accelera™
by Cummins

Electrolysis Solutions for Green Ammonia Production

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Cummins and Accelera

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Accelera by Cummins

190
Countries

69.6K
Global Employees

1.3M+
Engines built

19K
Certified dealer locations

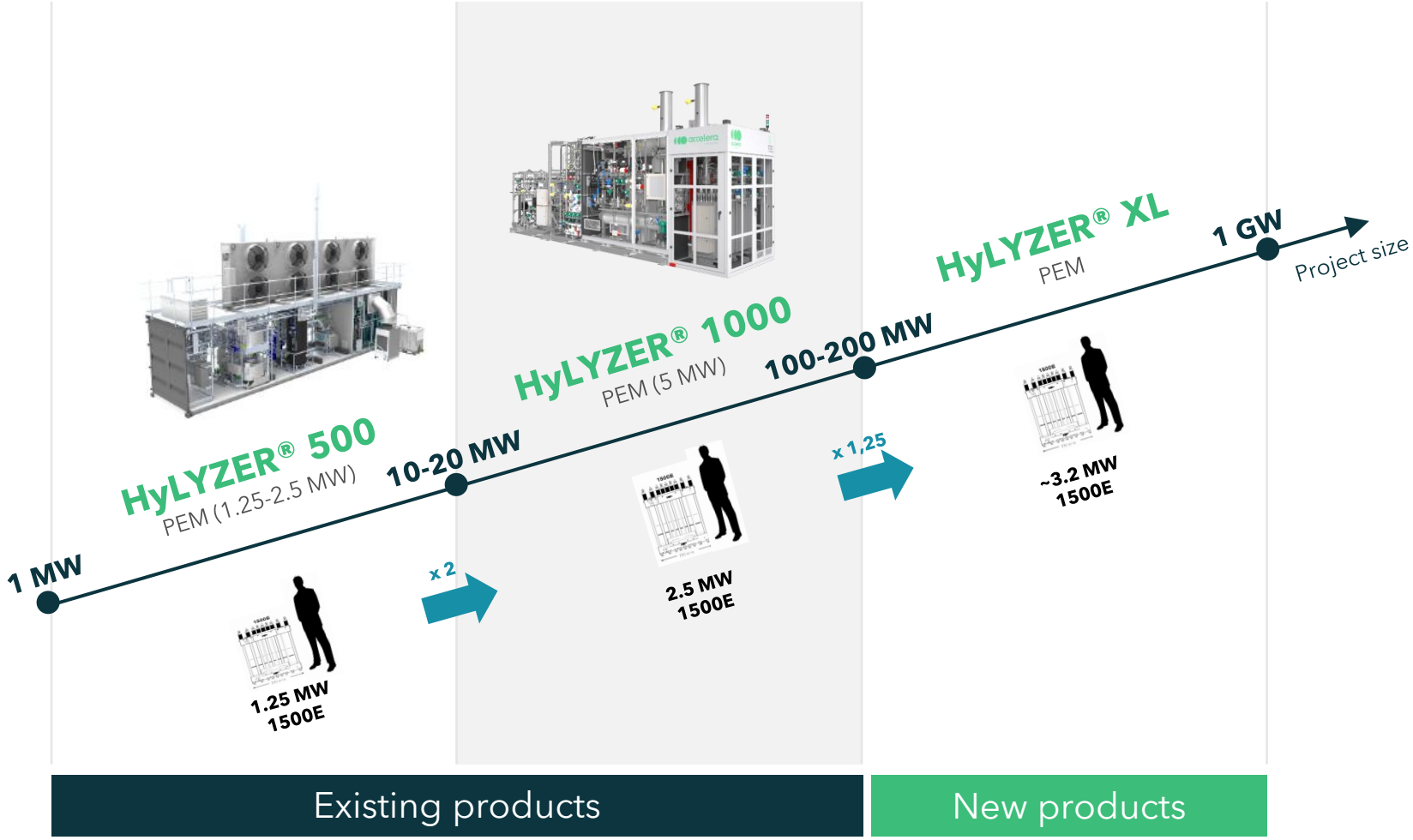
$34.1B
Full-year revenues 2024

106 YEARS
of industry leadership

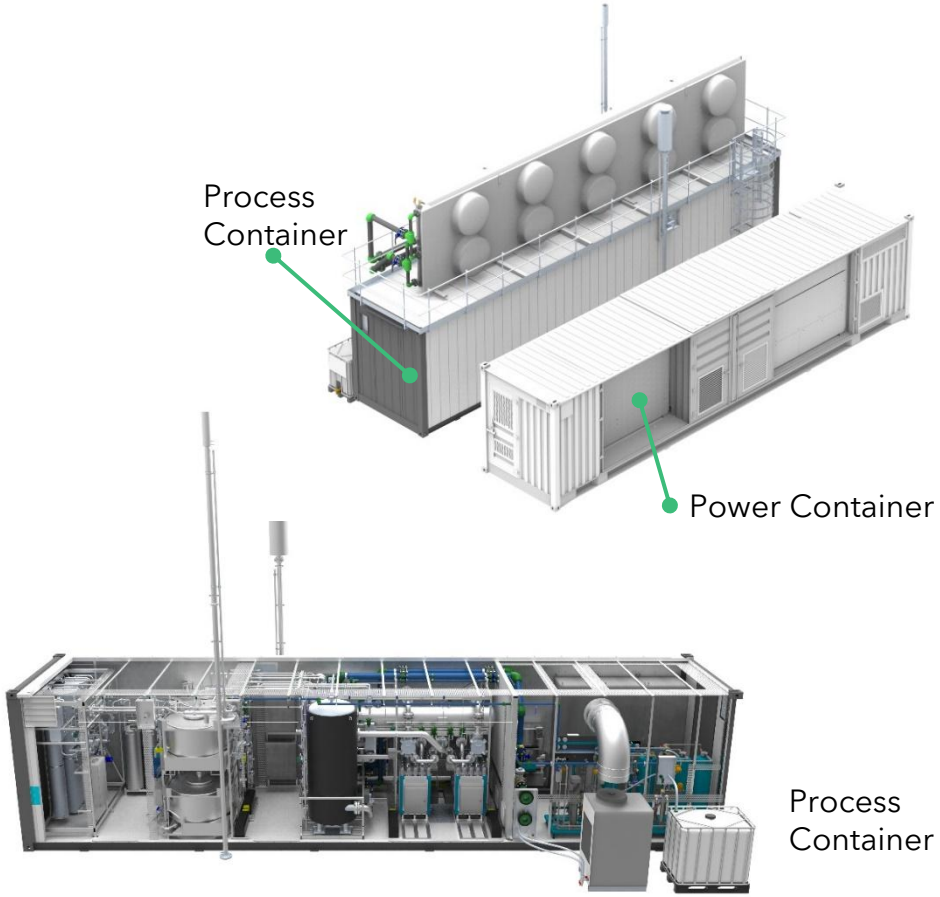
*as of Dec. 31, 2024

HyLYZER® : the industry benchmark for PEM electrolysis

	1500E cell stack (small)	1500E cell stack (high)
Nominal input power	1.25 MW	2.5 MW
Nominal hydrogen flow	250 Nm³/h	500 Nm³/h
Operating pressure	30 barg	30 barg
Used in product	HyLYZER® 500	HyLYZER® 1000



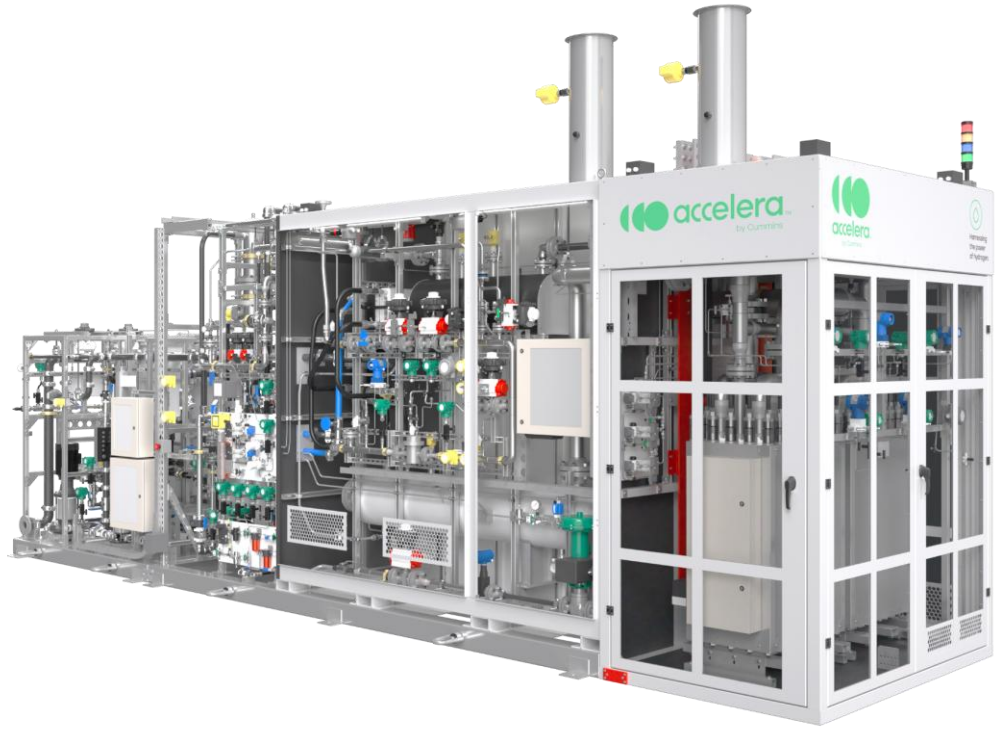
HyLYZER® 500 PEM Electrolyzer
2.5 MW outdoor product



HyLYZER® 250/500-30

- Containerized system (outdoor)
- **Turnkey (Plug & Play):** including hydrogen gas generation system, hydrogen purification system, outdoor power transformer and IGBT rectifiers AC-DC, water purification (reverse osmosis), cooling (dry cooler)
- **Dual stack platform:** up to 2 cell stacks of 250 Nm³/h (1,25 MW) to reach 500 Nm³/h (2,5 MW)
- **Product versions:**
  - 1.25 MW: 250 Nm³/h (1 stack)
  - 2.5 MW: 500 Nm³/h (2 stacks)
- **Output pressure:** 30 barg

HyLYZER® 1000 PEM Electrolyzer
5 MW indoor product



HyLYZER® 1000-30

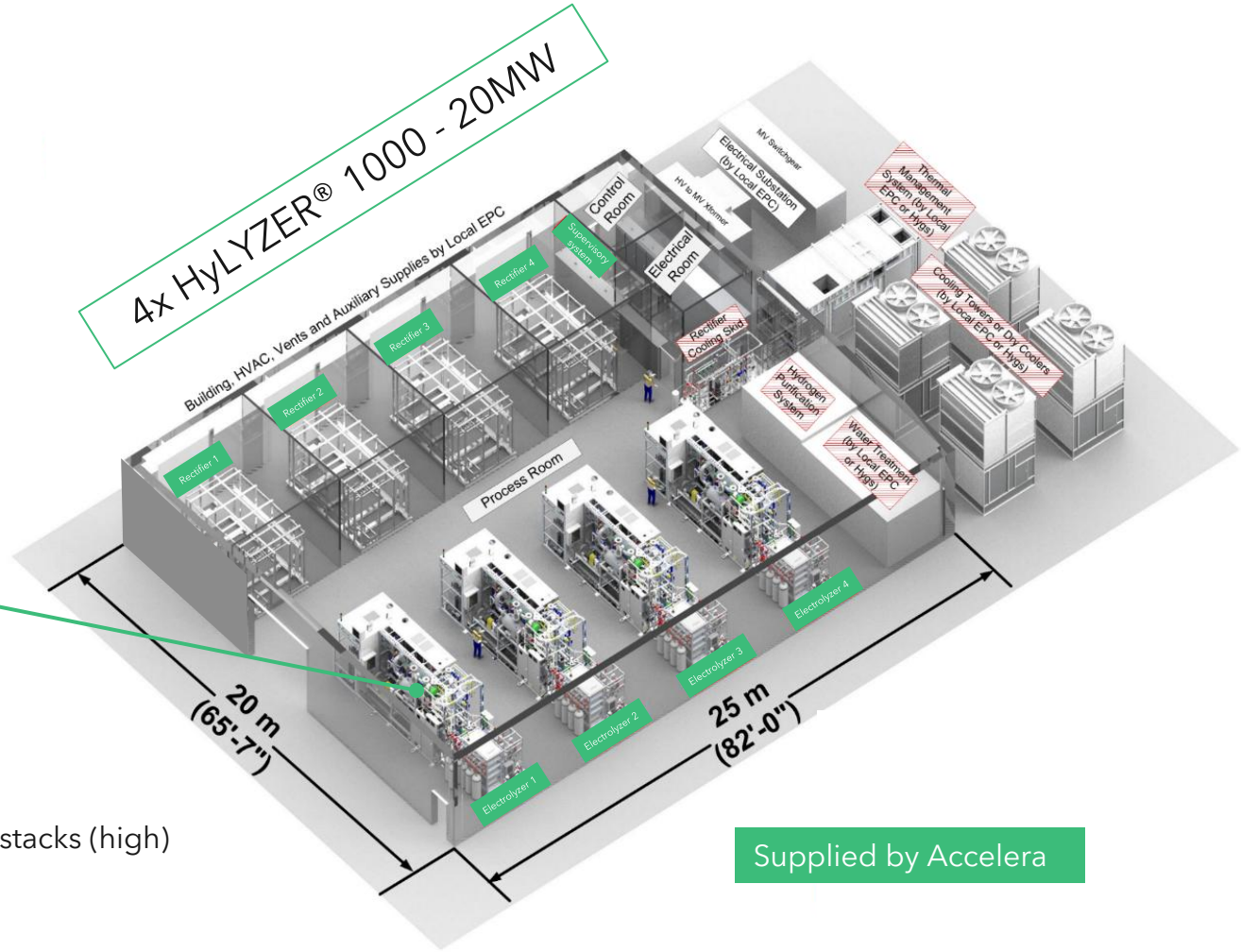
- **Indoor system**
- **Input power:** ~5MW
- **Modular product** (to be integrated): including hydrogen gas generation system, outdoor power transformer and IGBT rectifier AC-DC
- **Dual stack platform:** 2 cell stacks of 500 Nm³/h (2.5 MW) to reach 1000 Nm³/h (5 MW)
- **H2 output pressure:** 30 barg
- **O2 valorization:** 9-14 bar, available as an option

Every hazardous zone of the product is enclosed (ventilated enclosure + hydrogen detection) preventing the building to be classified as ATEX zone

HyLYZER® 1000 PEM Electrolyzer
5 MW indoor product

HyLYZER® 1000 – Balance-of-Stack
1000 Nm³/h (~5 MW) in total

2x 1500E cell stacks (high)



Supplied by Accelera

HyLYZER® - selection of project references

HyLYZER® 500 - PEM		HyLYZER® 1000 - PEM	
HySolar, 2.5 MW, Netherlands	**WindGas Reitbrook, 1.5 MW, Germany**	**Air Liquide Becancour, 20 MW, Canada**	**GAIL, 10 MW, India**
			
PtH2 Mallorca, 2.5 MW, Spain	**Refinery, 10 MW, Europe**	**FPL (NextEra), 25 MW, US**	**BP Lingen, 100 MW, Germany**
			

BP refinery - Lingen (Germany)
20x HyLYZER® 1000 - 100 MW

Accelera to power 100MW electrolyzer system for bp's Lingen green hydrogen project

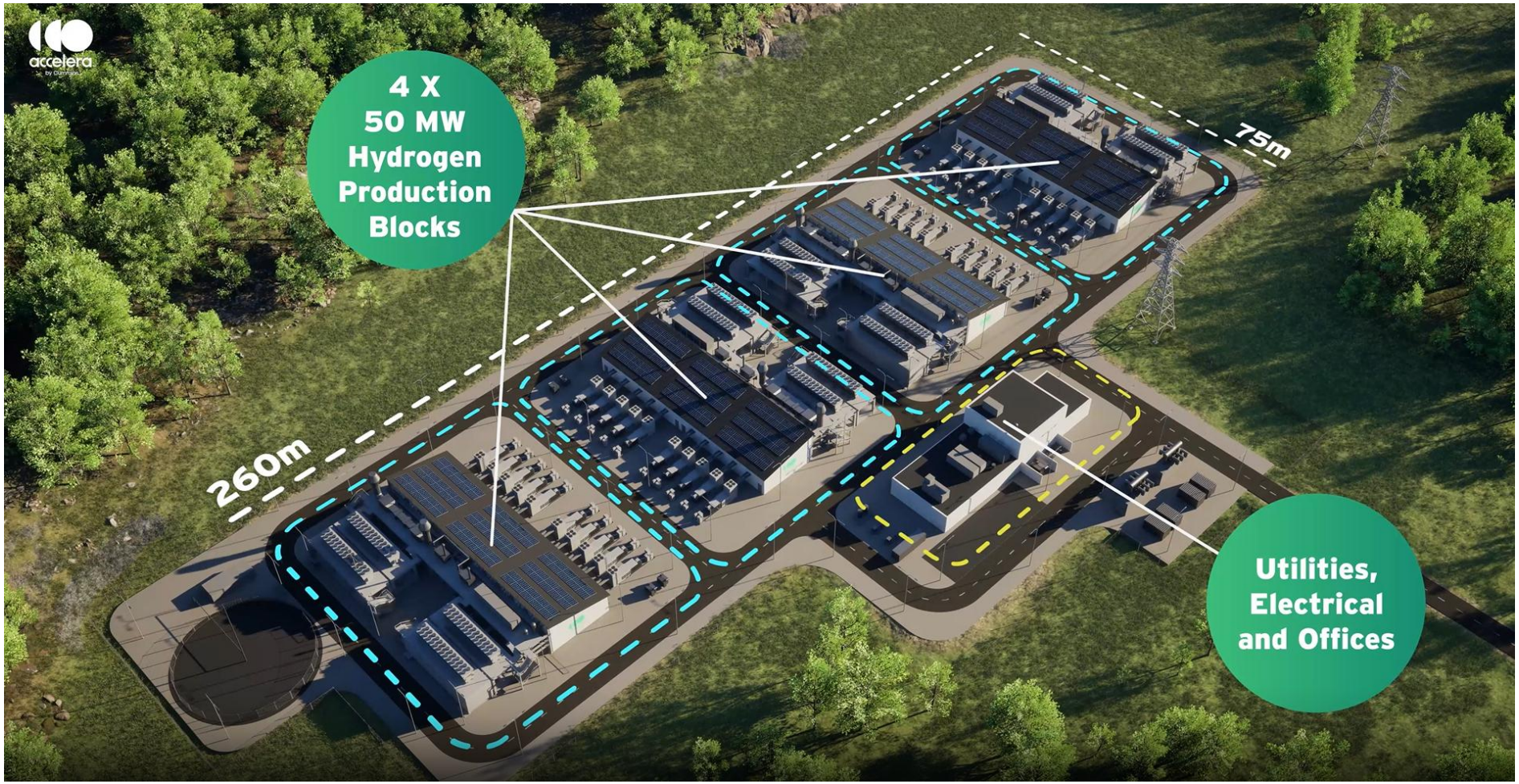
Lingen, Germany

- 20x HyLYZER® 1000-30 – indoor – 100 MW – 20,000 Nm³/h – 43 TPD
- Start of operation: 2027 (expected)

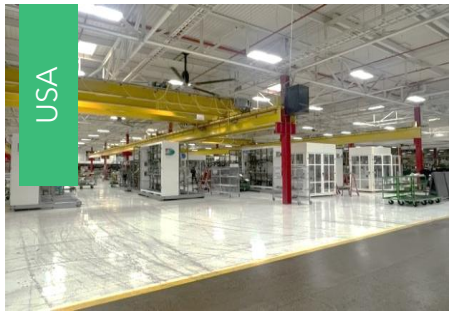
More info

https://investor.cummins.com/news/detail/667/accelera-to-power-100-mw-electrolyzer-system-for-bps

200 MW Electrolyzer Plant Design

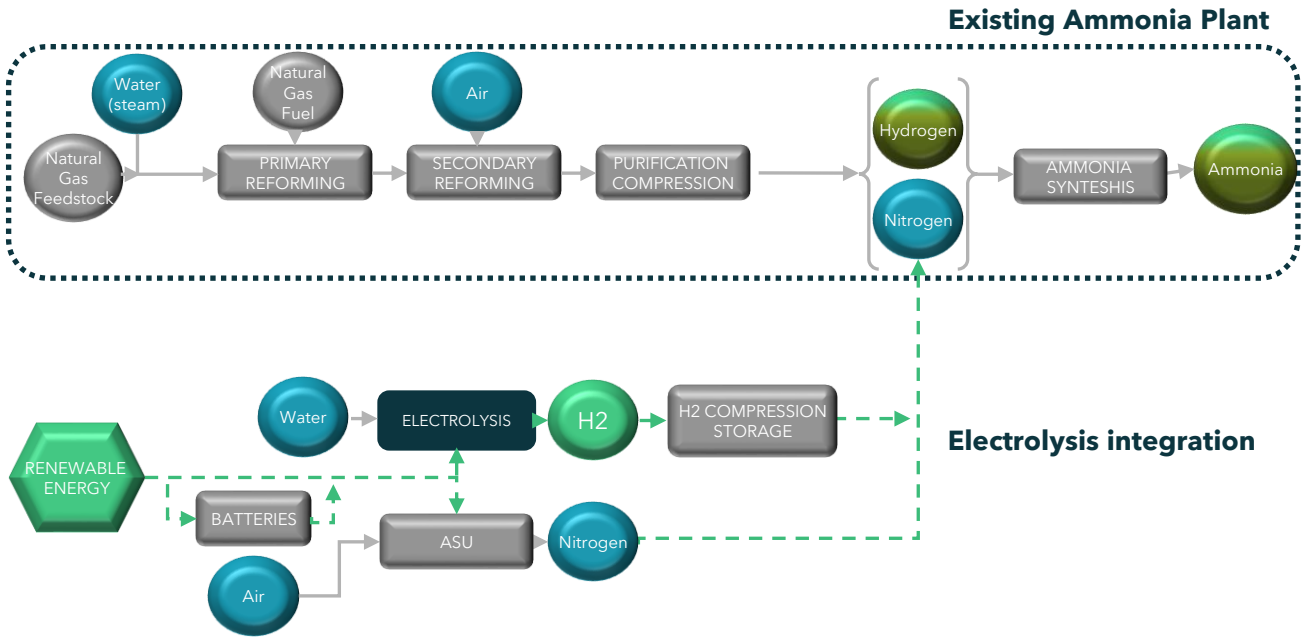


Accelera electrolyzer manufacturing footprint



	Europe		Americas	
Country	**Belgium**	**Spain**	**Canada**	**USA**
City	Oevel	Guadalajara	Mississauga	Fridley
HyLYZER® PEM cell stacks	●		●	
HyLYZER® 500	●	●		●
HyLYZER® 1000		●		●

Key Considerations
Hybrid Ammonia Plants



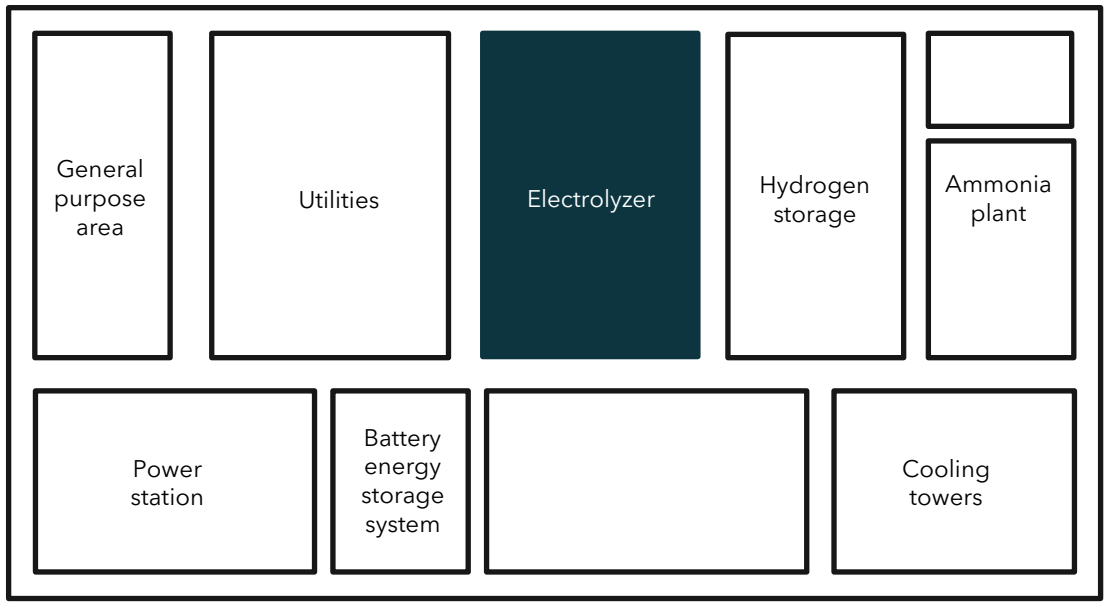
Technical considerations

- Electrolysis: could **replace 10-20%** of natural gas without a major overhaul.
- Typical Electrolysis Capacity: **XMW to 100MW**
- **Land limitations** in existing facilities
- Power Profile: **Access to RE** - Grid connection (PPA) – Correlation (RNBO) - Operational mode
- **SMR flexibility**: Batteries & H2 storage & ASU (N2)

Regulation – Commercial considerations

- Green Ammonia production targets under (**RED III**)
- **Certification** process (RFNBO)
- Willingness to Pay by Producers – **Green Premium** (local production vs importing)
- Access to **subsidies**

Key Considerations
Greenfield Ammonia Plants



Electrolyzer solution plays a fundamental role in Hybrid Ammonia Plants

Key considerations

- Typical Electroysis Capacity: **300MW – to XGW**
- **"Phase approach**" with long maturation process
- Power profile: RE assets + **limited Grid connection** => Large Aux Systems
- **Optimal** LCOH - Technology mix
- NH3 Certification for export/local Business model **(i.e EU vs India vs Japan/Korea)**
- Support from **governmental entities** (infrastructures, permitting,..)

Key Requirements by Electrolyzer OEMs

- Early Engagement to optimize the design
- Support Full Plant Life Cycle – 25y
- Technology Road map for Scale UP
- Partnership (EPC/Technology/End costumer)
- Global/Local: Manufacturing strategy

Electrolyzers: Accelera by Cummins

- ☑ **75 years** of expertise in water electrolysis
- ☑ **+600 electrolyzers** delivered to industrial customers
- ☑ Most powerful **single PEM cell stack: 2.5 MW**
- ☑ **HyLYZER® PEM products validated** in world-class reference projects since 2015
- ☑ **High-quality manufacturing & supply chains** across 2 continents
- ☑ **Digital services** offering and **worldwide service support**
- ☑ Accelera is wholly owned by **Cummins Inc.**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