



ENERGY TRANSITION Executive Summary



Market Evolution

- Mid-term Growth opportunities, Green H₂ will play a Key role in Global Decarbonization
- AWE preferred large-scale projects, 80% share in 2030
- Regulatory in EU & US could accelerate market development

Competitive Scenario

AWE

- Limited suppliers of AWE electrodes
- Chinese and Western competitors offer lower-value solutions
- tk nucera is continuing to be the market leader



Our SDGs Commitment



Strategic Guidance

- Technology: focus on performance, costs, and sustainability
- Grow in partnerships with leading industry players
- Develop aftermarket for main contract (NEOM)
- Develop our small-scale electrolyzer (**Dragonfly®**)
- Invest in manufacturing capacity



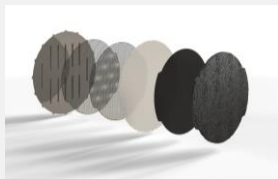
De Nora's Strengths

- Cutting-edge proprietary technology
- Operational Excellence (legacy in CA)
- Distinctive global manufacturing capacity (2.5 GW)
- Best in-class R&D activities
- Profitable from the beginning
- Solid partnership with tk nucera





PORTFOLIO



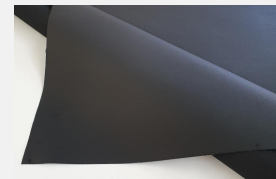
Electrodes for Alkaline Water Electrolysis (AWE)



Electrolysis Cells



Stack for AWE

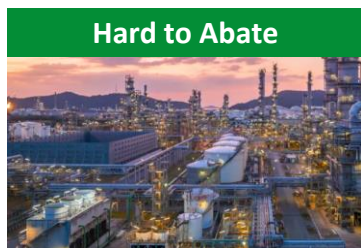


Gas Diffusion Electrodes for fuel cells

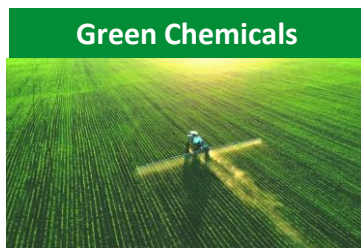


Small Scale Electrolyzer DRAGONFLY®

MAIN APPLICATIONS



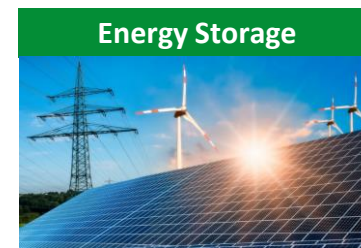
Hard to Abate



Green Chemicals

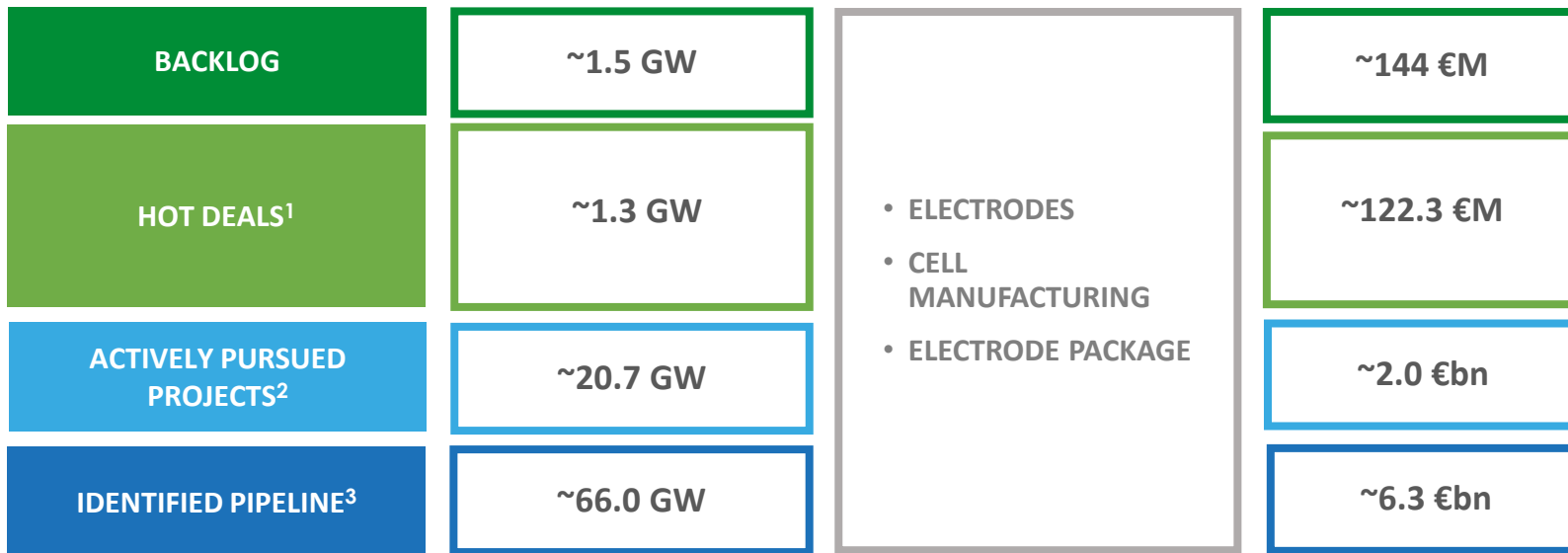


Mobility

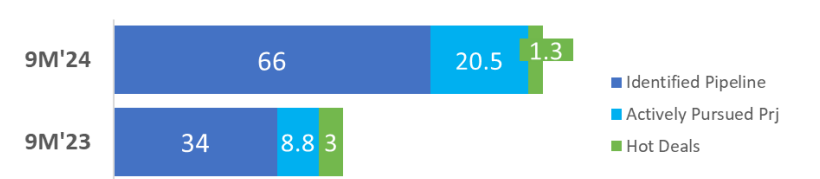


Energy Storage

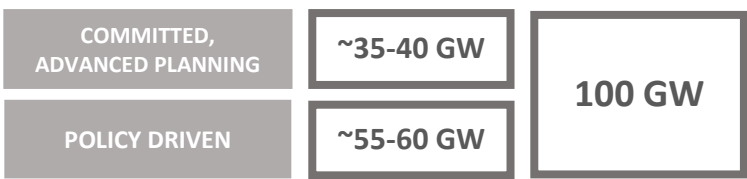
Growing **88 GW** Pipeline, Towards a Mid-Term Sustainable Growth



DE NORA'S PIPELINE TREND



2030 GREEN H₂ MARKET⁴



1.Hot Deals: projects with high probability of award in the short term. 2.Actively pursued projects in which our partners, and especially those with whom we are closely cooperating, have been having active interactions 3.Identified pipeline: Projects with which our partners had first interactions. 4 Average of external multiple sources.



INDUSTRIAL SCALE GREEN H₂ SOLUTIONS

Unique, Efficient, Ready to use Technologies... and ongoing innovation



In The Market

Under development

Services

ELECTRODES
FOR AWE

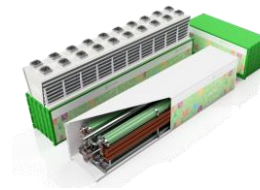
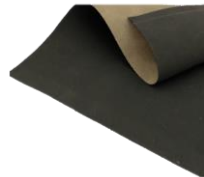
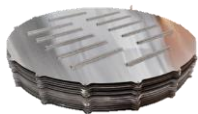
CELLS
FOR AWE¹

ELECTRODES
FOR FUEL
CELLS

SMALL SIZE AWE
ELECTROLYZERS

OTHER R&D
INITIATIVES

AFTERMARKET



AEM Electrodes
Transport &
Storage
Carbon Utilization

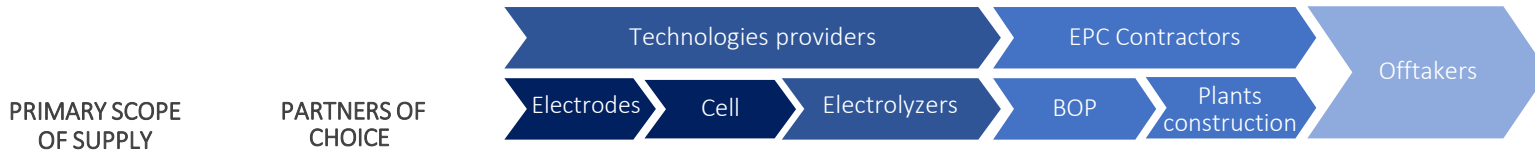


1. For thyssenkrupp nucera



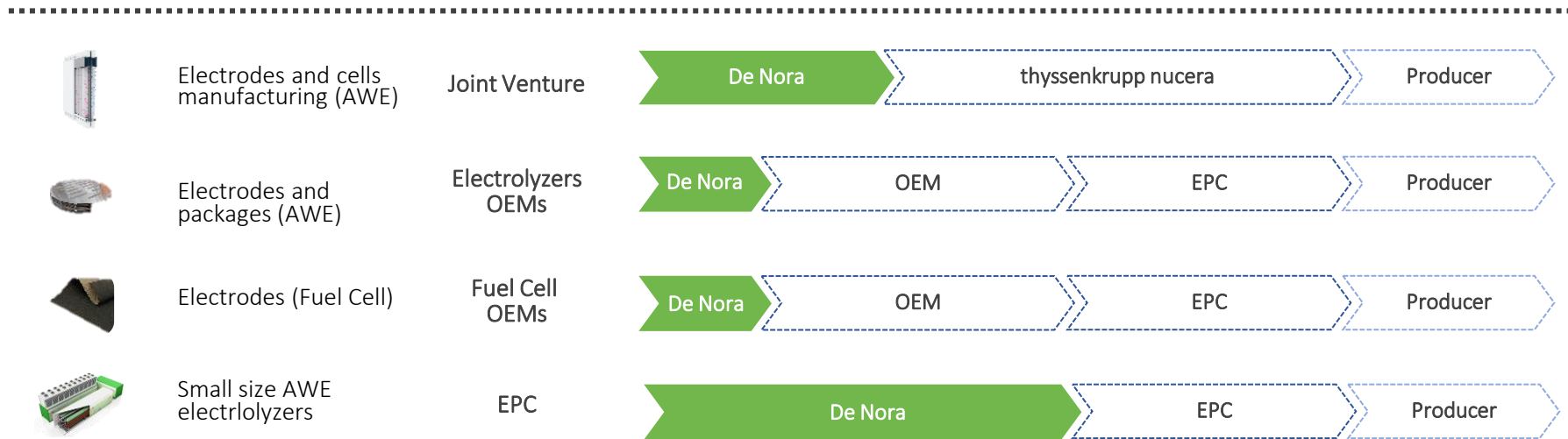
MULTIPLE ROUTES-TO-MARKET

Distinctive position in the value chain and strategic partnerships with major market leaders in the hydrogen space



PRIMARY SCOPE OF SUPPLY

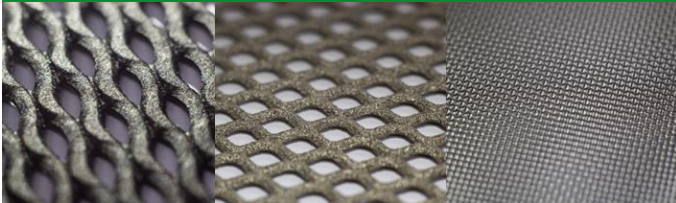
PARTNERS OF CHOICE



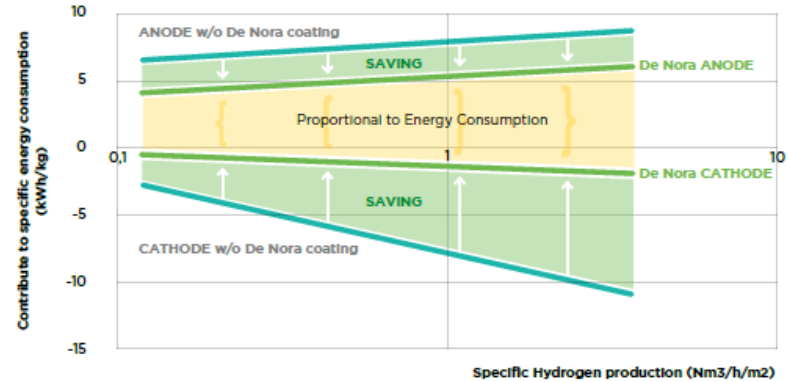


De Nora's Electrodes: diversified offer addressing all AWE technologies needs

- PRESSURIZED AWE ELECTROLYZERS
- ATMOSPHERIC AWE ELECTROLYZERS
- RENEWABLE SOURCES OPERATION
- CONTINUOUS OPERATION



De Nora's Electrodes: premium performance to deliver lower Levelized Cost of Hydrogen



- De Nora's electrodes allow a reduced specific energy consumption (kWh/kg) at any current density.
- De Nora high performing electrodes can be operated at higher current densities than competitive technologies, resulting in a higher H₂ production rate.



ELECTRODES AND CELLS FOR AWE

De Nora is thyssenkrupp nucera's partner, coating supplier and cell manufacturer



ANODE AND CATHODE COATINGS



- **Proprietary coatings** solutions, ensuring best-in-class technical performance.
- **Dedicated development** with thyssenkrupp nucera

AWE CELL MANUFACTURING



Rodenbach (Germany)
Manufacturing Facility



INDUSTRY-LEADING ELECTROLYZER CELL



thyssenkrupp nucera
design IP





De Nora has been a specialized manufacturer of Fuel Cell Electrodes since 1998, continuously working on technology improvement.



De Nora's E-TEK® products

Gas Diffusion Electrodes (GDE), Gas Diffusion Layers (GDL), and catalysts for fuel cells

Main served technologies

- High-temperature PEM Fuel Cell
- Alkaline Fuel Cell

E-TEK® products' competitive advantages

- Superior longevity
- Voltage performance
- Simple design
- Competitive usage of raw materials



KEY NUMBERS¹

785 MW
Green H₂ Techs realized in 9M'24, **+12% YoY**

€88m
9M'24 new orders (€26m in 9M 2023)

~2.1 GW
Green H₂ Techs realized Since 2022

1.5 GW
Backlog @ 30 Sep'24

Strategic Partnerships to grow and develop technologies from

large to small scale facilities:



Main Projects in Backlog

NEOM, Saudi Arabia,
Largest Green H₂ Project Globally
part of > 2 GW tot project
H₂ to Green Ammonia



NEOM

Green Steel project, Sweden
the first large-scale green steel plant in EU
700+ MW
H₂ to Steel – Hard to abate industry



1. MW Megawatt, GW Gigawatt of Equiv. Technologies for the Green Hydrogen generation.



Our innovative H2 generation system

- Designed to minimize Total Cost of Ownership (TOC) and Levelized cost of green H2
- Plug-n-play system
- Reduced Footprint

Sizes: 1MW – 7.5MW

A versatile solution for decentralized applications:

- Heavy transport and Mobility (train/buses, tracks)
- Light industries' needs
- Ideal for small local uses and Hydrogen Valleys





ON GOING DRAGONFLY PROJECTS

Developing a New Market

DRAGONFLY®
Technologies



Backlog and Pipeline (n. of Projects)*

BACKLOG
4

HOT DEALS
9

ACTIVELY PURSUED PRJ.
3

IDENTIFIED PRJ.
12

Small Scale Projects ongoing

Maffei Sarda Silicati – Sassari (ITA)
1 MW ~50 tons/y of Green H₂
financed through PNRR funds



CRAVE H₂ - Crete Hydrogen Valley (Crete)
4 MW - 500 tons/y of Green H₂
co-funded by the EU Commission



HyTecHeat - Snam e Tenova
1MW low carbon H₂ for steel production
Funded by EU “Horizon Europe”



Partnerships to develop small-scale Green H₂ production





Strategic ongoing projects:

Continuous improvement of DSA® Electrodes performances

- Current density increase
- Operating temperature increase
- Noble Metals usage optimization
- Sustainable solutions exploitation

Development of cutting-edge technologies in a rapidly evolving environment



HYDROGEN STORAGE & TRANSPORTATION



Application

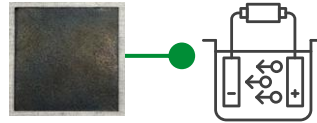
Liquid Organic Hydrogen Carrier (LOHC)¹ to store and release hydrogen through electrolysis.

De Nora's scope

Electrodes and Electrolyzer development for Hydrogenation² & Dehydrogenation³

Project type: participated by industrial partner

AEM ELECTRODES



Application

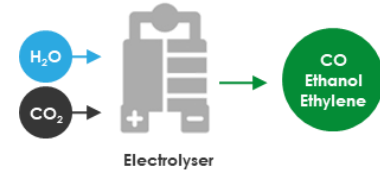
Anion exchange membrane water electrolysis (AEM), a technology under development potentially capable of joint PEM and AWE advantages

De Nora's scope

Electrodes and components development for AEM technology

Projects type: De Nora and financed projects

GDE ELECTRODES FOR CARBON UTILIZATION



Application

CO₂ direct transformation into higher-value chemicals by means of electrolysis

De Nora's scope

E-Tek[®] GDE Electrodes development

Projects type: EU and US financed projects

1. Liquid organic hydrogen carriers (LOHC) are organic compounds that can absorb and release hydrogen through chemical reactions; 2. Chemical reaction transforming toluene in MCH, which is then eligible for transport and storage; 3. Chemical reaction that converts MCH into toluene and hydrogen.



BOOSTING OUR DISTINCTIVE PRODUCTION CAPACITY

Readiness and Flexibility to market trend is our approach

AMS



- Automation and technology upgrades.
- New Energy Innovation Center



- ~US\$50m Grant¹ for manufacturing expansion (green H₂) pre-selection

EMEIA



- Strengthened manufacturing set-up in Germany (Energy Transition)



- Greenfield Gigafactory in Italy. 2GW Green H₂ Capacity (Dragonfly[®]) by 2030



ASIA



- Synergic plan of expansion for China & Japan.



- Suzhou's expansion phase completed in '23

- Okayama expansion completed in March 2024

2GW Italian Gigafactory

- Smart and Sustainable Factory
- Eligible for €63 m IPCEI funds, o/w €32m approved by Italian Gov.
- Identified Techbau as a General Contractor and obtained all authorizations for the project
- Start of Operations in 2025

2023

2026E



Brownfield



Greenfield

2.5 GW eq. elements

4.5 GW eq. elements





«Be the key enabler for the green hydrogen revolution, thanks to a diversified portfolio of best-performing electrodes and the readiness of our production capacity.»



TECHNOLOGY
LEADERSHIP



STRATEGIC
PARTNERS SERVICE



BROAD PORTFOLIO
OFFERING



MANUFACTURING
EXPANSION



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