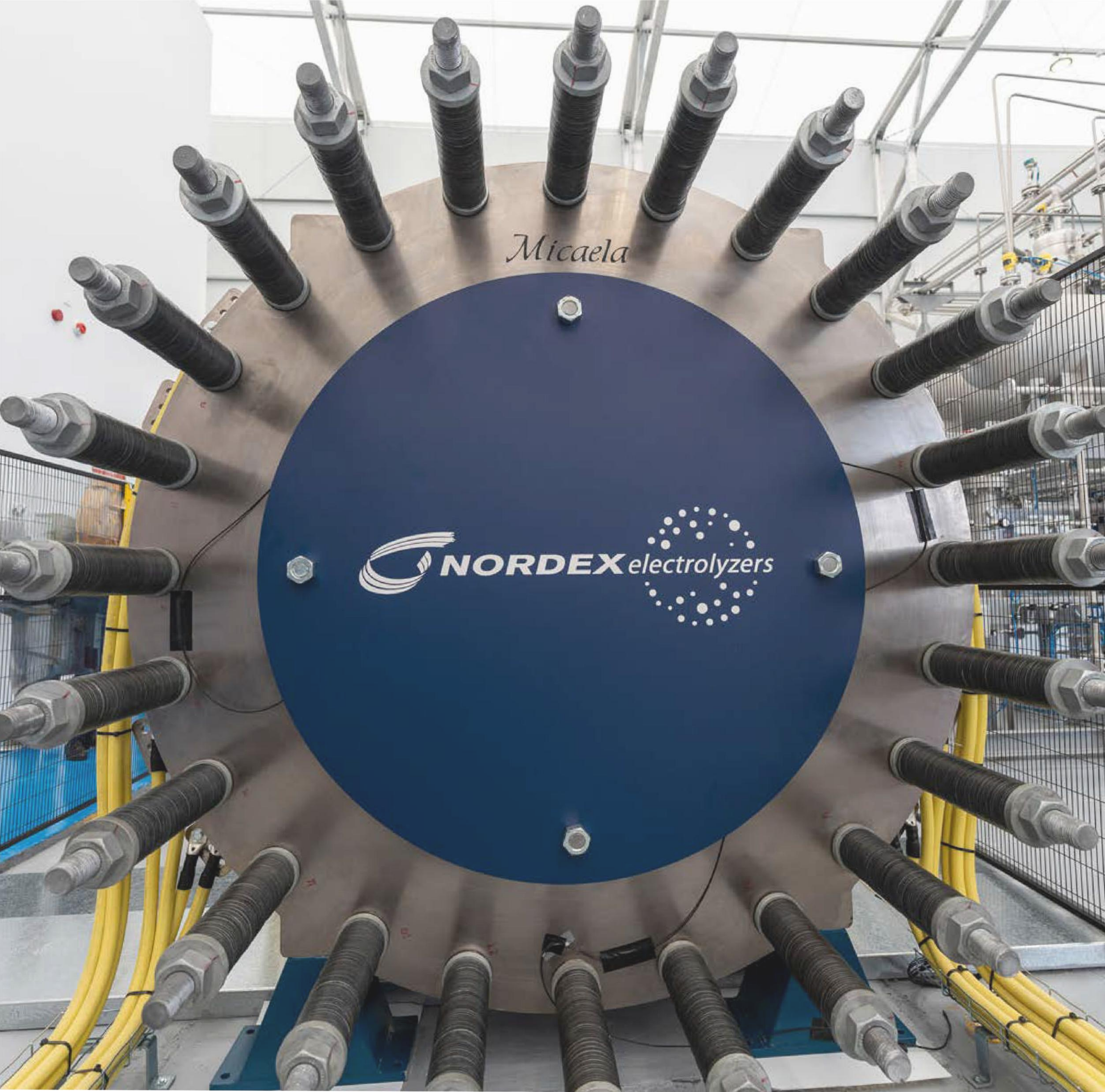


Nordex Electrolyzers

From Wind to Hydrogen



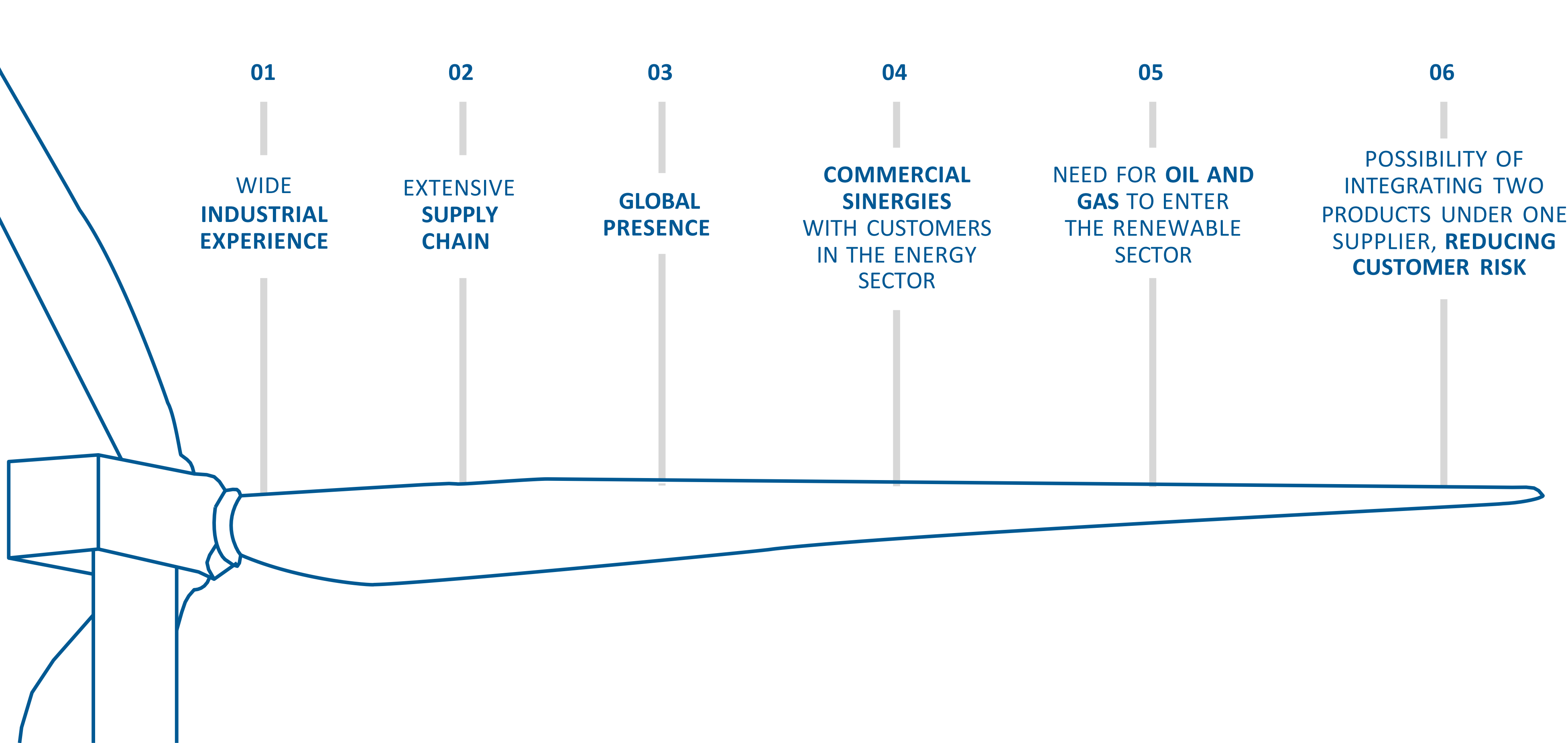


01

Industrial
Project

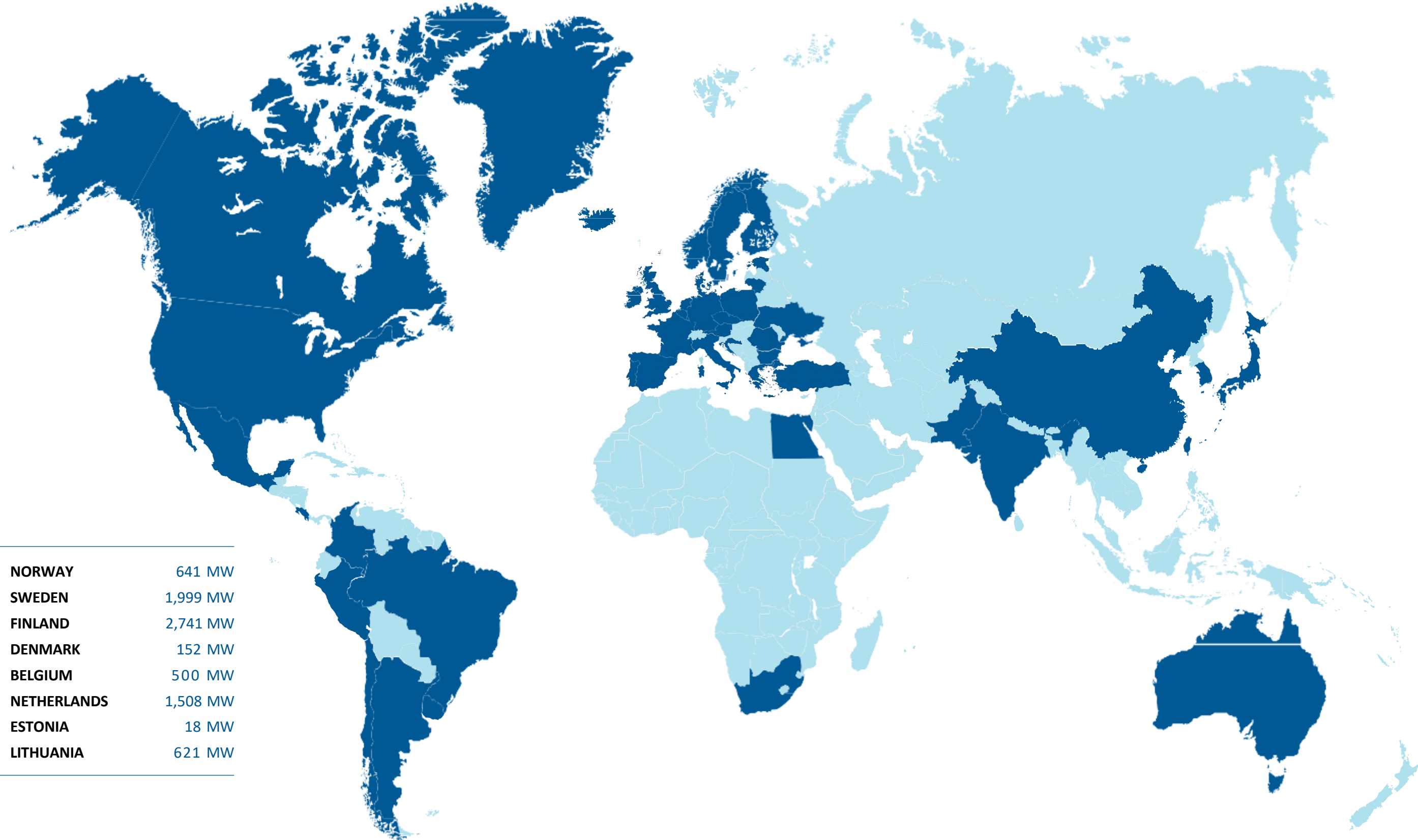
Nordex group: from wind to hydrogen

The Numerous synergies between wind and hydrogen energies sectors explain the firm's commitment to this new energy vector



Nordex group: Track record

Turbines commissioned:
More than 61,300* MW worldwide.



AMERICA

ARGENTINA	627 MW
CANADA	688 MW
USA	8,584 MW
MEXICO	1,944 MW
COSTA RICA	50 MW
PERU	440 MW
COLOMBIA	20 MW
BRAZIL	5,062 MW
URUGUAY	309 MW
CHILE	1,157 MW

ASIA/AFRICA/OCEANIA

TÜRKIYE	4,814 MW
PAKISTAN	300 MW
INDIA	378 MW
CHINA	1,053 MW
JAPAN	73 MW
SOUTH KOREA	65 MW
AUSTRALIA	528 MW
EGYPT	63 MW
SOUTH AFRICA	1,103 MW
OTHERS (ROW)	330 MW

EUROPE

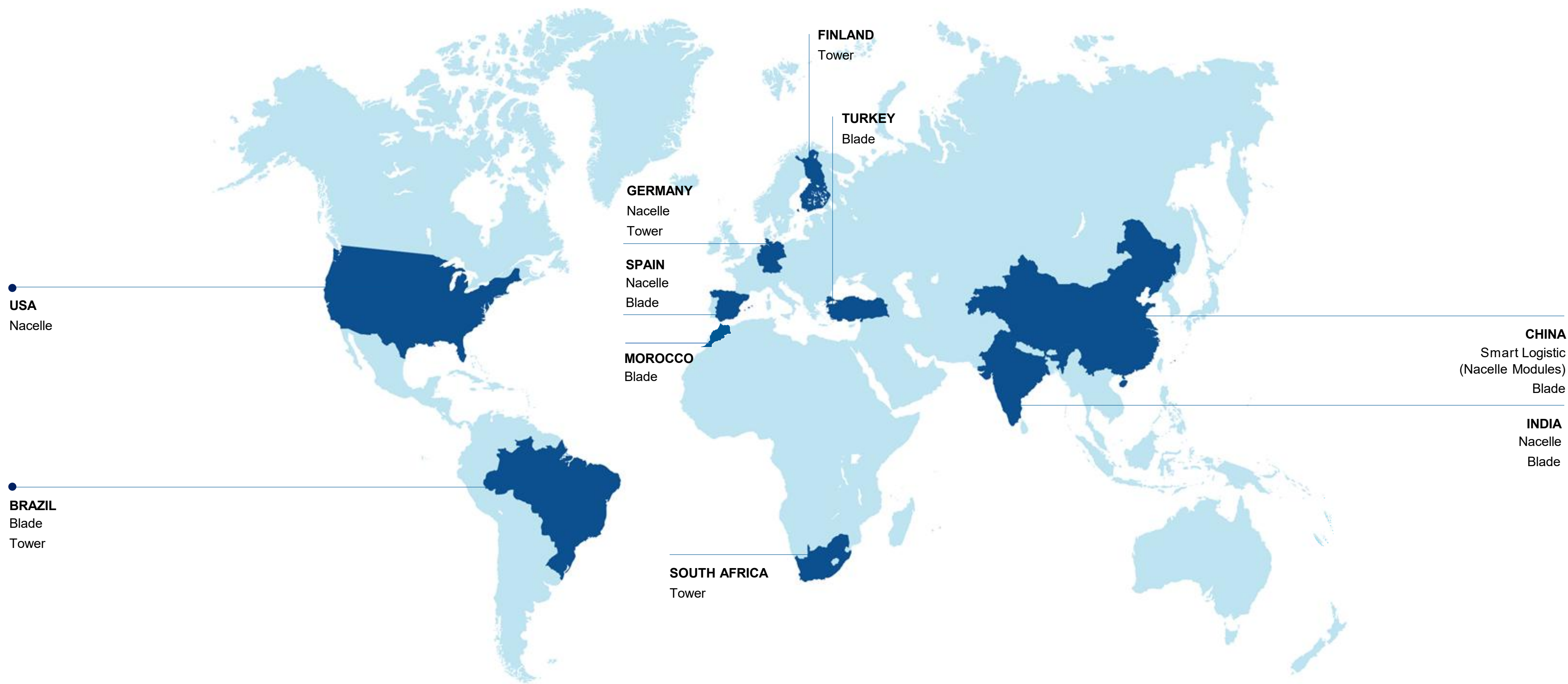
SPAIN	3,763 MW
FRANCE	4,049 MW
PORTUGAL	447 MW
ITALY	1,336 MW
CROATIA	585 MW
GREECE	409 MW
UK	2,105 MW
IRELAND	1,495 MW

GERMANY	8,898 MW
POLAND	1,538 MW
CZECH REPUBLIC	12 MW
ROMANIA	130 MW
UKRAINE	377 MW
BULGARIA	8 MW
LUXEMBOURG	23 MW
AUSTRIA	85 MW

NORWAY	641 MW
SWEDEN	1,999 MW
FINLAND	2,741 MW
DENMARK	152 MW
BELGIUM	500 MW
NETHERLANDS	1,508 MW
ESTONIA	18 MW
LITHUANIA	621 MW

Nordex group: Manufacturing capacity

Global supply chain established to supply in any market with the lowest installation cost.



Timeline

50kW
Electrolyzer
Validation

500kW
Electrolyzer
Validation

2,5MW
Electrolyzer
Validation

5MW
and 10MW
Module Design

5MW
and 10MW
Module Construction

2023

2024

2025

2026

2027

2028

2029

2030

Manual
assembly
capacity 15MW

Manual
assembly
capacity 30MW

Manual assembly
capacity 100MW

Automatic
assembly
capacity 400MW

Automatic
assembly
capacity 1GW



● Prototypes

● Manufacturing

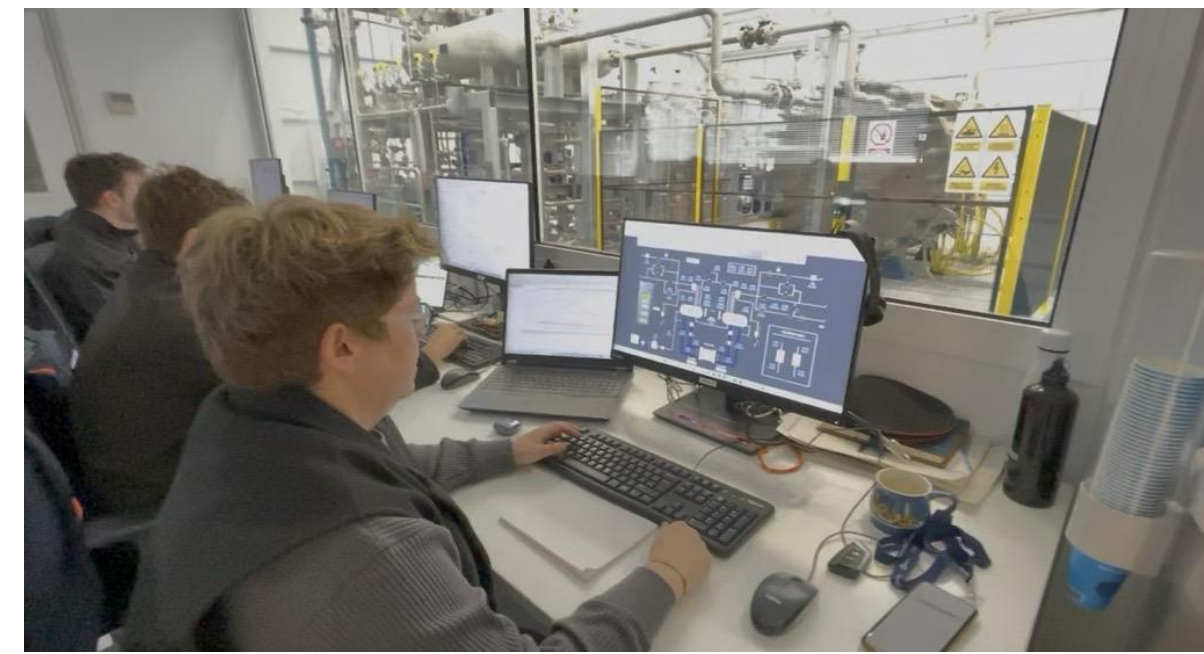
Barasoain Plant



Barasoain Plant



Lumbier Test Bench





02

Product Portfolio

Our Roadmap

2023

Electrolyzer
50kW

2024

Electrolyzer
500kW

2025

Electrolyzer
2,5MW

2026

5MW - 10MW
Modules



Our Roadmap

2023

Electrolyzer
50kW

2024

Electrolyzer
500kW

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Electrolyzer
2,5MW

2026

5MW - 10MW
Modules



Our Roadmap

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Our Roadmap

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Electrolyzer
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2025

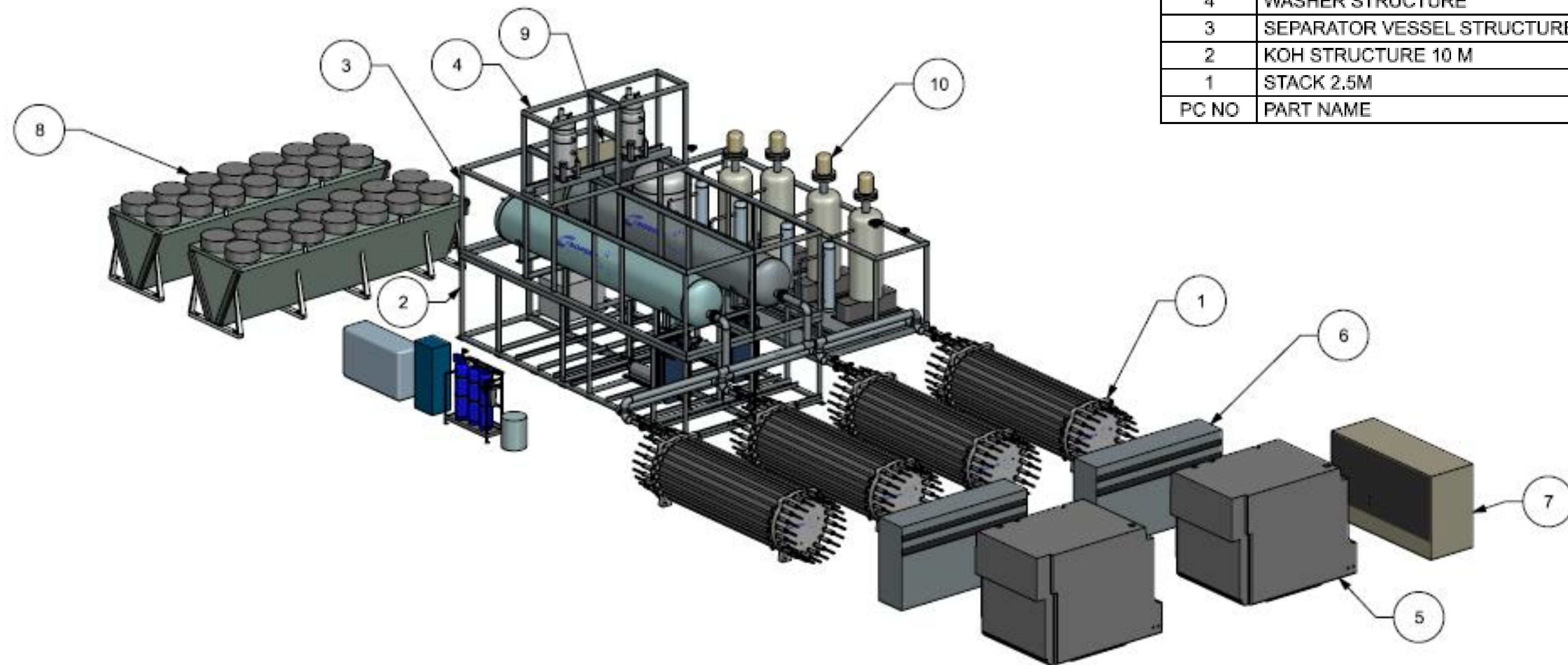
Electrolyzer
2,5MW

2026

5MW - 10MW
Modules



Multi-stack Module



10	HIDROGEN PURIFICATION UNIT	1
9	CHILER 10M	1
8	AIR COOLER 5 M	2
7	RECTIFIER CHILER	1
6	RECTIFIER CABINET 5M	2
5	TRANSFORMER 5M	2
4	WASHER STRUCTURE	2
3	SEPARATOR VESSEL STRUCTURE 10M	2
2	KOH STRUCTURE 10 M	2
1	STACK 2.5M	4
PC NO	PART NAME	QTY

Product Portfolio

NX2500

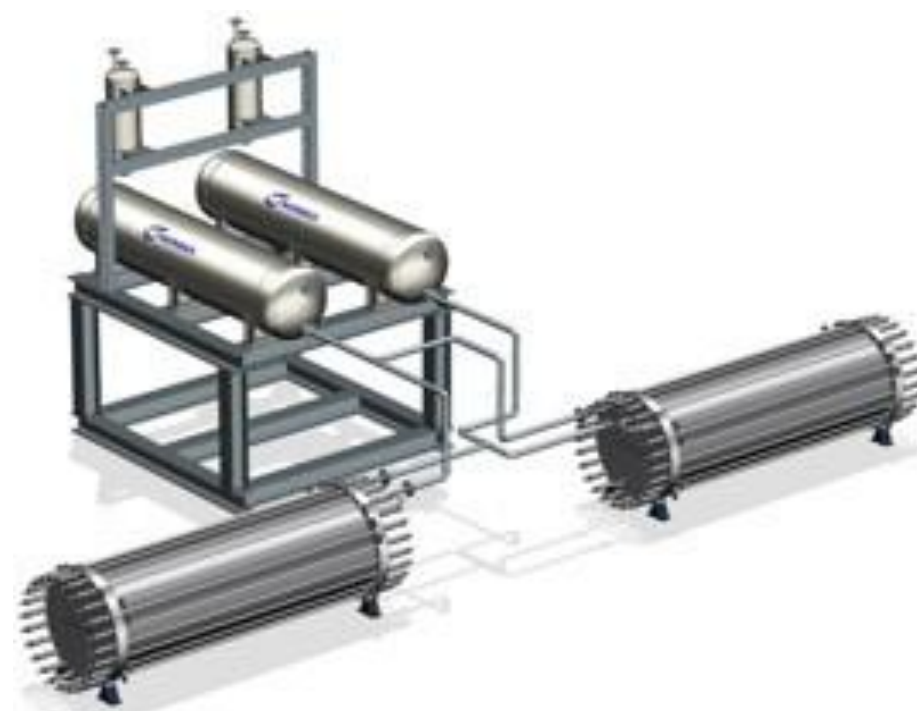


Production: 562 Nm³/h

H₂ purity: 99,999% *

Consumption: < 4.45 kWh/Nm³ **

NX5000



Production: 1124 Nm³/h

H₂ purity: 99,999% *

Consumption: < 4.45 kWh/Nm³ **

NX10000



Production: 2248 Nm³/h

H₂ purity: 99,999% *

Consumption: < 4.45 kWh/Nm³ **

After purification (*)

Values at nominal load at beginning of life (BoL) considering stack(s) (**)

NX2500



2.5 MW - ALK
562 Nm³/h , ~ 1000 kg/day
15-18 bar(g)
25-110% flexibility
4.45 kWh/Nm³

What makes our product unique

Our product is specifically designed to work under fluctuating conditions of Renewable power generation.

01

Stack mechanical design for a high efficiency

Fluid-dynamic optimization

Thermal optimization

Reduced stray currents

02

High operation range and quick response

High quality diaphragm material

Sealing optimization design

Optimal BoP design quick response

03

Durability at dynamic operation conditions

Electrode materials selection and manufacturing process for dynamic operation conditions

Optimal selection of material for HER and OER electrodes

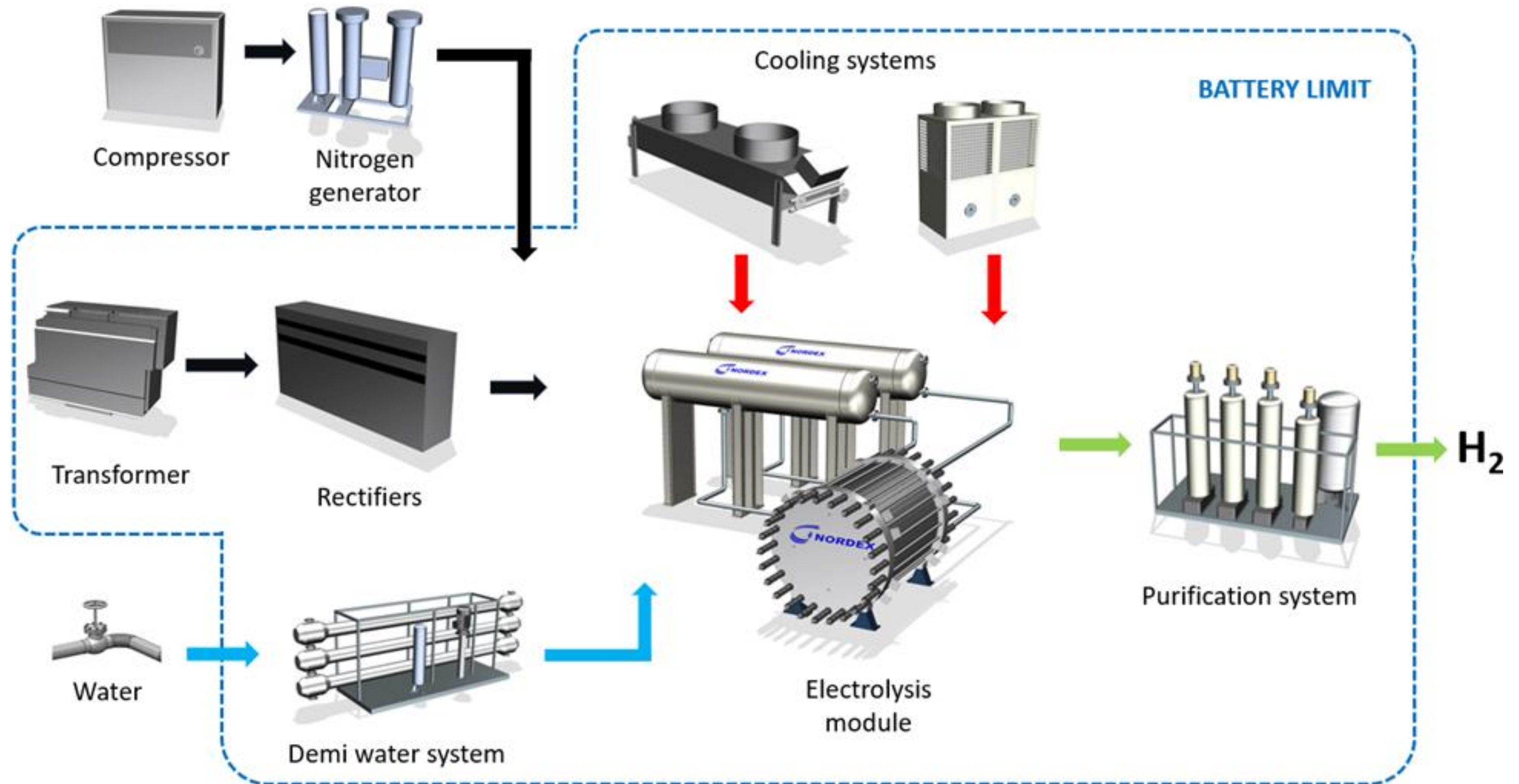
What makes our product unique

Our product is specifically designed to work under fluctuating conditions of Renewable power generation.

01	02	03
Stack mechanical design for a high efficiency	High operation range and quick response	Durability at dynamic operation conditions
Fluid-dynamic optimization	High quality diaphragm material	Electrode materials selection and manufacturing process for dynamic operation conditions
Thermal optimization	Sealing optimization design	
Reduced stray currents	Optimal BoP design quick response	Optimal selection of material for HER and OER electrodes
Low energy consumption	High flexibility	Durability
4.45 kWh/Nm3 (Stack)*	25-110%	<1% /Year

*At nominal load at beginning of life (BoL)
and at an outlet pressure of 15 bar(g) (*)*

Our scope of supply





03

Service
Portfolio

Service portfolio

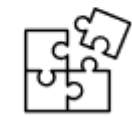
Project Services



Support for the plant's Engineering



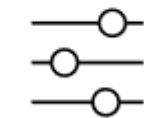
Transport to site



On-site assembly



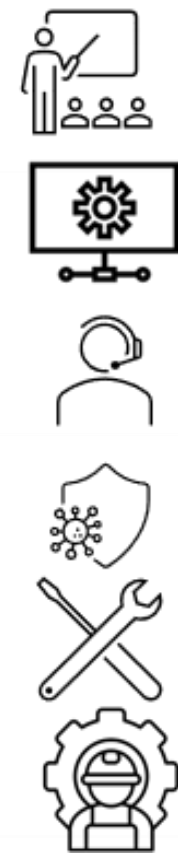
Commissioning



Fine-tuning



Service portfolio



O&M Services

Training in operation and maintenance

Remote monitoring

Remote technical assistance

Preventive Maintenance

Corrective Maintenance

Plant operation



Thank you for your attention

