



Next generation electrolysers  
to enable the industry of tomorrow



[stargatehydrogen.com](https://stargatehydrogen.com)



# A world where green hydrogen is a commodity

“Affordable green hydrogen is essential for reducing carbon emissions in hard-to-abate sectors such as steelmaking, fertiliser and chemical industries.

Stargate’s breakthrough ceramic catalysts will increase the efficiency of the electrolysis process. Our electrolyzers reduce the cost of green hydrogen thanks to efficiency at low capital cost.

Our electrode technology received positive test results from the German institute Fraunhofer, and our stacks successfully completed performance testing at ZSW.

We are looking for partners on the journey of building the industry of tomorrow.”

**Marko Virkebau**  
CEO of Stargate Hydrogen





# Stargate develops electrolyzers with novel catalysts, called Stardust, highlighted by the European Commission as an IPCEI\*

\* IPCEI - Important Project of Common European Interest



stargate IPCEI

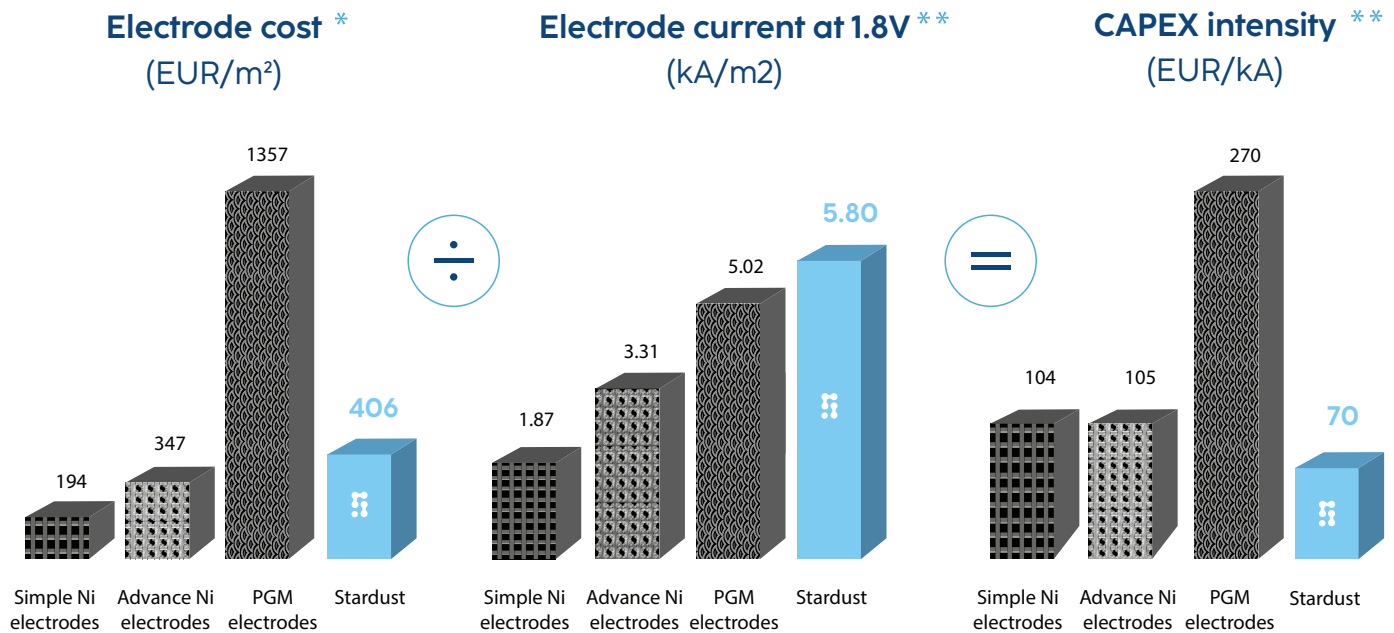


**Stargate's patent portfolio covers materials, stacks and electrolysis systems.**

# Stardust electrode technology

Stargate's innovative catalyst material - Stardust - increases the current density of the electrodes used for green hydrogen production without additional investment.

**Higher current densities allow to reduce the stack size and thus CAPEX.**



\* Based on commercial quotations for 4000 cm<sup>2</sup> electrodes

\*\* Electrode current is directly proportional to H<sub>2</sub> production. Measured at 5 barg, 80°C, 30% KOH, Zirfon diaphragm, Simple Ni as cathode. 1.8 V/cell = 47.9 kWh/kg H<sub>2</sub>.

\*\*\* How much investment is needed at fixed H<sub>2</sub> production rate?

# Pressurised alkaline stacks for system integrators.

## Two footprints, unlimited possibilities.

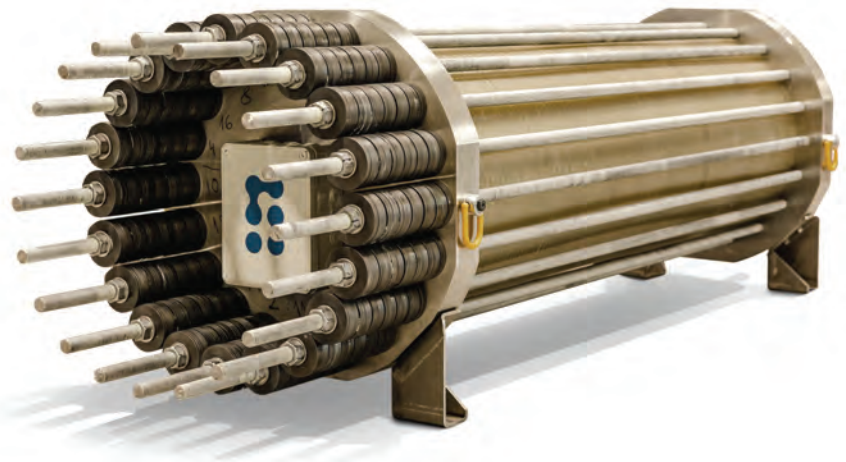
# stellar

S E R I E S



The Stellar series is **manufactured in the European Union** and is offered in **different sizes**.

- Industrial installations
- Lab & Prototyping
- Max output up to 100 Nm<sup>3</sup>/h
- Customizable current density
- Pressurised operation up to 32 barg
- Designed to fit into a ISO container
- Integration support



## Tested by ZSW.

**Thomas Ottitsch, Manager of the Electrolysis test field (ElyLab) at ZSW commented:** “It was a pleasure working together with Stargate Hydrogen’s team to test their alkaline electrolyser stack technology at our test facility „ElyLab“ in Stuttgart. Our independence and scientific approach ensures that the results obtained in these tests can be compared to other tests with a high confidence. We measured the average cell voltage in the stack to be lower than 1.85V (at 0.5 A/cm<sup>2</sup>, 15 barg, 70°C), corresponding to a stack-level efficiency of 80% (HHV).”



Customizeable configurations



Performance guarantee



Full Integration support



Fast delivery less than 6 months



Up to 100 Nm<sup>3</sup>/h



High Efficiency





# Next generation electrolyzers

Full turn-key solution for green hydrogen applications.

Each 40 ft container has an input power of up to 1 MW and an output of up to 200 Nm<sup>3</sup>/h, pressurised to 30 bar as output. The systems can be ordered with a 12-month lead time and come with an industry-leading performance guarantee. The electrolyzers produce high purity hydrogen that is suitable for a wide range of applications such as chemical feedstock, process heat, blending, transport fuel and energy storage.

## gateway SERIES



High Purity Hydrogen



High Efficiency



Leading Performance



Full Maintenance Support



Low CAPEX



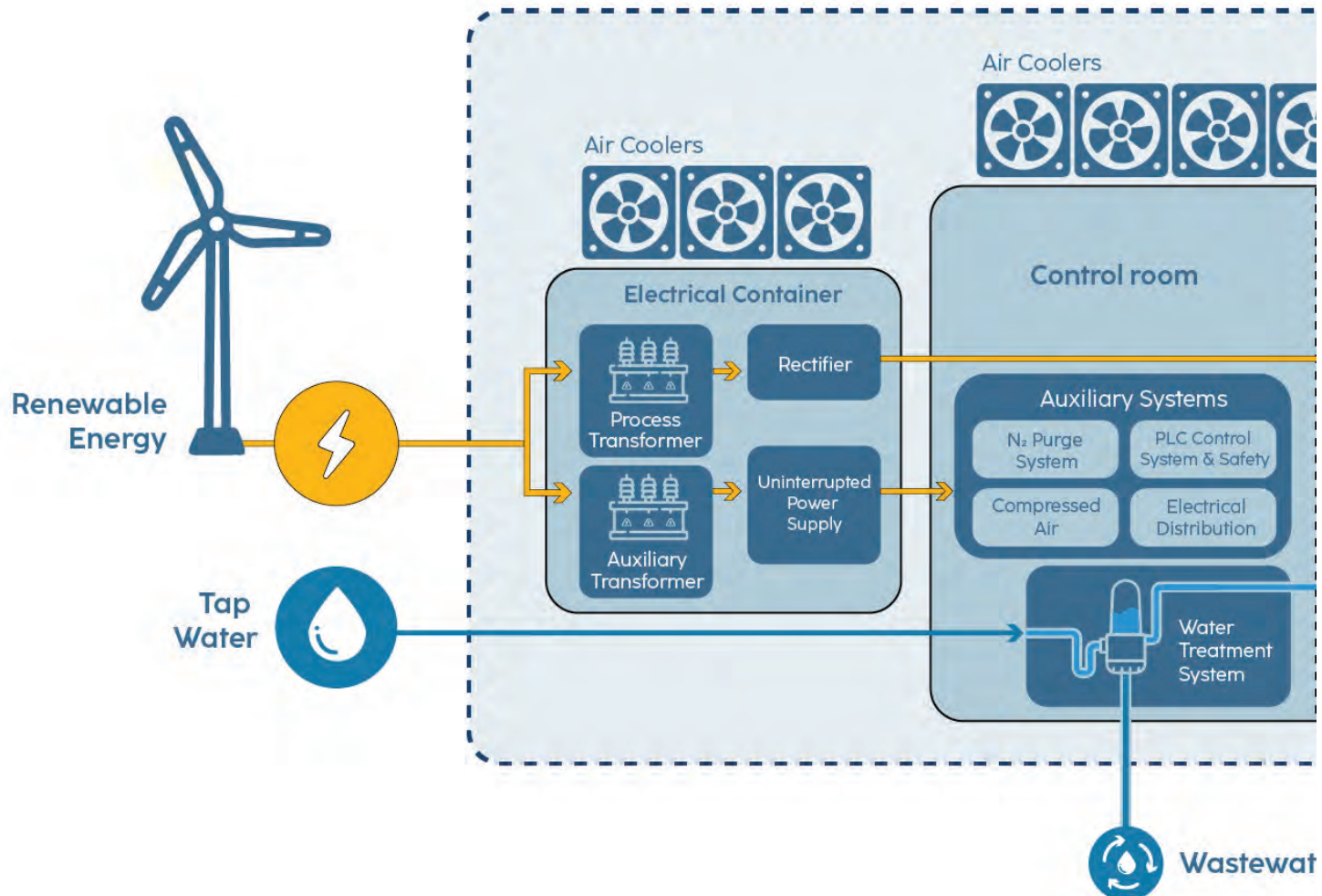
# System Diagram

## gateway

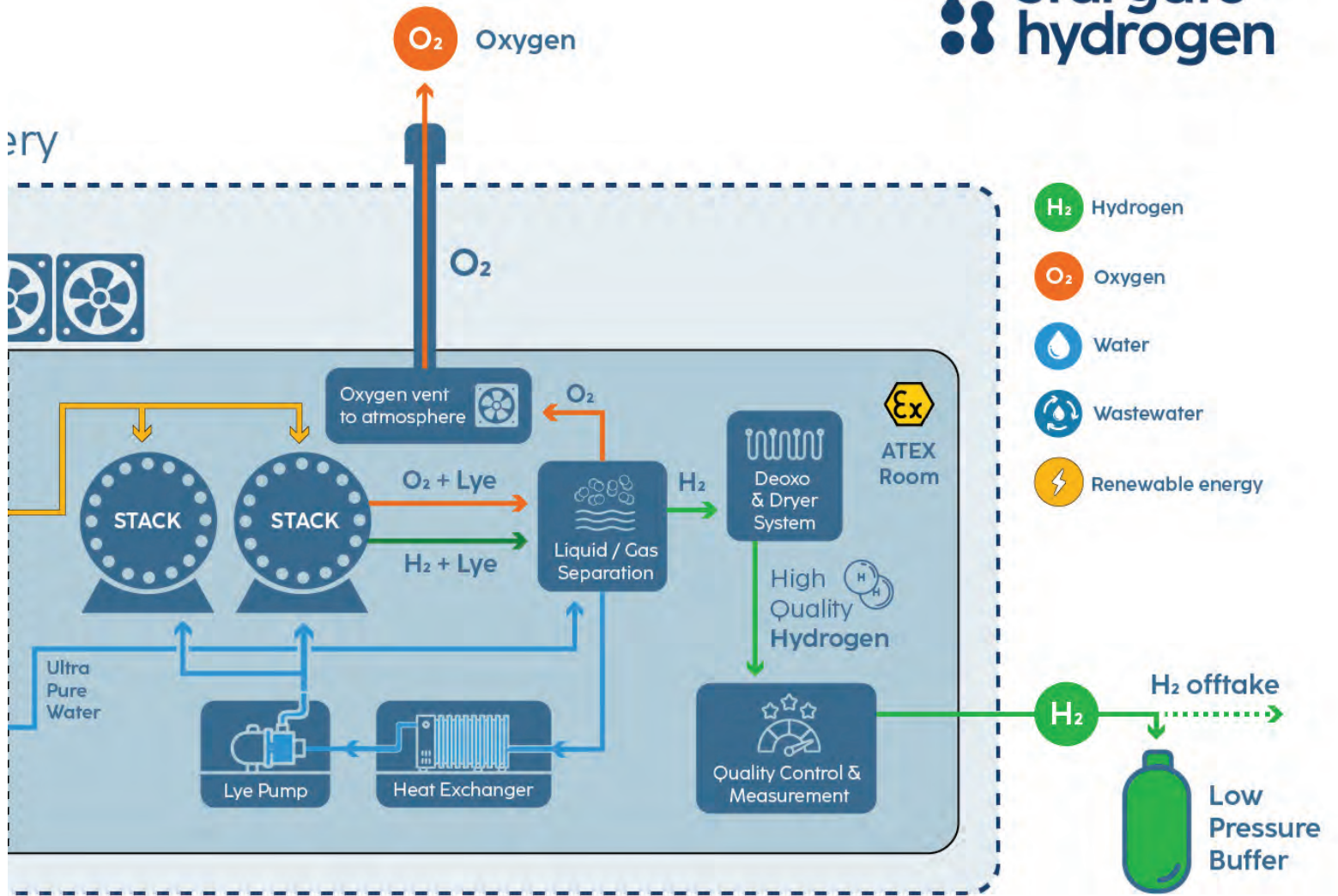
SERIES

200

### Stargate Hydrogen - Scope of Delivery







# Turn-key electrolyzers for project developers

## gateway SERIES

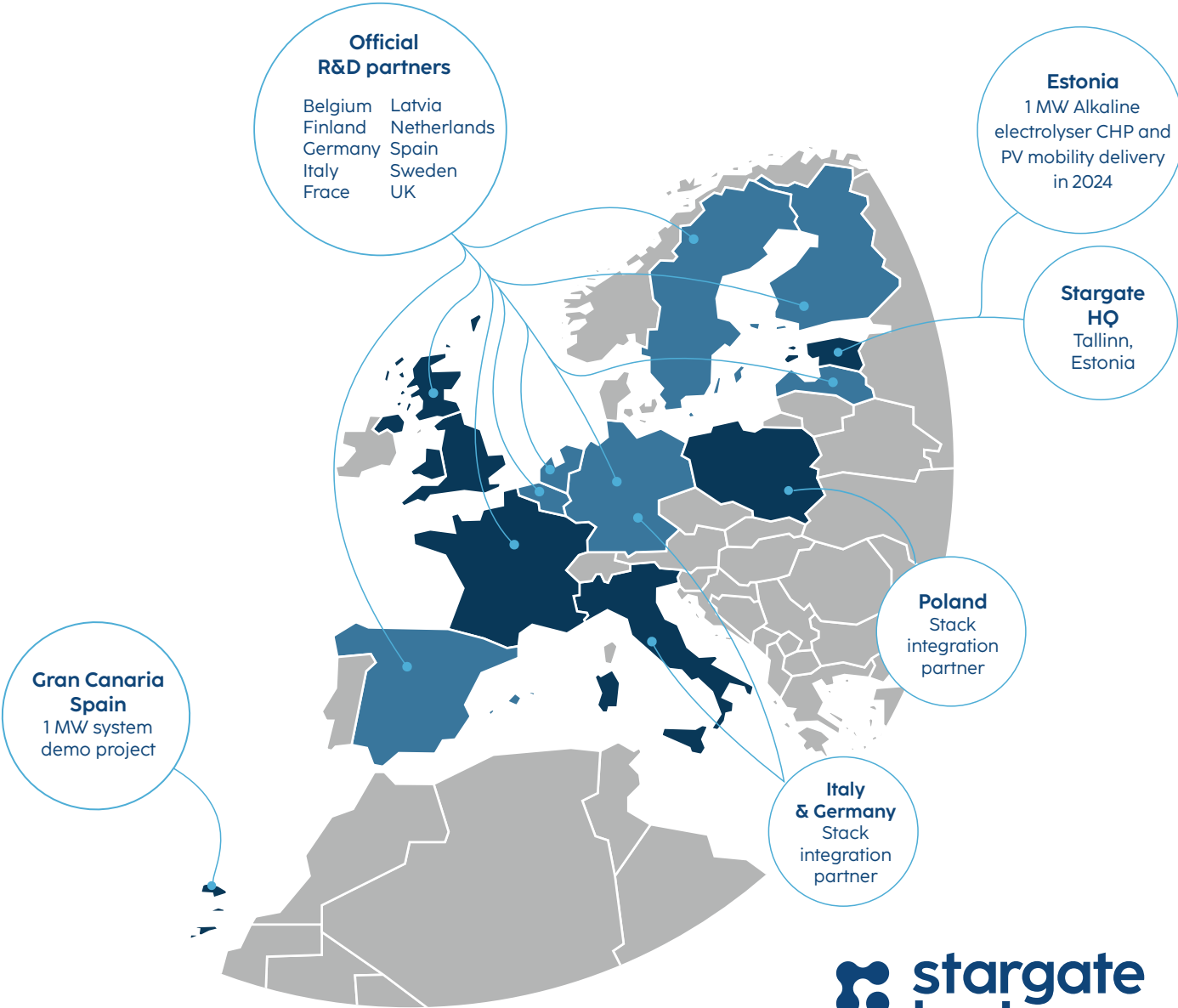
Product	Production capacity Nm <sup>3</sup> /h (kg/h)	Installed electrical power - kVA	Operating range %	Delivery pressure- barg	System efficiency kWh/kg	Hydrogen purity %	Electrical input	Ambient temperature range -C	Certification
Gateway 200	200 (18)	1200	20-100	30	53-55	>99.999 <sup>1</sup>	0.4 kV, 3-ph 50/60 Hz	-20 to +40 <sup>2</sup>	CE-mark
Gateway 400	400 (36)	2400	10-100	30	53-55	>99.999 <sup>1</sup>	0.4 kV, 3-ph 50/60 Hz	-20 to +40 <sup>2</sup>	CE-mark
Gateway 800	800 (72)	4800	5-100	30	53-55	>99.999 <sup>1</sup>	0.4 kV, 3-ph 50/60 Hz	-20 to +40 <sup>2</sup>	CE-mark
Gateway 1600	1600 (144)	9600	5-100	30	53-55	>99.999 <sup>1</sup>	0.4 kV, 3-ph 50/60 Hz	-20 to +40 <sup>2</sup>	CE-mark
Gateway 2000	2000 (180)	12000	5-100	30	53-55	>99.999 <sup>1</sup>	0.4 kV, 3-ph 50/60 Hz	-20 to +40 <sup>2</sup>	CE-mark

1. **Target purity** achievable with optional purification system / 2. **Target temperature** range available with optional extra package standard: +5 to +40 C

The first Gateway electrolyser will operate in Tallinn in 2024, including waste heat recovery for the district heating network



# Stargate in Europe





# Next Generation alkaline electrolyser

**gateway**  
SERIES



## Technical specifications

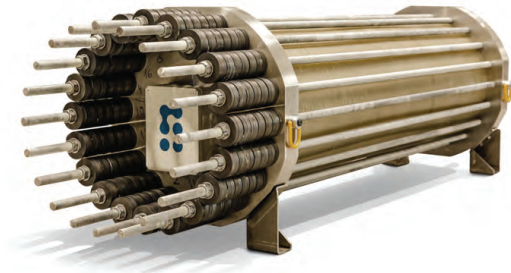
Product	Gateway 200	Gateway 400	Gateway 800	Gateway 1600	Gateway 2000
Hydrogen hourly production rate [Nm <sup>3</sup> /h]	200	400	800	1600	2000
Hydrogen daily production rate [kg/day]	432	864	1728	3456	4320
Hydrogen pressure [barg]	30	30	30	30	30
Hydrogen purity [%] *	> 99.999%	> 99.999%	> 99.999%	> 99.999%	> 99.999%
Installed electrical power [MVA]	1.2	2.4	4.8	9.6	12
Stack consumption [kWh/Nm <sup>3</sup> ]	4.59	4.59	4.59	4.59	4.59
System efficiency (HHV) [%]	69.4%	69.4%	69.4%	69.4%	69.4%
System efficiency (LHV) [%]	58.7%	58.7%	58.7%	58.7%	58.7%
Operating range [%]	20-100%	10-100%	5-100%	5-100%	5-100%
Electrolyte	KOH	KOH	KOH	KOH	KOH
Electrical interface	Low-Voltage substation	Low-Voltage substation	Low-Voltage substation	Low-Voltage substation	Low-Voltage substation
Tap water requirement [l/h]	328	656	1312	2624	3280
System installation location	Outdoors (containerized)	Outdoors (containerized)	Outdoors (containerized)	Outdoors (containerized)	Outdoors (containerized)
Equipment footprint incl. maintenance zones [m <sup>2</sup> ]	155	310	620	1240	1550
Ambient temperature range [°C] **	-20 to +40	-20 to +40	-20 to +40	-20 to +40	-20 to +40
Communication interface	OPC UA	OPC UA	OPC UA	OPC UA	OPC UA

\* Target purity achievable with optional purification system

\*\* Target temperature range available with optional extra package - Standard: +5 to +40 °C

# Pressurised alkaline stacks for System Integrators.

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## Technical specifications

	Max Efficiency	Balanced	High Power
Hydrogen hourly production rate [Nm <sup>3</sup> /h]	100	100	100
Hydrogen daily production rate [kg/day]	215	215	215
Hydrogen pressure [barg]	32	32	32
Hydrogen purity [%]	>98%	>98%	>98%
Oxygen purity [%]	>98%	>98%	>98%
Stack Consumption [kWh/Nm <sup>3</sup> ]	4.59	4.74	4.84
Stack Consumption [kWh/kg]	51.07	52.74	53.85
Stack Operating temperature [ °C]	80-90	80-90	80-90
Stack rated voltage - BOL [V]	227	189	160
Stack rated voltage - EOL [V]	264	213.4	178.2
Stack rated current [A]	2027	2507	3022
Stack minimum current [A] *	1150	1150	1150
Stack rated power - BOL [kW]	460	474	484
Stack rated power - EOL [kW]	535	535	539
Stack minimum operating point [%] *	55%	45%	38%
Stack efficiency (HHV) [%]	77.2%	74.7%	73.2%
Stack efficiency (LHV) [%]	65.2%	63.1%	61.8%

\* Lower minimum load point on request.

**We are made of people.**



 **stargate  
hydrogen**



**Notes:**

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