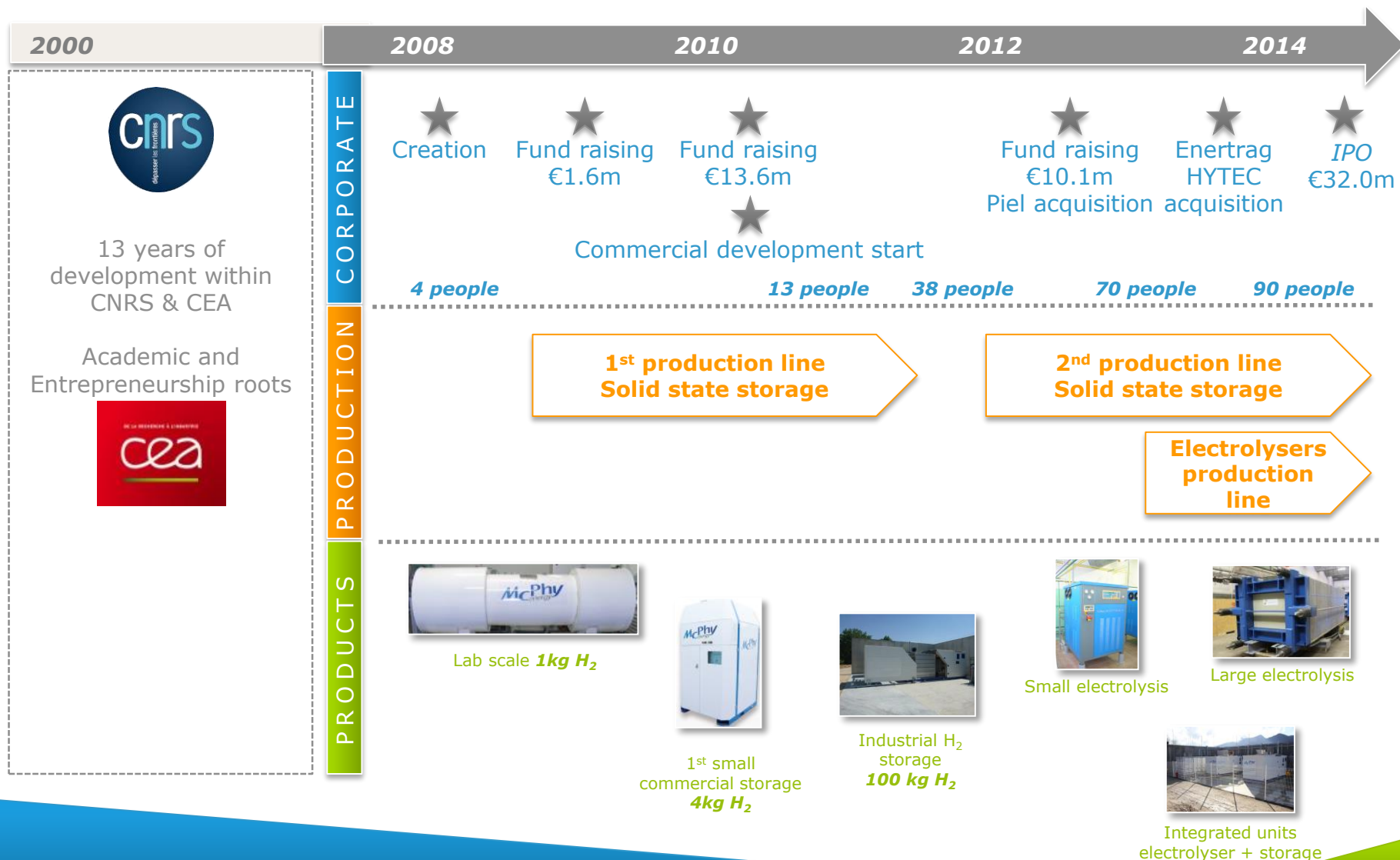


Hydrogen
a new energy
for our planet

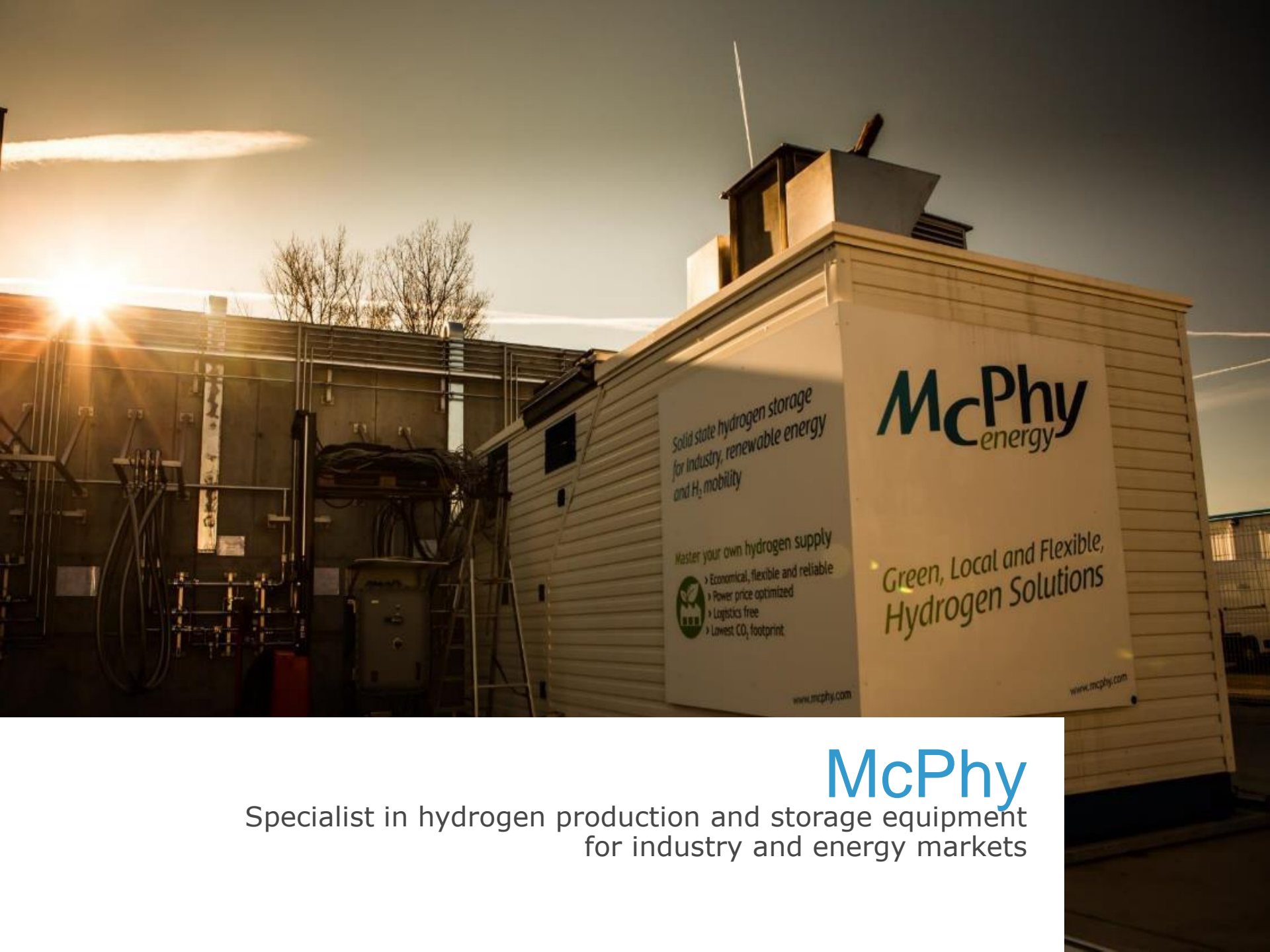






Foreword

Hydrogen, our Business



McPhy

Specialist in hydrogen production and storage equipment
for industry and energy markets



based in   

A portfolio of innovative products ...



**Small & mid
electrolyzers**



**Large
electrolyzers**



**Disruptive H₂
solid storage
technology**

... addressing 2 main high-growth markets



**INDUSTRIAL
HYDROGEN**



**ENERGY &
MOBILITY**





A world of opportunities

Decarbonated H₂ onsite production and storage



Cost Competitive

- > Electrolyzers: €1,000 / kWh
- > €5 / kg of H₂
- > vs. €5 to €50 for traditional routes (highly dependant to transport)
- > ROI: 2 to 3 years

Benefits for final clients

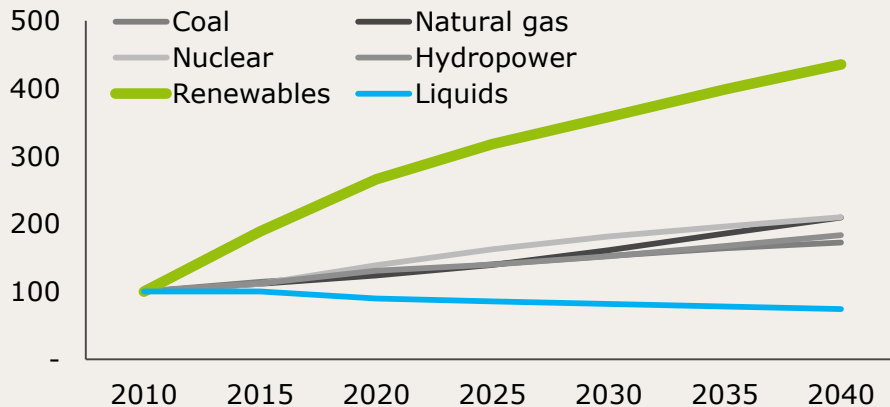
- > No logistics
- > Secured sourcing
- > Improved safety

Benefits for industrial gas suppliers

- > New opportunity to increase service portfolio
- > Secure long term contract with customers
- > From a commodity to a services business

World net electricity production growth

Source: U.S. Energy Information Administration 2013



The
Economist

How to lose half a trillion euros

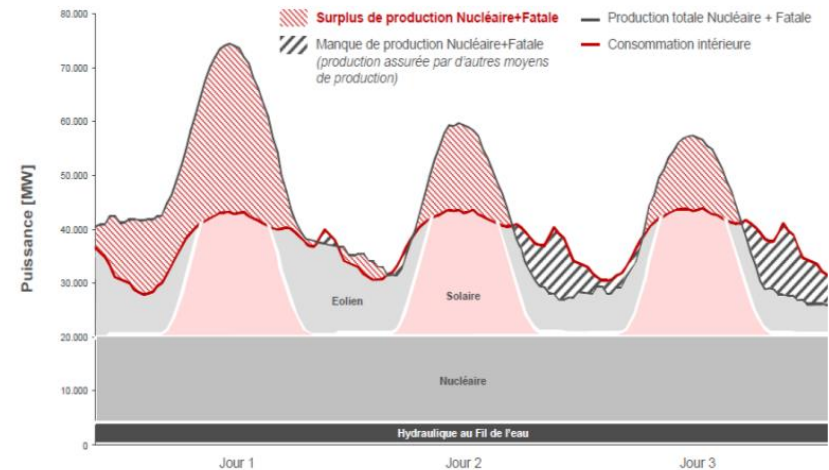
Europe's electricity providers face an existential threat

Oct 12th 2013 | From the print edition

ON JUNE 16th something very peculiar happened in Germany's electricity market. The wholesale price of electricity fell to minus €100 per megawatt hour (MWh). That is, generating companies were having to pay the managers of the grid to take their electricity. It was a bright, breezy Sunday. Demand was low. Between 2pm and 3pm, solar and wind generators produced 28.9 gigawatts (GW) of power, more than half the total. The grid at that time could not cope with more than 45GW without becoming unstable. At the peak, total generation was over 51GW; so prices went negative to encourage cutbacks and protect the grid from overloading.

Limits of current technologies

- > Irregular output
- > Grid saturation
- > Low predictability



Smoothing and storage are critical for continued penetration of renewable energy in the energy mix

H₂ FOR INDUSTRIALS

Be a leading player in industrial H₂ market, with advanced and flexible on-site solutions

➡ Addressable market (€ Bn)

Source: Freedonia, McPhy



H₂ FOR ENERGY

POWER-to-GAS:

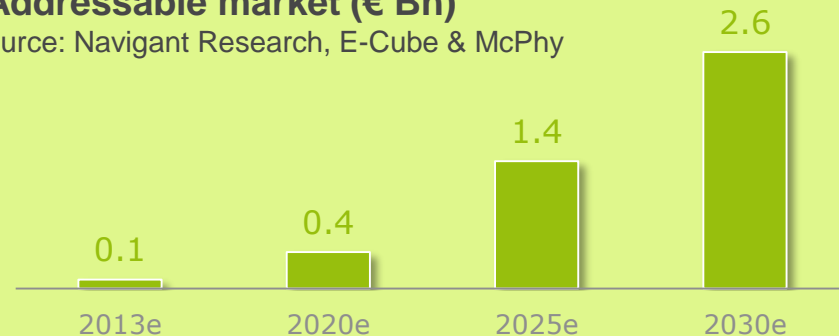
Be a reference player in H₂ for energy:
 ↗ Power storage
 ↗ Power to gas
 ↗ Biogas / Methanation

MOBILITY:

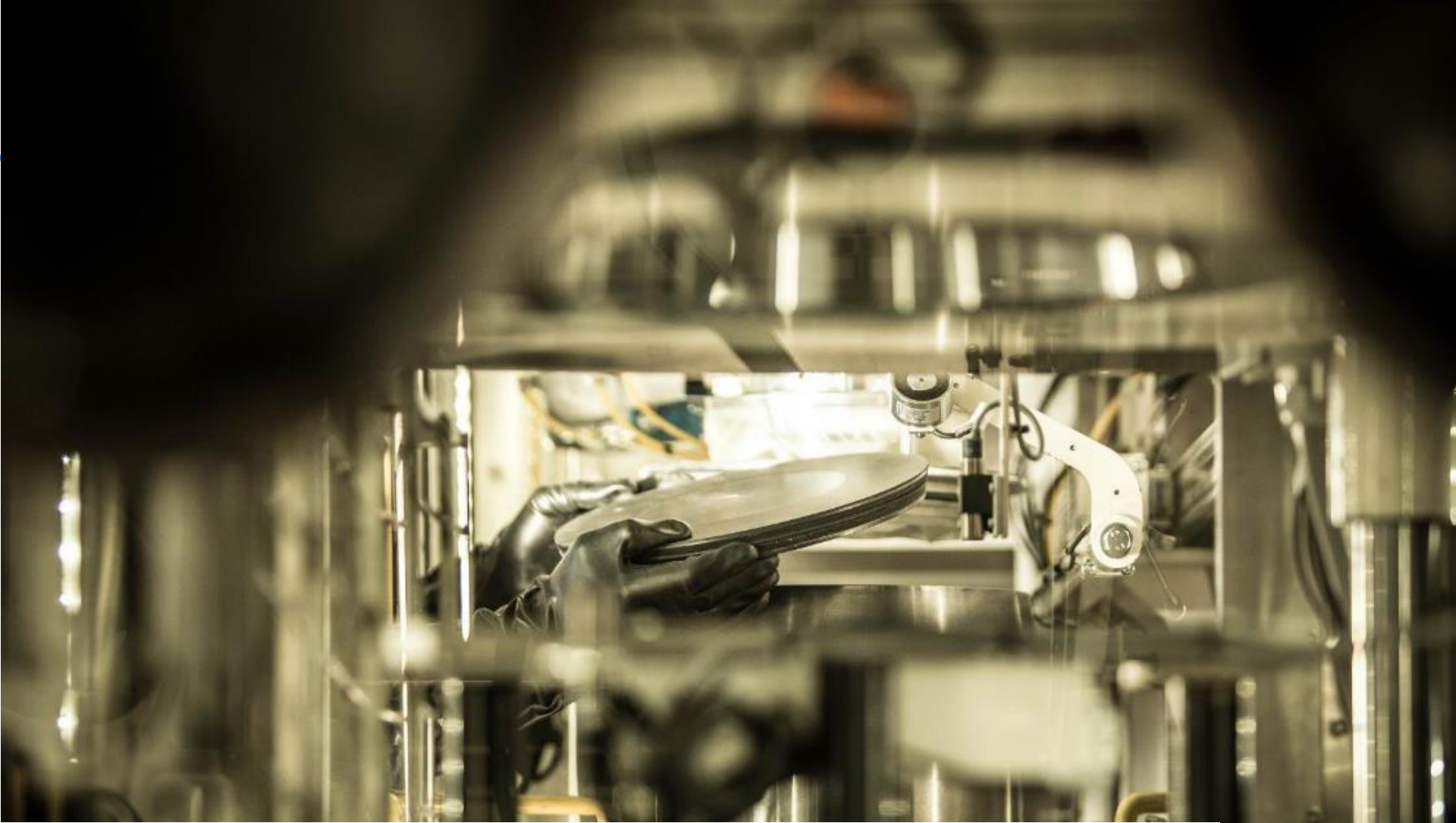
Be a key player in HRS* in Germany to capture growth internationally

➡ Addressable market (€ Bn)

Source: Navigant Research, E-Cube & McPhy



* HRS: Hydrogen Refueling Station



What's new in McPhy



» H₂BER project

A multi-energy refuelling station

- > In the context of CEP, Europe largest demonstration project for H₂ mobility
- > €5 M of public funding
- > 50 refuelling stations will be created by the end of 2015

€10 M total investment by the project partners

- > Total Deutschland, Linde, McPhy Energy, Enertrag, 2G Energy

McPhy production and storage H₂ units

- > Electrolyzer: 0,5 MW - 100 Nm³/h
- > Storage: 100 kg H₂

* source: H2mobility.org

To address the anticipated strong ramp-up of the 2 main markets

Commercialization

Integration of 6 sales veterans specialized in the energy and hydrogen markets

- 4 sales managers: North America / Asia-Pacific / Russia and Eastern Europe / Middle East, India and Africa
- 2 senior sales engineers to strengthen the sales force in France and Italy

Manufacturing

Increase in production capacity

- New assembly unit for large-scale hydrogen production equipment in Wildau (Germany)
- Relocation of Italian manufacturing operations to a new ultra-modern 5,000 m² plant in San Miniato (Italy)

R & D

Improvement in industrial deployment of H₂ storage units

- Technological partnership agreement with GKN, global leader in powder metal

Small alkaline electrolysis < 500 kW
Flow rate from 1 to 30 Nm³/h, 1 to 30 bar pressure



Italy (San Miniato factory)



“Traditional”
Electrolyzers



“Innovative”
Electrolyzers

Alkaline technology 2.0: an innovative technology



Large alkaline electrolysis > 500 kW
Flow rate from 100 to 500 Nm³/h, 1 to 30 bar pressure



Germany (Wildau factory)



Large projects



Alkaline technology 2.0: an innovative technology

» Industry

H₂ production equipment: 1st contract for the market of electric power plant cooling systems

- Cooling of the alternator of a thermal power generation plant built by Daewoo in Algeria
 - A joint turnkey hydrogen-based cooling technology solution developed in partnership with Ecisgroup
 - To be commissioned in early 2015

» Renewable energies

Integrated solid hydrogen production-storage solution to the Australian firm Petawatt[®] Energy, a developer and operator of sun, water and wind hydrogen energy production sites.

- Installation on the customer demonstration site of Petawatt
 - Small capacity equipment: 4 kg allowing for storage of 130 kWh

»H₂ mobility

Production H₂ unit: Notice of Proposed Award from the CEC

- Development of the Woodside hydrogen refueling station by providing an electrolyzer
 - Target community for Toyota, Hyundai, Daimler and Honda for early adopters of hydrogen electric vehicles
 - Operational at the end of 2015 summer
- McPhy part of an international consortium led by HTEC, a leading developer of hydrogen fuelling infrastructure based in Canada

»Energy autonomy

H₂ production unit: partnership with EPS

Leader for hydrogen fuel cells in stationary and datacenter market

- Targets: telecoms and datacenters

H₂ storage unit: partnership with Atawey

Specialist for stationary energy autonomy solutions

- Targets: remote-site market (telecom antenna, broadcast antenna, telecommunications and television base stations, off-grid housing, sustainable hotel facilities, living compounds...

Key words

- Vision
- Ambition
- Flexibility / Agility
- Talents
- Customers
- Investors
- Focus

Lessons learned

- Blindness
- Over confidence
- Versatility
- Demotivation
- Over selling
- Cash Burn
- Over focus

Local markets are absolutely needed

Demonstration and deployment projects are key to
trigger markets

Cooperation between SMEs and large Corporations are
critical for innovation

“ Yes, my friends, I believe that water will be one day used as fuel, that the hydrogen and the oxygen, which make it, used separately or simultaneously, will provide a source of inexhaustible heat and light and with an intensity the coal could never reach”

Jules Verne, L'Île Mystérieuse - 1874

