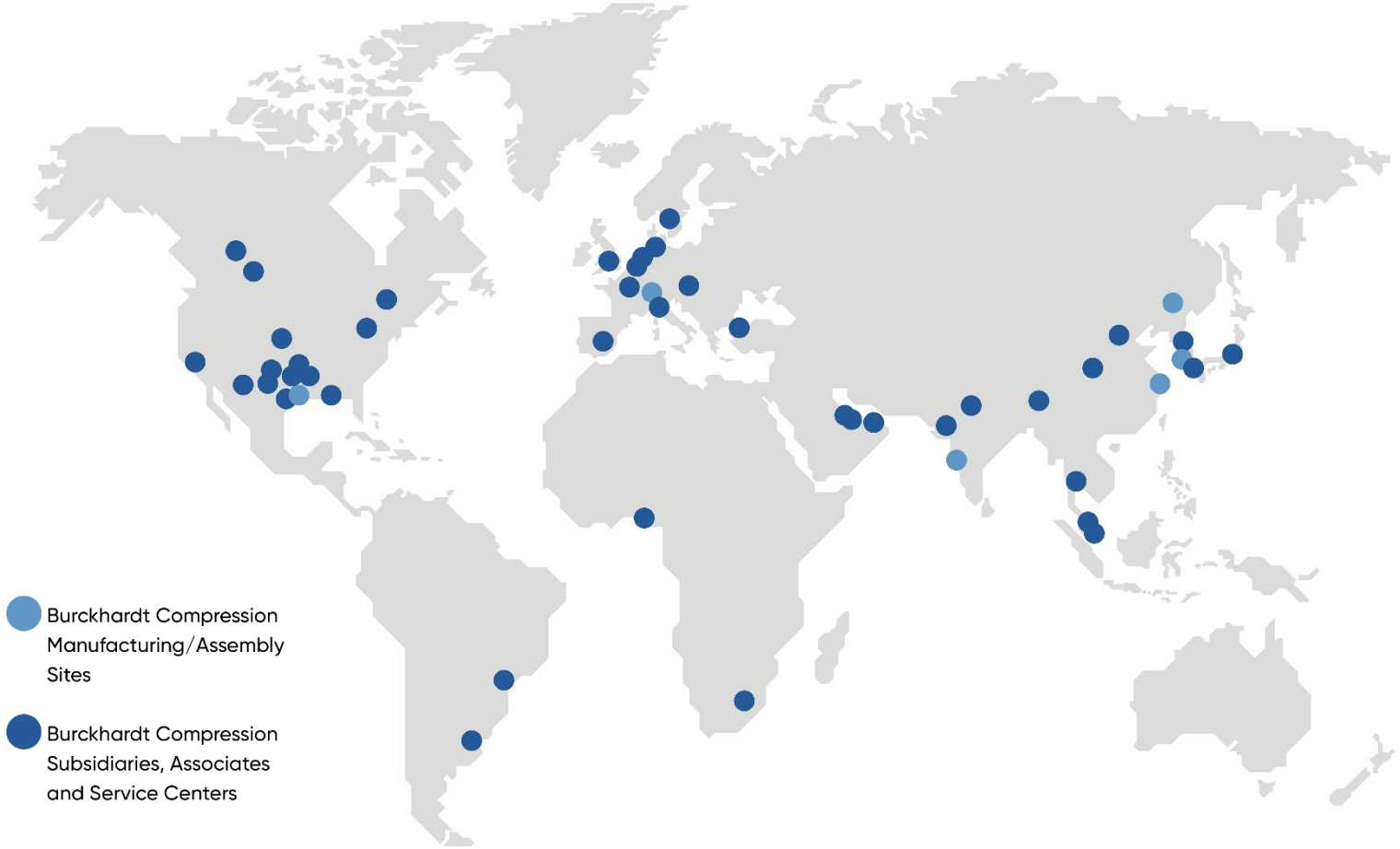

Gas bottles for domestic use (heat, cooking)

Lubricant oil


O_2-bottles


Solar panels

More than 3000 qualified employees around the world for new compressor systems and services



Compression systems

Highly reliable compressors
Full compression solutions

Services solutions

Optimizing your compressor system
Turning partnership into success

We are wherever gases are compressed

Petrochemical and chemical industry

Gas transport and storage

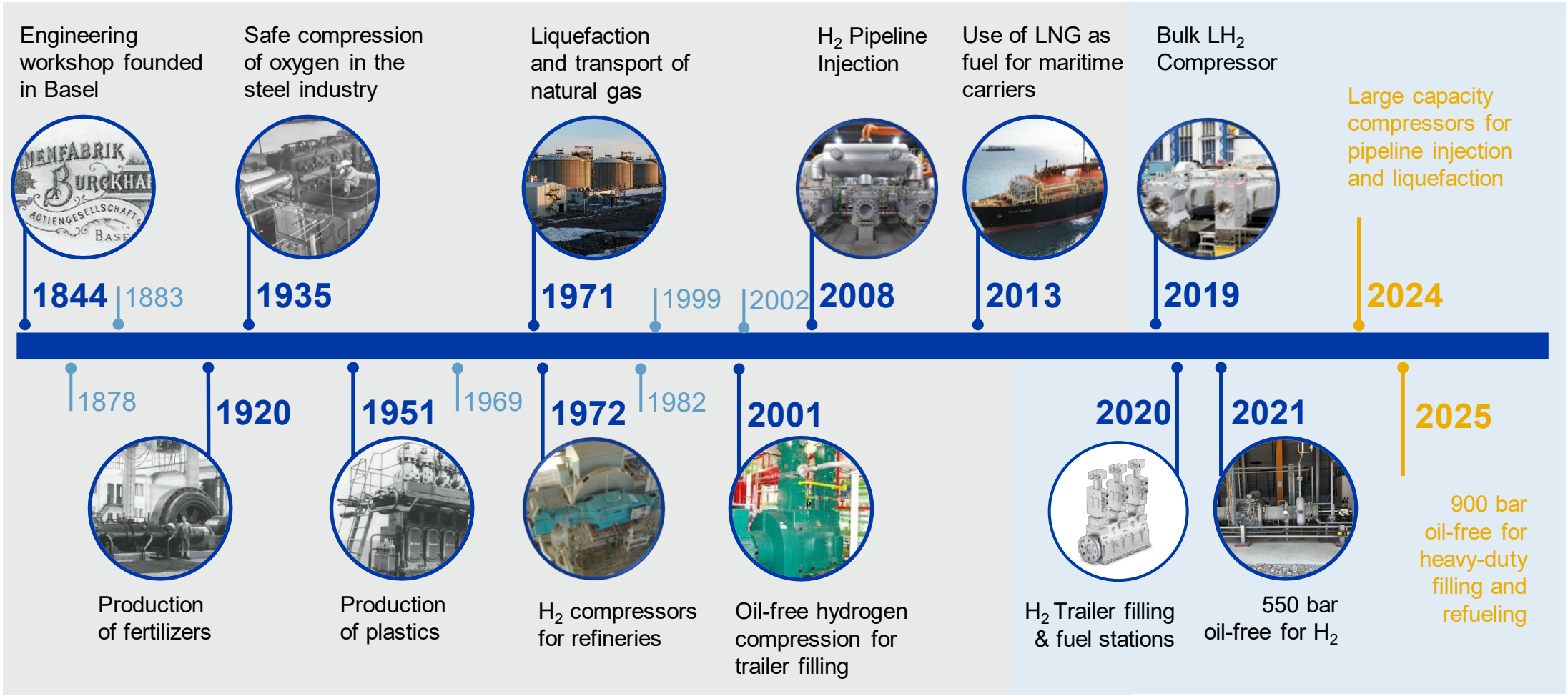
Hydrogen mobility and energy

Industrial gas

Refinery

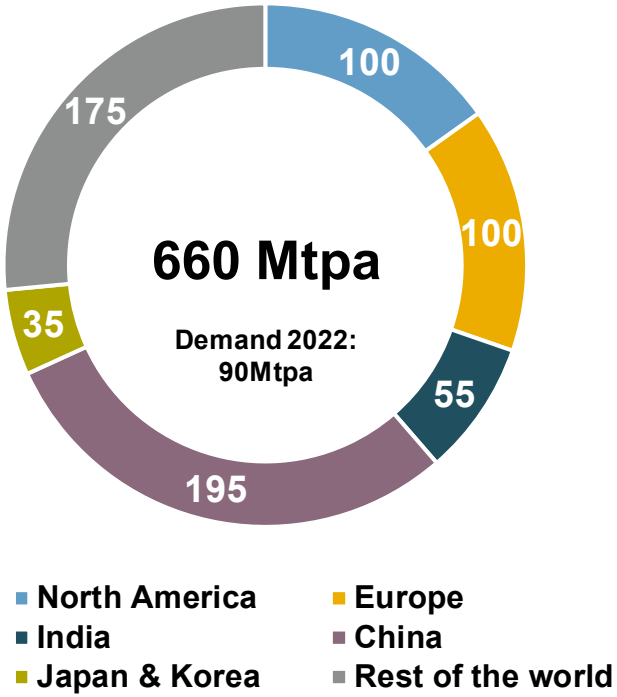
Gas gathering and processing

In the past 50 years, hydrogen was used mainly for refineries and the chemical industry – future applications will include mobility & energy

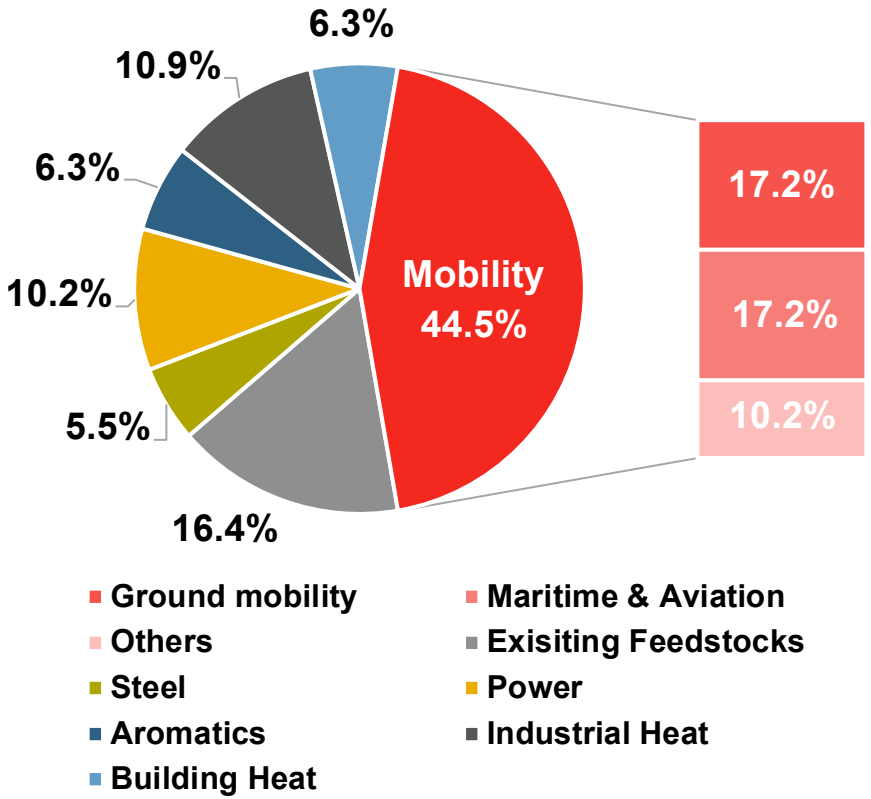


Hydrogen will be a major part of energy markets across geographies by 2050

Hydrogen demand 2050



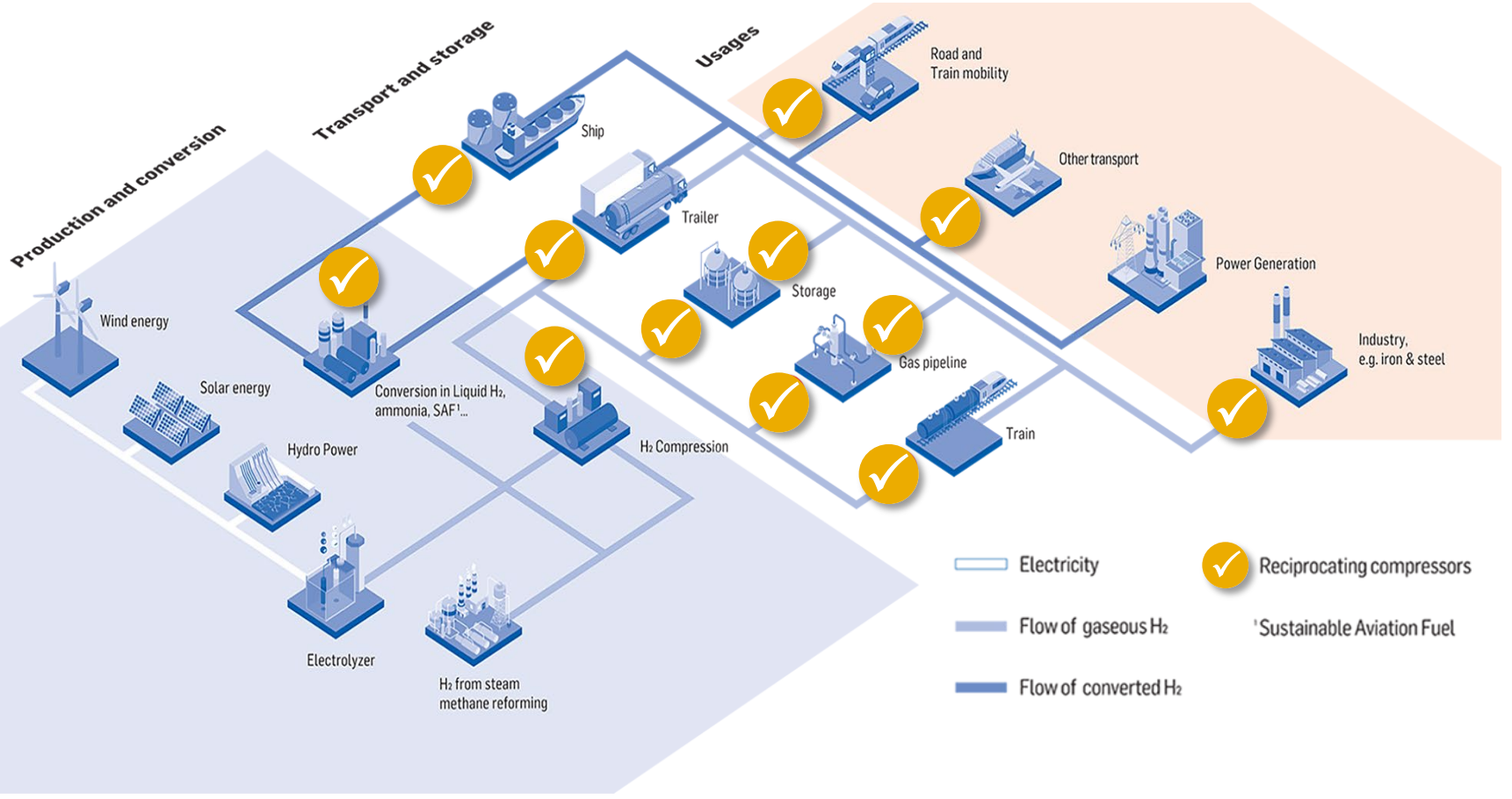
Hydrogen end use 2050



- ✓ NAM, Europe, China, India, South Korea and Japan will account for 75% of global hydrogen demand
- ✓ Energy and mobility sector account for greater than 50% of hydrogen end use
- ✓ Hydrogen could contribute >20% of global emissions reduction to meet net zero goals

Source: Global H2 Flows Hydrogen Council / McKinsey report: (Oct 2022)

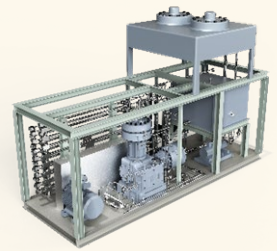
Our compression systems are needed across the entire hydrogen value chain from production to end-use



Diaphragm Compressor

- Containerized
- Small Flows
- High Pressure

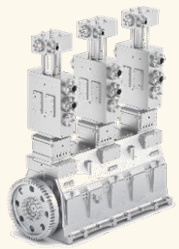
› *Trailer filling*
› *Fuel stations*



Vertical Piston Compressor

- Oil-free
- Large Flows
- High Pressure

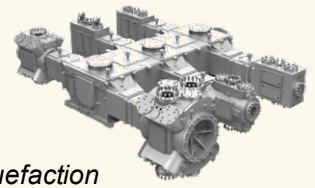
› *Trailer filling*
› *Fuel stations*



Horizontal Piston Compressor

- Oil-free
- Large Flows
- Medium Pressure

› *Pipeline injection, Liquefaction*
› *Syngas & Ammonia*



We are investing in research and development of hydrogen compressors for high-pressure and large capacity

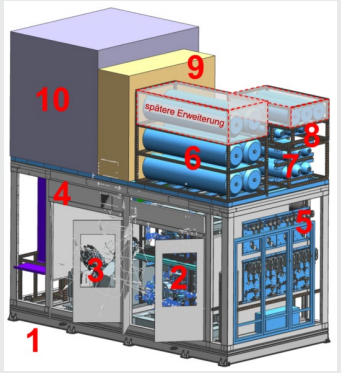
Innosuisse Project: LCHRS

Low-Cost Hydrogen Refueling Station

Partner: OST Ostschweizer Fachhochschule, Endress+Hauser, Swagelok

Project Scope:

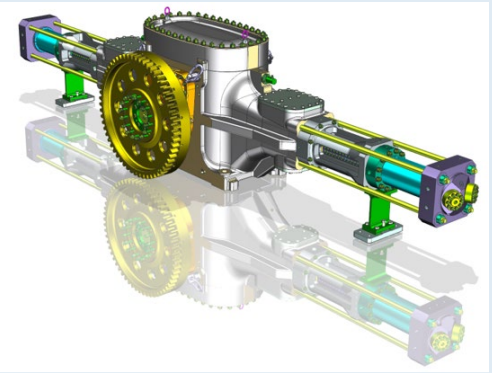
- H35 for refueling trucks / buses at 350bar tank pressure, additional fast filling module
- H70 for refueling cars at 700bar tank pressure
- Construction and testing of prototype at OST in Rapperswil (BC diaphragm compressors)



H2 booster: novel type of oil-free piston compressor

Design case: 10tpd H2 compression 450-900bar
Application: ultra-heavy duty refueling

Installation of real-scale prototype at test center in Winterthur
First test results expected in Q4 2024

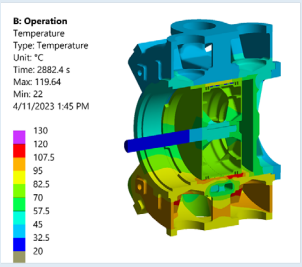


Large oil-free piston for hydrogen

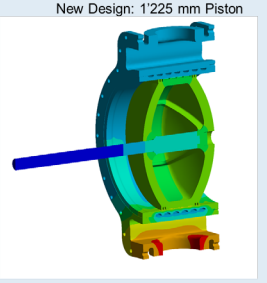
Design case: Large capacity at medium pressure (<200bar)
Applications: Liquefaction, pipeline injection

Development of new cylinder design for piston-Ø1225mm, with optimized cooling performance

Existing running reference: 880 mm Piston



New Design: 1'225 mm Piston



We have over 100 hydrogen compressor references in operation

Hydrogen Pipeline Injection, NL

Hydrogen pipeline from production site in Botlek, Rotterdam to Antwerp (B) distribution center to industrial end-users in North of France. Start-up 2009.

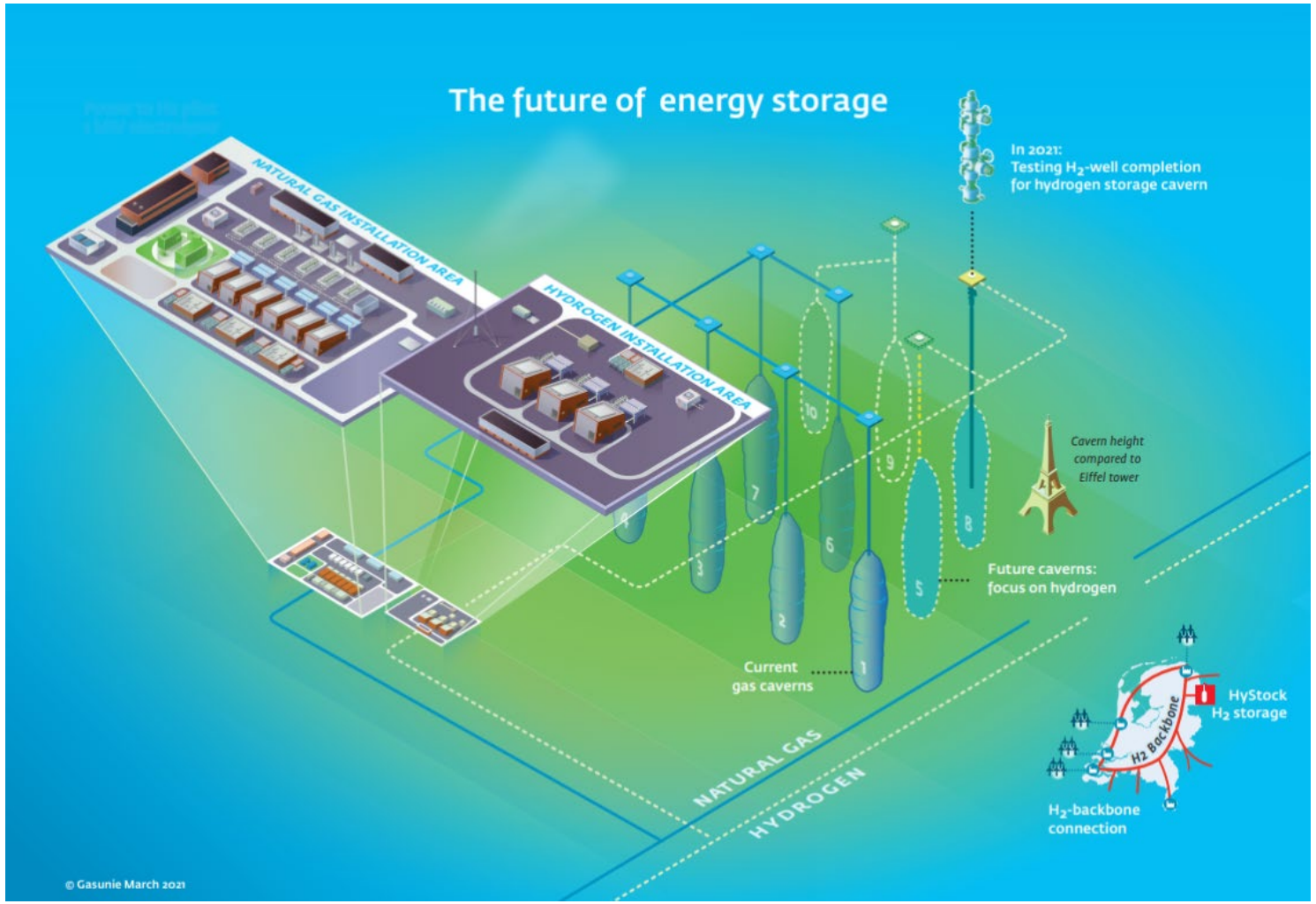
H_2 compression 22-100 barg, 6'052 kg/h, 3 units in parallel
6BA Compressor Unit with 4.8 MW motor power

Hydrogen Liquefaction, USA

Hydrogen liquefaction plant in Las Vegas, US. Distribution of LH2 to various end-users in California. Start-up 2019.

H_2 compression from 6-60 barg
30 tons per day of liquid hydrogen production
4BE Compressor Unit with 7.4 MW motor power

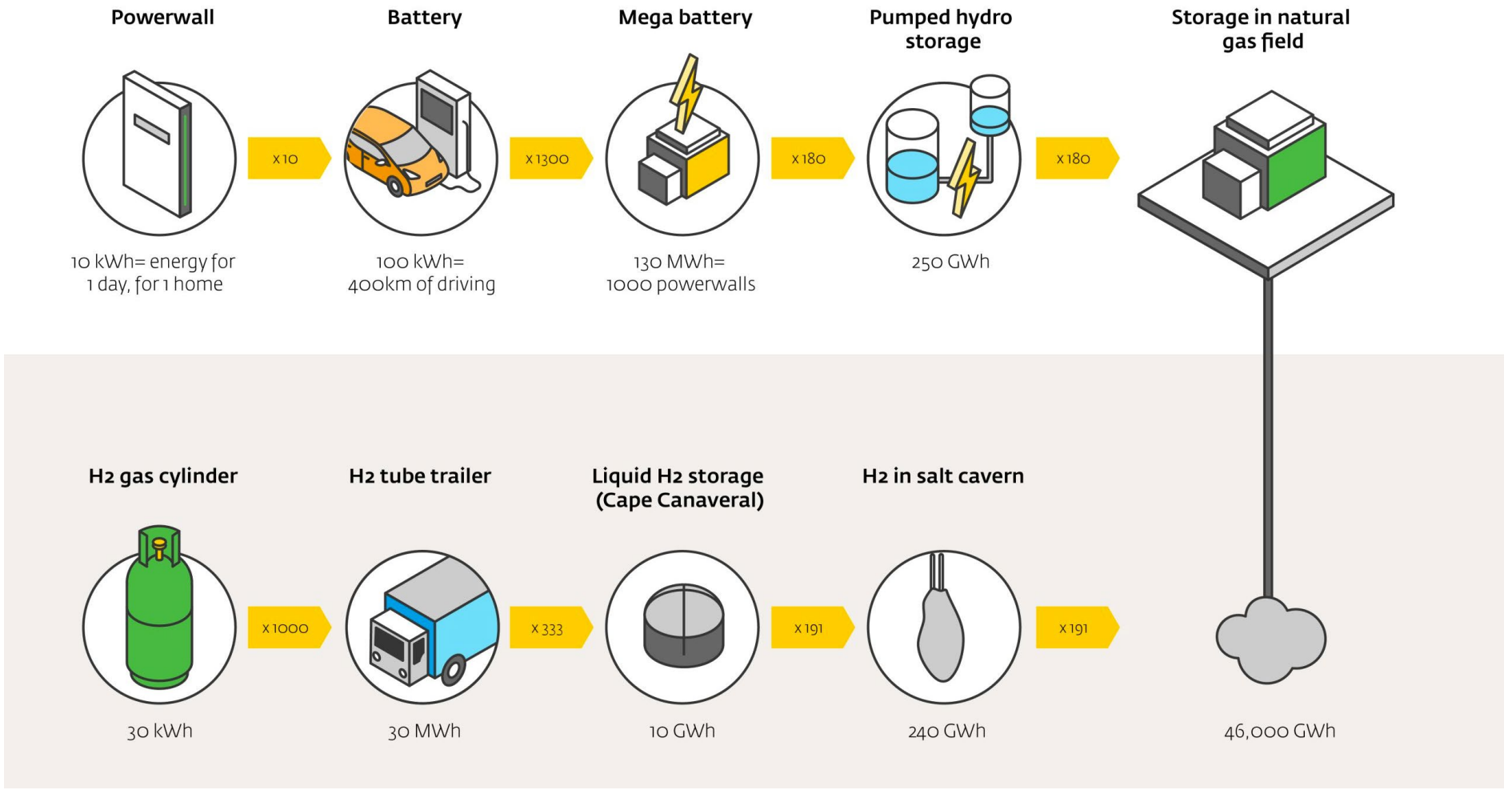
Hydrogen storage connected to the backbone pipeline
Project HyStock, The Netherlands



2020	Feasibility study
2021	Basic design and start permitting
2022	Small scale tests
2023	Detail engineering
2025	Financial Investment Decision
2028	First storage facility ready and connected to hydrogen backbone

Source: gasunie

Electrical and hydrogen storage capacity comparison



Source: gasunie

The ramp-up of the hydrogen industry requires a well-defined regulatory framework and fast decisions

As industrial corporation, we can support and influence the development of the hydrogen economy by engaging in associations and alliances:

SWISSMEM New Energy Systems

France Hydrogène – Engagée pour la transition écologique

SPN Swiss Power-to-X Collaborative Innovation Network

CGES Coalition for Green Energy & Storage

DWV Deutscher Wasserstoff-Verband

European Clean Hydrogen Alliance

Hydrogen Europe

ALLIANZ WASSERSTOFF

Two goals in two phases:

1. **the adoption of an ambitious hydrogen strategy with precise and measurable KPIs by the end of 2024.**
2. **the development and adoption of a hydrogen law in Switzerland by 2028.**

Burckhardt Compression

VIELEN DANK!

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