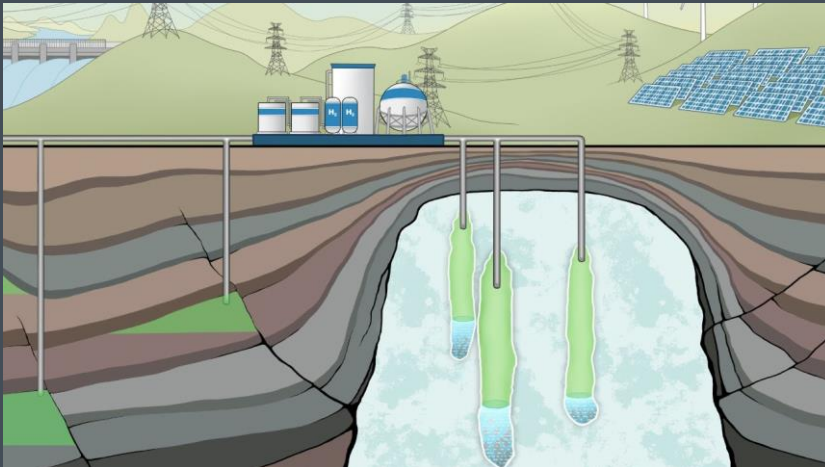




MISSION HYDROGEN

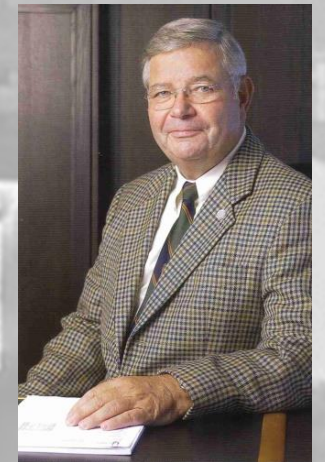


Pictures taken from : Gasunie (upper) Catharine Peters, Pathways to Energy Decarbonization (lower)

1.1 | FAMILY BUSINESS SINCE 1830



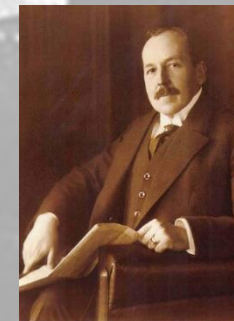
Since 2008
Stefanie & Alexander Peters



1965
Klaus Peters

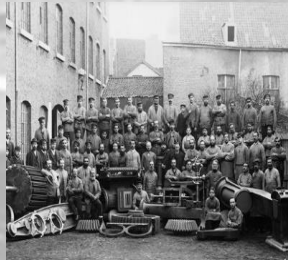


1937
Wolfgang Peters



1891
Oscar Peters

1830/1831
Johann L. Neuman
Theodor Esser



NEUMAN & ESSER GROUP

Facts and Figures – Four Divisions and Cross Divisional Support



>400

Mio. Euro

**Consolidated
Turnover**



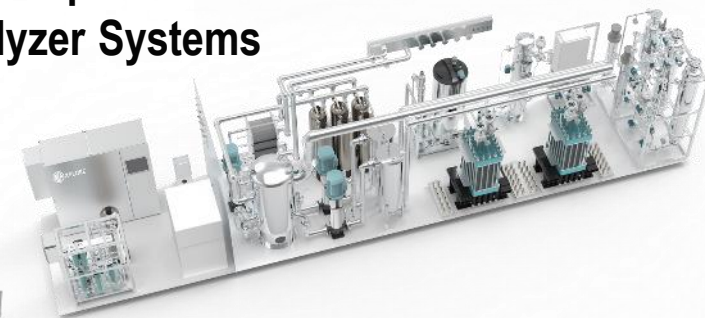
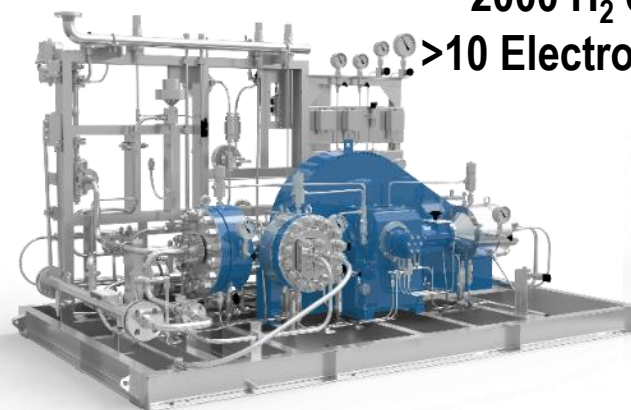
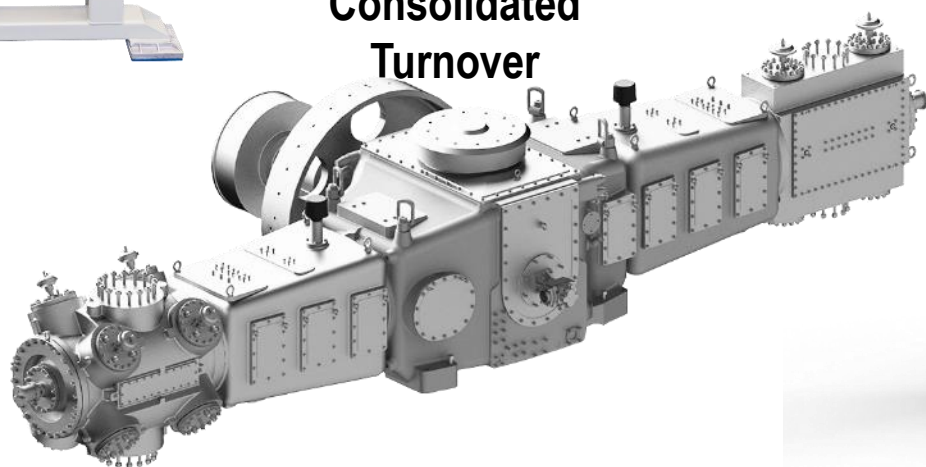
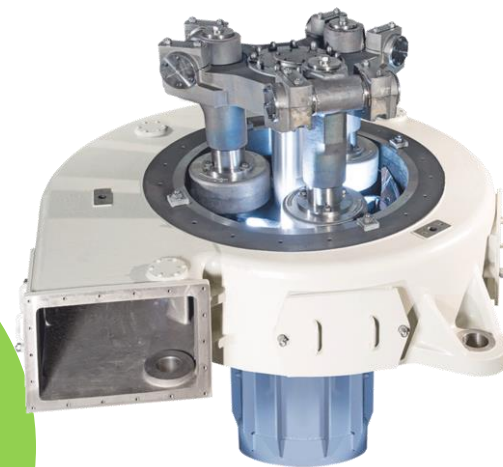
1680

Employees



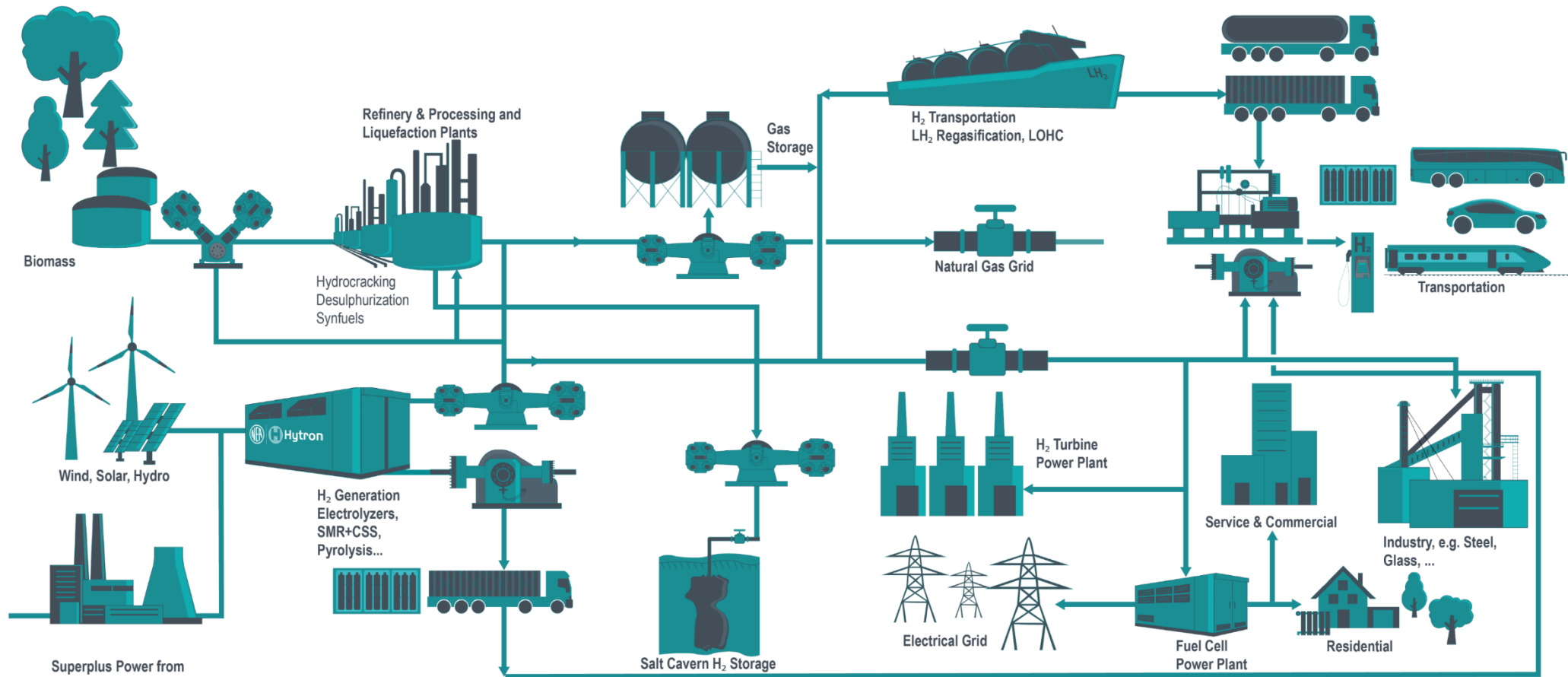
5500

**Machines Running ww
+ more than 10000 legacy machines
~2000 H₂ compressors
>10 Electrolyzer Systems**



THE ROLE OF HYDROGEN IN THE ENERGY TRANSITION

H₂-Value Chain for the Energy Transition



Primary Energy

Conversion & Processing

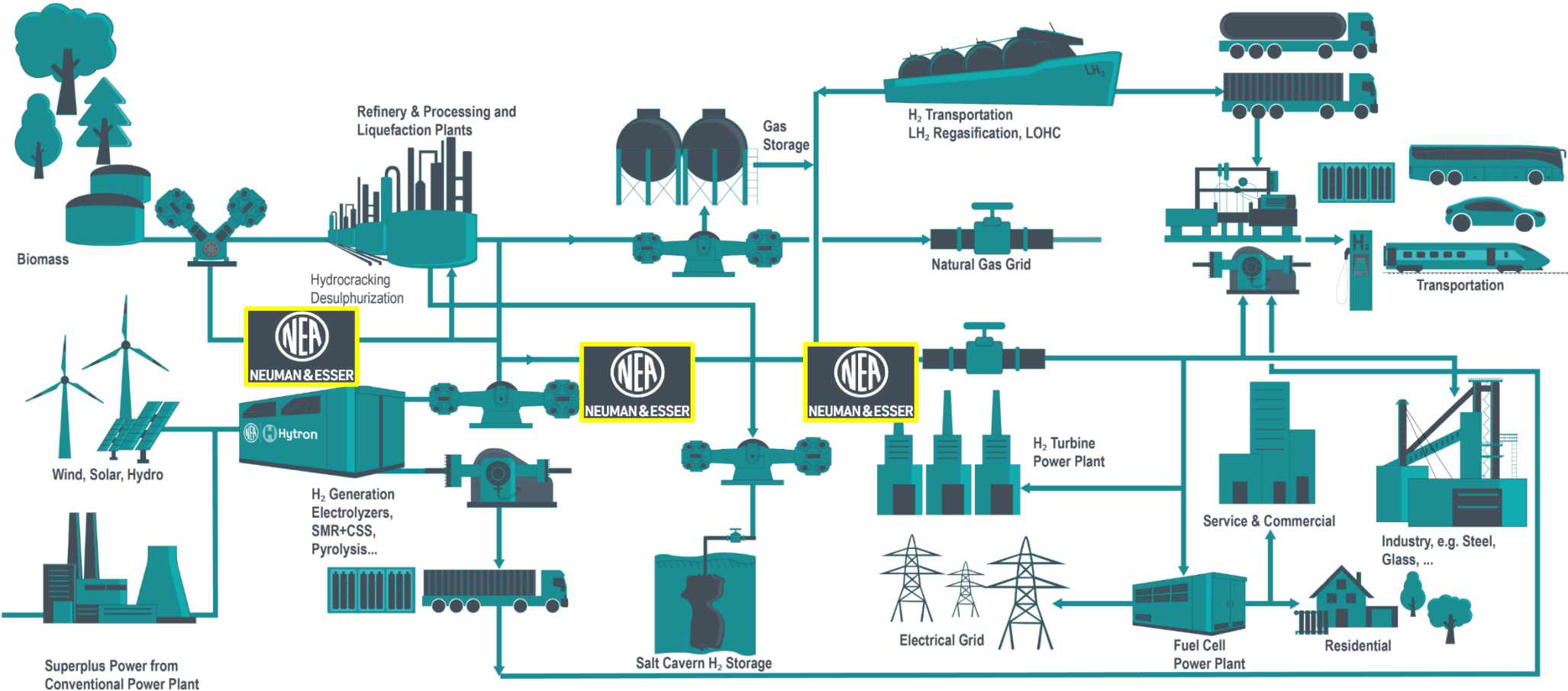
Storage

Transport & Distribution

Final Energy Demand

H2 VALUE CHAIN – THE ROLE OF CAVERN STORAGE

Large scale storage



TYPICAL SMALL SCALE COMPRESSOR PLANT

e.g. Gas Grid feed in after 20MW (PEM) Electrolyser

- suction // discharge pressure:

24 barg // 84 barg

- Volume flow

4400Nm³/h

- Electrical Power kW

235kW

2-stage dry running V-type



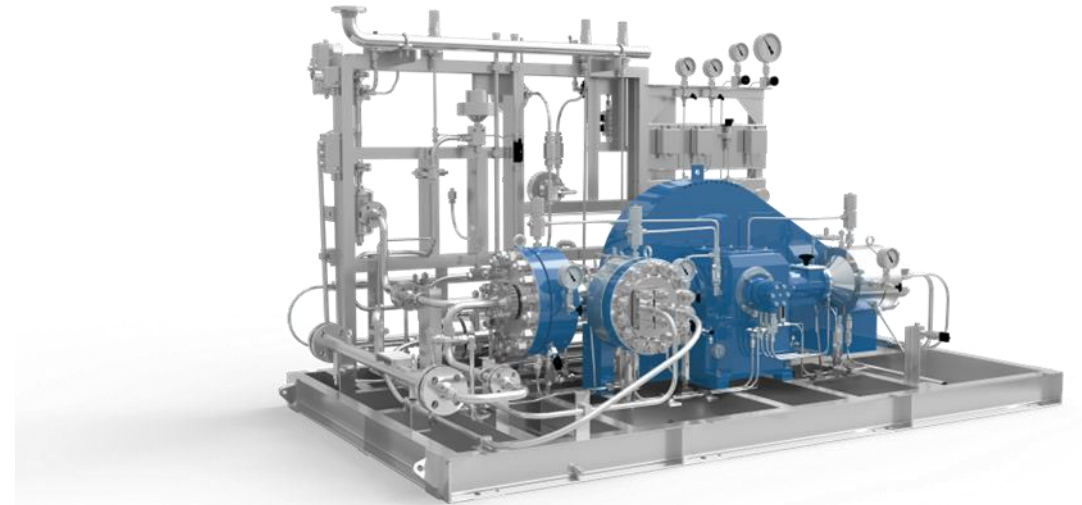
Diaphragm Compressor

- **Features**

- for continuous operation
- oil-free, abrasive-free, leakage-free up to 10-6 mbar l/s
- expensive, explosive, toxic gases
- for demands of high purity and gas-tightness
- up to 3,000 bar (45,000 psi), 1 to 4 stages
- ratio per stage 7 to 10 (20)

- **Applications**

- (petro)chemical industry
- food industry
- bottle filling
- automotive
- rocket filling
- H2 filling station



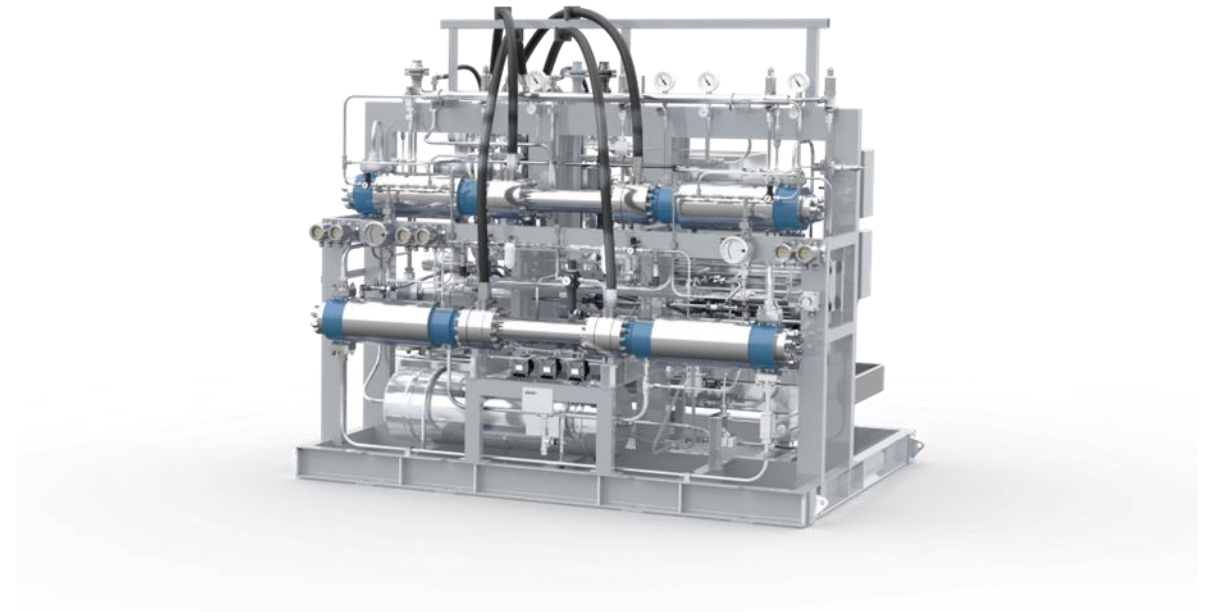
TKH-Piston Compressor with hydraulic drive

- **Features**

- for start-stop applications
- easy flow control
- small footprint → ideal for container installations
- easy and fast maintenance
- market launch in 1985

- **Applications**

- population: 200 units worldwide servicing N₂, ethylene and argon
- since 2005 for H₂ services and H₂ filling stations, with more than units 100 installed



H2 GENERATION- ELECTROLYZER





**Time for Questions & Answers -
Looking forward to an interesting discussion...**