

Hydrogen Solutions

Hydrogen Energy Ministerial Meeting 2018
Eric Klein



Today, ~ 95% of hydrogen production has high CO₂ emissions different steps are necessary to reduce emissions

Global H₂ supply ...

- **Main share** of production is **captive** (68%)¹, i.e., hydrogen **produced and consumed in-house** for producing other products
- Three **main technologies** to produce H₂

5% Electrolysis & others¹

- Utilize electricity to split water into hydrogen and oxygen

45% Steam Methane Reforming (SMR)²

- Synthesis from steam and natural gas, today most economic method

50% Coal gasification / partial oxidation

- Produced as part of, e.g., chemical processes in refineries



Major initiatives

Power2X Roadmaps

Hydrogen Roadmaps in different countries e.g. Japan, Australia, France, UAE

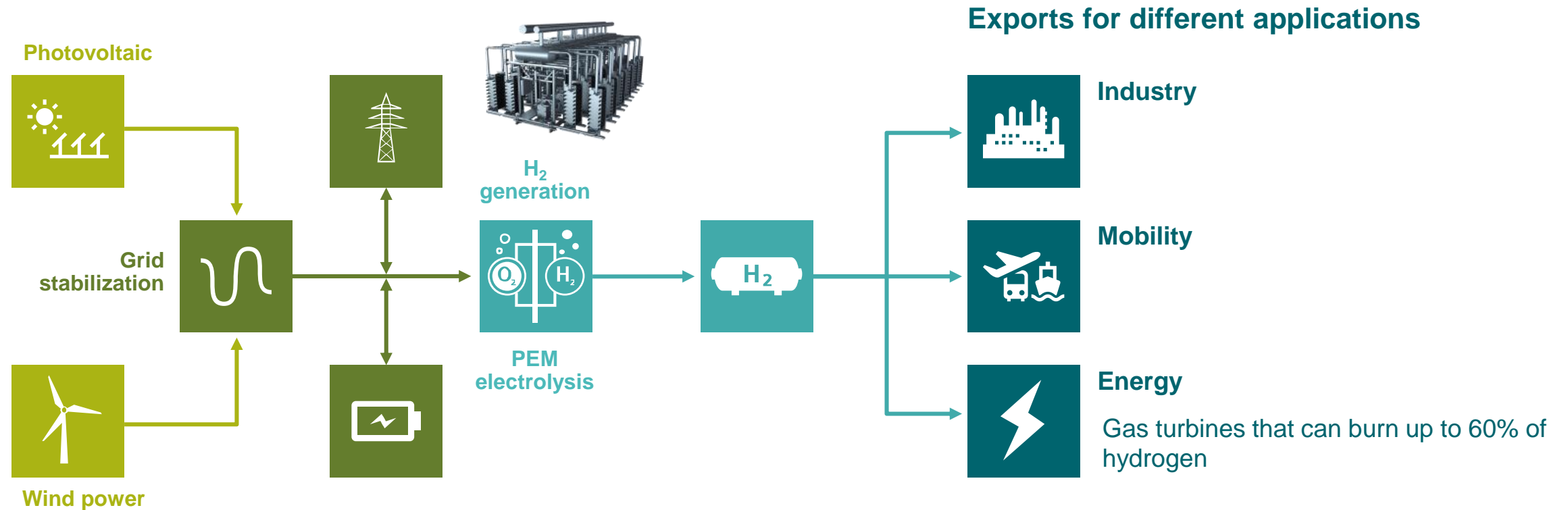
Europe: RED II directive

Germany: 7th Energieforschungsprogramm

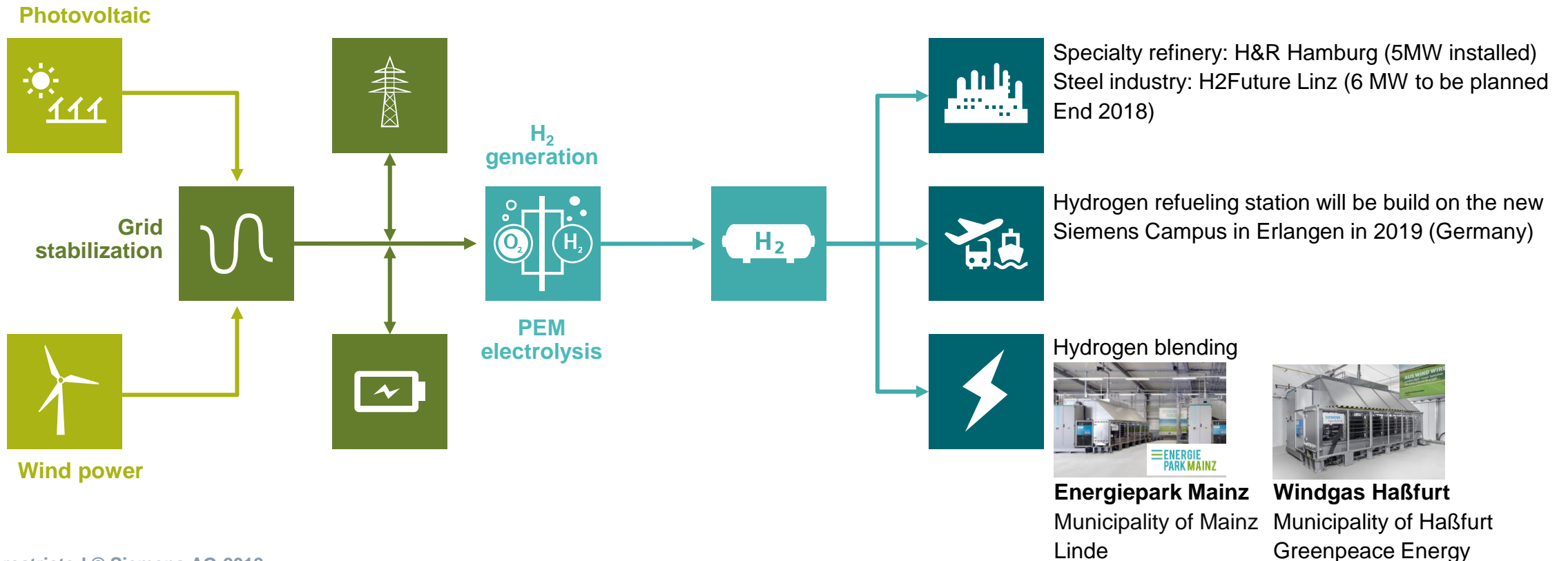
! Electrolysis is a CO₂ neutral production method for hydrogen

Source: ¹ Freedonia; ² Hydrogen Generators GIA; ³ Navigant; ⁴ CertifHY

Siemens as reliable partner in hydrogen value chain – from renewables, grid services, electrolysis and applications

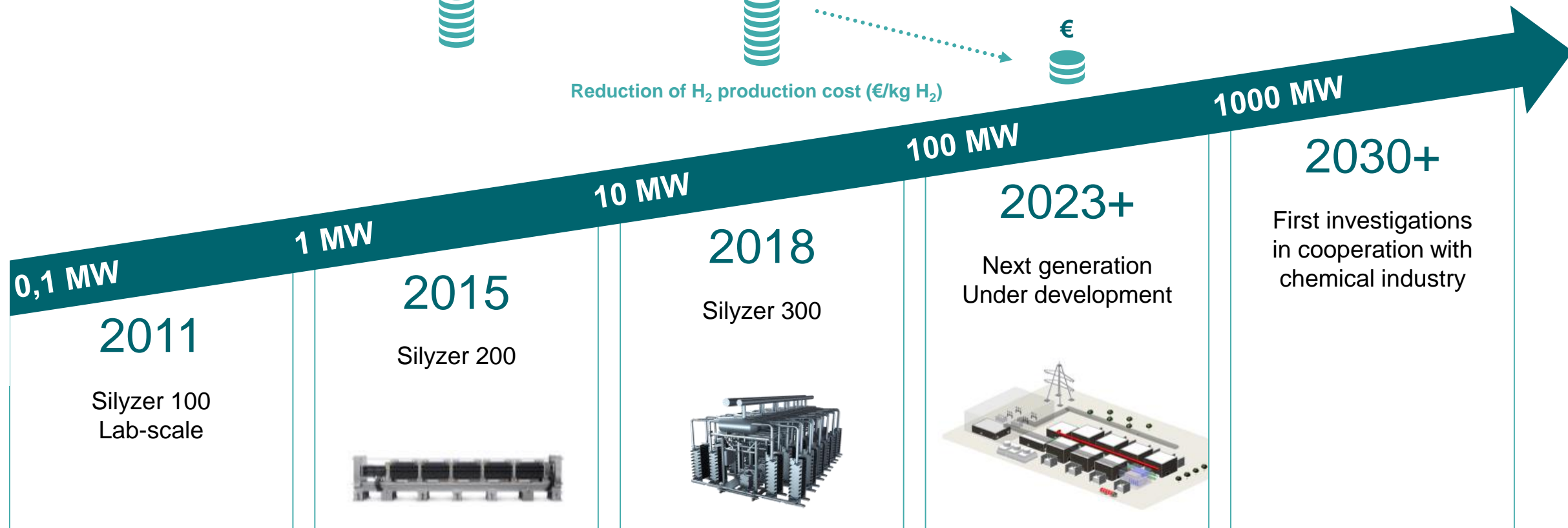
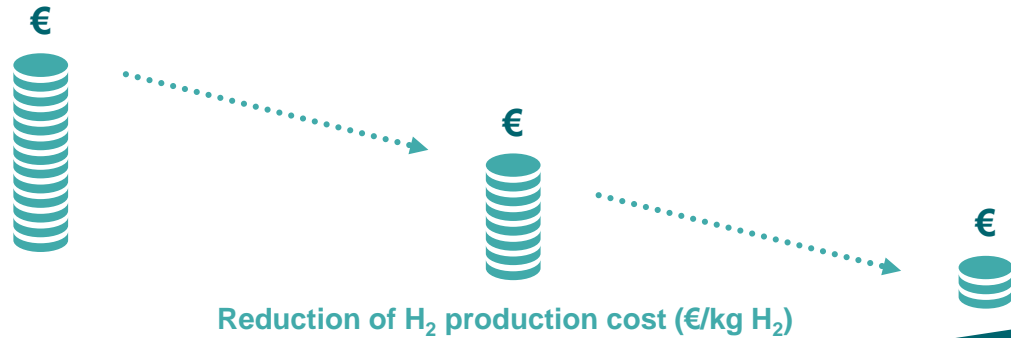


Various references in medium MW scale for different applications are running, double digit MW solutions to follow



Silyzer portfolio scales up by factor 10 every 4-5 years driven by co-development with our customers and market demand

Silyzer portfolio roadmap





Eric Klein

Vice President Sales
Hydrogen Solutions

Guenther-Scharowsky-Str. 1
91058 Erlangen

Mobile: +49 (172) 3544267

E-Mail: eric.klein@siemens.com

siemens.com