



## Il ruolo dell'ottimizzazione energetica nei progetti di produzione idrogeno

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## ABB in numbers

### Company facts

**105,000+**  
Employee globally

**173**  
Nationalities

**\$34 bn**  
Order intake

**\$32 bn**  
Revenues

**16.9%**  
Operational EBITA  
margin

**177**  
Manufacturing  
sites globally

**\$1.3 bn**  
R&D investment

**26,000+**  
Number of  
patents filed

**21%**  
Women in senior  
management  
positions

**76%**  
Reduction of scope 1  
and 2 GHG emissions  
since 2019

**140+**  
years history

# ABB in Italy

**Employees**

~ 5.600

**Revenues**

3.124Meur

**Export**

63%

140 years  
on the  
Italian  
market

8  
Factories  
17 sites

2022 figures

• **Headquarter**, • **factories** and • **branch offices**

Tremezzina



Sesto San Giovanni



Vittuone



Santa Palomba



Genova



Bergamo



Dalmine



Garbagnate Monastero



S. Giovanni Valdarno



Frosinone



# ABB Energy Industries Division

Global leader in integrated solutions and service for the energy market



## Portfolio

Competitive technology paired with vast domain knowledge



Electrical



Automation



Telecoms



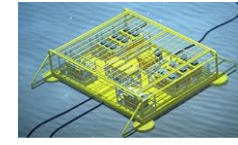
Service & Remote Ops



Digital



Control



Specialties



Project Execution

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## Why hydrogen?

1

When used as fuel, **it emits exactly zero CO<sub>2</sub>**

2

**An excellent store and carrier of energy** – either as a gas or a liquid – for later or distant use

3

**Known, stable process** with mature technology to produce, liquify/compress, transport and consume

4

When produced through electrolysis powered by renewable energy sources, it **produces only energy and water with zero carbon**

Established  
technology -  
providing stability,  
security and reliability

# ABB Ability™ Energy Management – OPTIMAX for Green Hydrogen

Leveraging technology to help customers more strategically direct energy flows and assets

Coordinate assets, generation and production to optimize the total value of energy.

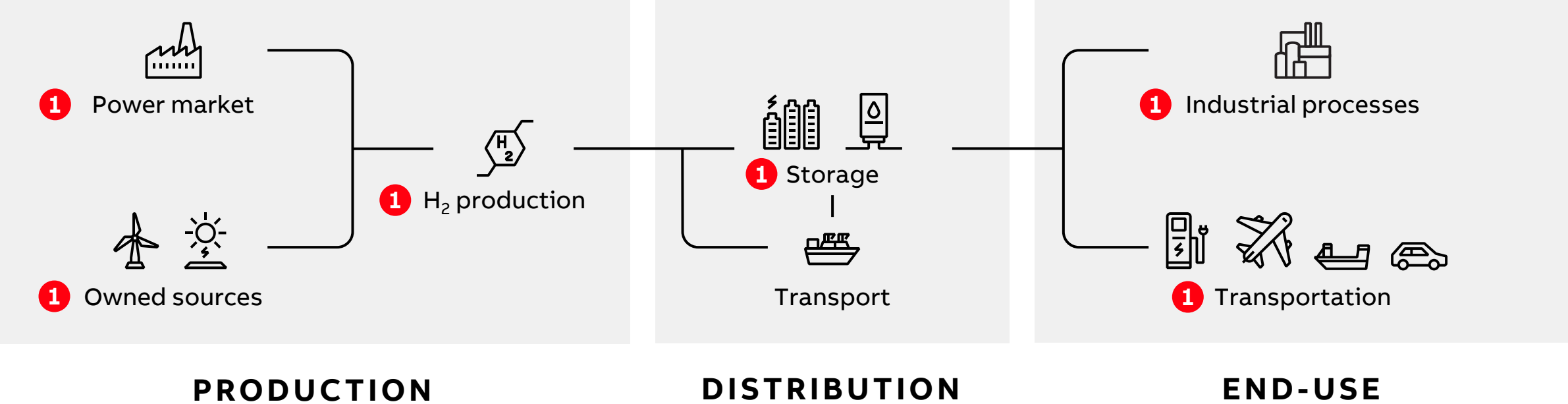
The offering helps:

- Optimize asset performance
- Simulate and virtualize optimal productive energy flows and use adaptive control to achieve them
- Forecast energy demand and supply, including renewable energy



# Energy Management for Green Hydrogen

ABB helps you manage the entire value chain from production to distribution to end-use

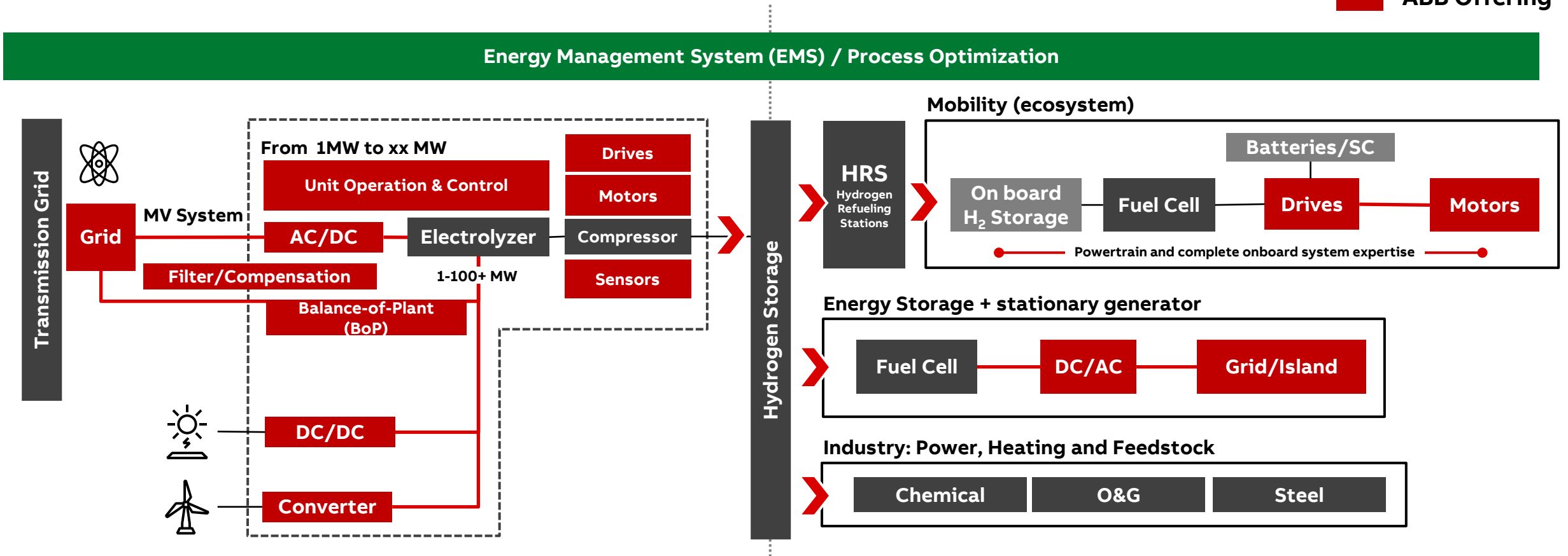


**1** — Energy management



# ABB helps strengthen your hydrogen value chain

- OPTIMAX
- ABB Offering







Reducing electrical life cycle costs by **20%**



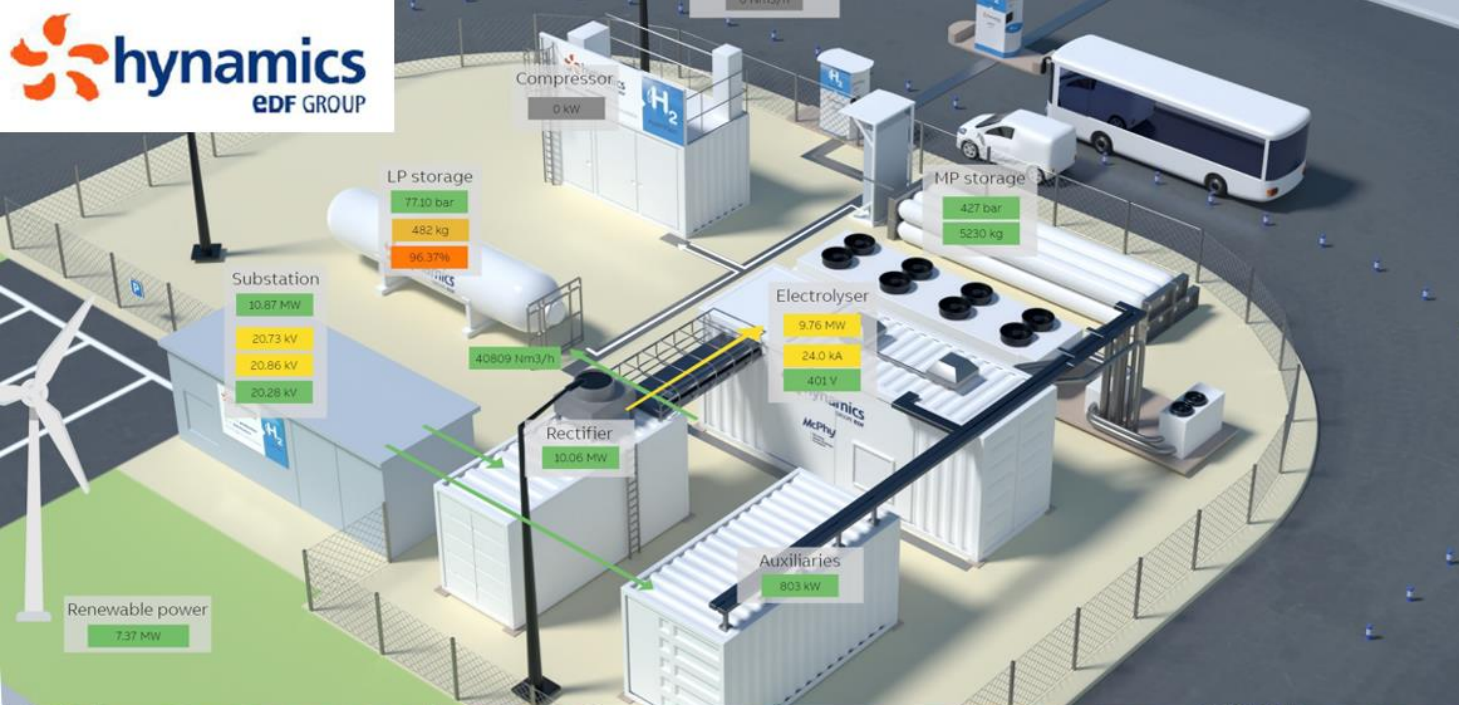
Increasing efficiency and maximizing the total value of the energy created



Balancing available energy sources to ensure availability and leverage optimal market pricing



- 14% CAPEX
- 69% OPEX electricity
- 16% OPEX maintenance
- 1% OPEX water



**Customer:** Hynamics Groupe EDF, France  
**Delivery:** OPTIMAX® for Green Hydrogen  
**Solution:** real-time optimization of electrolyzes on premise and planning optimization in the cloud

**Predictive Optimization**

- Consider forecast for renewable production
- Consider grid prices and Power Purchase Agreements
- Exploit flexibilities of plant (storages) and electricity market

**Real-Time Optimization**

- Control electrolyzer modules
- Provide grid services and flexibility (demand response, FCR, aFRR)
- Enable predictive maintenance of modules

**Monitoring & Reporting**

- Power flows of all assets and KPIs
- CO2 footprint when using grid power
- Complies with ISO 50001

**Multi-Site Operation**



OPTIMAX® for Green Hydrogen in hybrid cloud deployment to manage green H2 production



Manage the overall green H2 production  
 Exploit plant flexibility and the storages for the electricity market

Reduce optimize electrical costs of hydrogen production by up to **16 percent**

Comply with ISO 50001

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# ABB – your partner in the Hydrogen industry

- Proven technology and solid integration partner throughout the hydrogen ecosystem
- State of art technology solution from a recognized market leader in automation, electrical and digital within energy sector
- Global presence and top of mind brand recognition in Energy and Industry arena
- Long-term solution life cycle strategy based on “functional upward compatibility“
- Embedded unmanned 24/7 CoC services (predictive maintenance, remote assistance, integrated condition monitoring, etc)
- Multi-site/fleet management due to high quality automation platform
- Energy Management System to increase efficiency, reduce electrical cost and better operate the plant

**Visit ABB’s booth at Hdrogen Expo – A61**

**Don’t miss ABB’s Cyber Security expert speech: Friday 13 at 11 – Room E**

**“Cyber security negli impianti a idrogeno”**

**ABB**