

The power to change the future



Hydrogen

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Power to the Electrolyzer

- Rectifier & transformer System
- Auxiliary Power
- Drives & motors
- Cooling Water Systems

Controlling and optimizing the process

- Controls, Safety and Protection
- Instrumentation & Measurement
- Telecom & Network

Power to consumers

- MV Switchgear
- AC Filter
- Battery & Fuel cell solutions
- Power Mgmt Systems
- Step-Down transformer
- LV switchgear

ABB Ability™



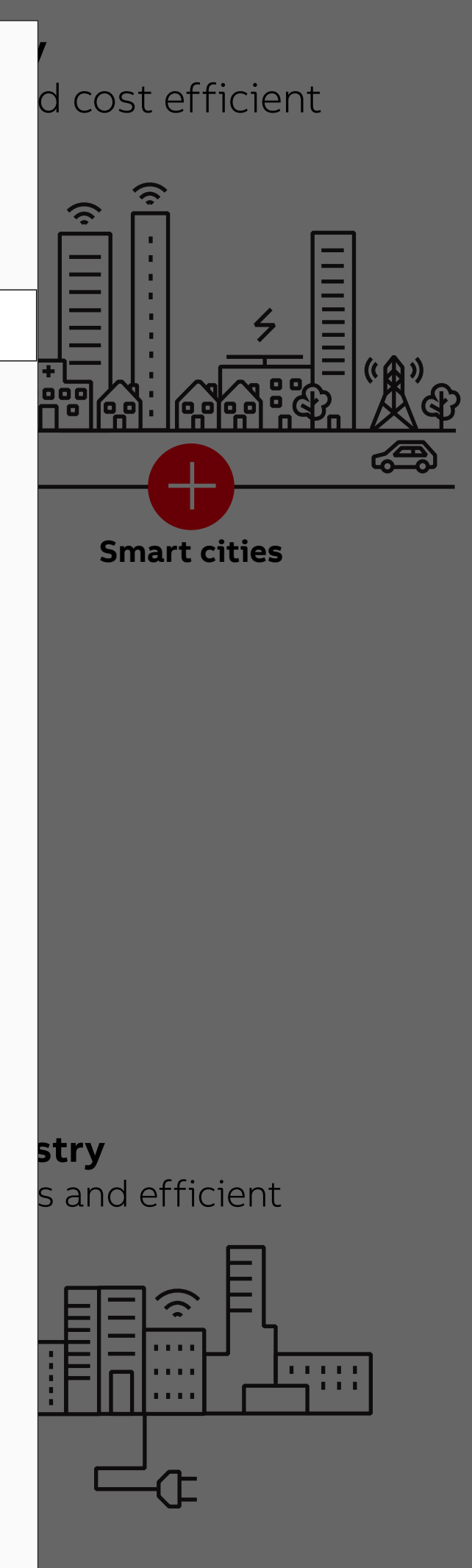
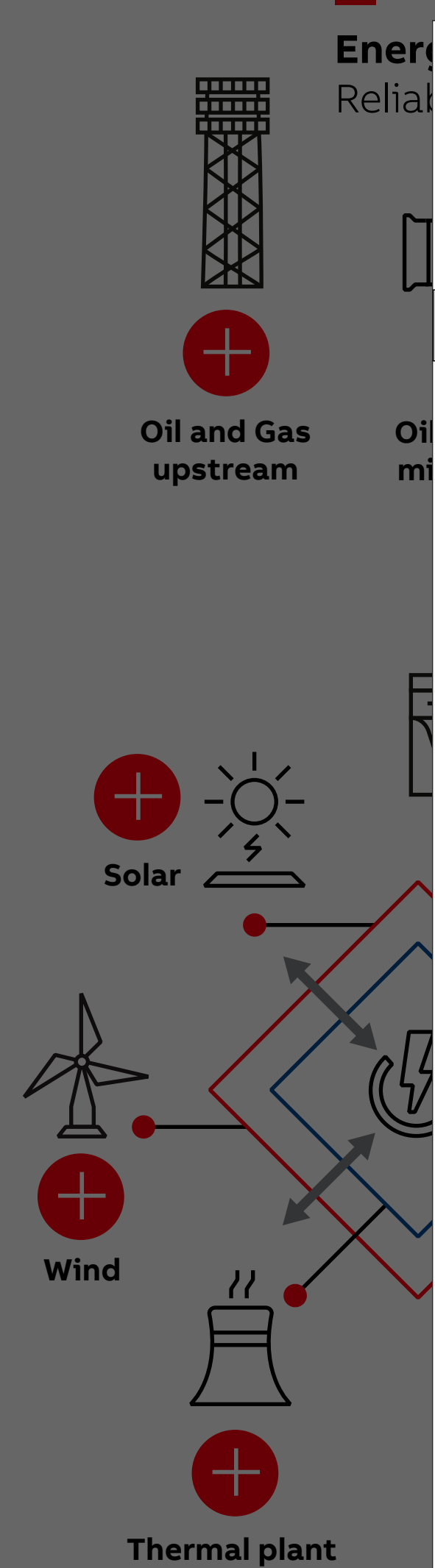
Remote Operation and Digitalization

Service and Asset Management

Production and Energy Optimization

The successful operation of a hydrogen plant is about efficient energy and process management

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Our offering

Features


Benefits

Reference

Energy sources of different forms and reliability

-  Distributed Energy Resources
-  Feedstocks
Water, Waste, Fossil
-  Fuel cells
Gas turbines
Boilers




Highly efficient process without waste of energy and low carbon emission


H₂ production

Excess heat


Storage & transport

Reliable and cost-efficient supply of energy

-  Industrial processes
-  District energy in smart cities
-  Transportation

Hydrogen to electricity

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Oil and Gas upstream

Solar

Wind

Thermal plant

and cost efficient

Smart cities

Industry
and efficient

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Energy Reliability

Oil and Gas upstream

Solar

Wind

Thermal plant

Smart cities

Industry





Cost efficient

Efficient

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CAPEX	OPEX	Energy feedstock	Additional value
 CAPEX Power electrification - about 30% of total CAPEX Areas of optimization: <ul style="list-style-type: none">• Electrification• Energy quality• Automation and digitalization solutions• Project Commissioning <ol style="list-style-type: none">1. Technical solution2. ABB Integrated Project	 OPEX Operational optimization: <ul style="list-style-type: none">• Autonomous and controlled sites in a centralized control room• Predictive Maintenance and Advanced Services• Lifecycle management <ol style="list-style-type: none">1. Lifecycle management2. ABB Services3. ABB Ability™ Advanced services	 Energy feedstock Energy efficiency: electricity = about 80% of the price of H2 <ul style="list-style-type: none">• Renewable energy management; Anticipating weather forecasts and energy prices• Purchasing management - electricity sales on the EPEX Spot• Multi-site management <ol style="list-style-type: none">1. ABB Ability™ Optimax Energy Management System	 Additional value <ul style="list-style-type: none">• Green certificate• Original warranty



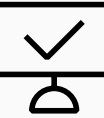


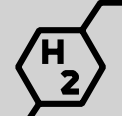

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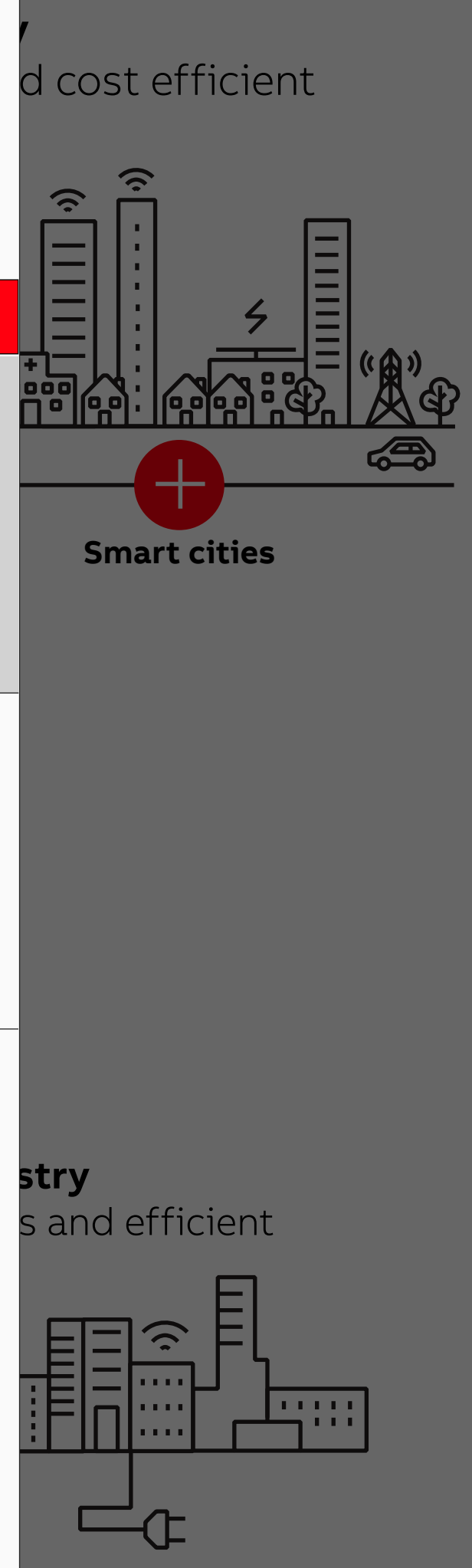
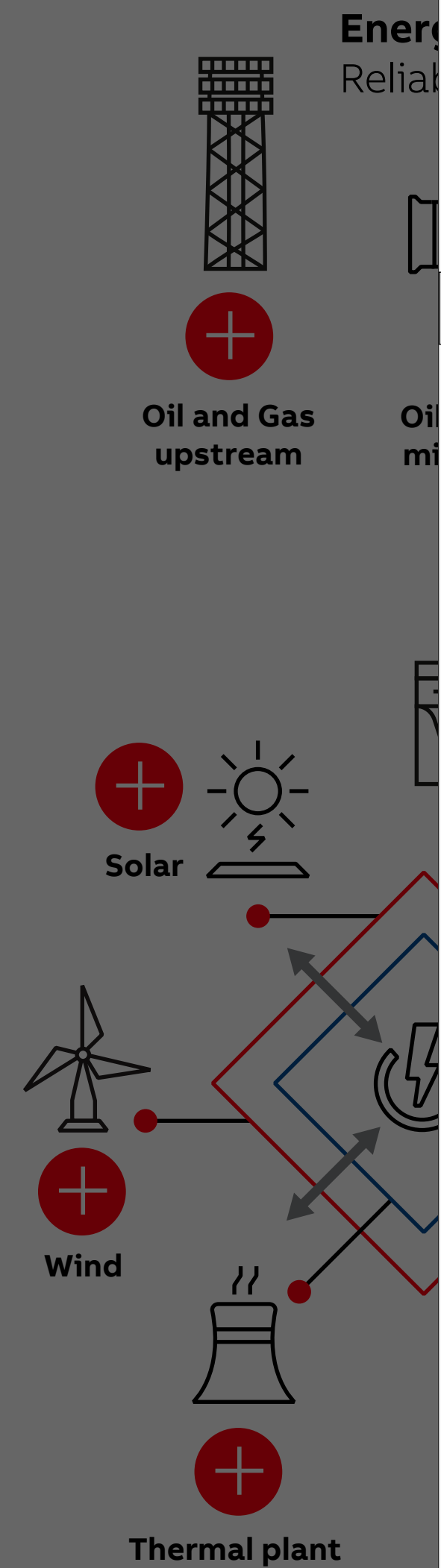


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 Project information ABB has signed an order with HydrogenPro, a hydrogen plant company, to provide electrical equipment for the world's largest single stack high-pressure alkaline electrolyser - a system that generates hydrogen by using electricity to split water into hydrogen and oxygen. Once deployed, at a specially built test facility in Herøya, Norway in 2022, the system will be capable of producing 1,100 normal cubic metres of green hydrogen per hour (Nm3/h).	HydrogenPro, Norway	 Application <ul style="list-style-type: none">Integrated electrical package comprising transformers, rectifiers, DC Chokes and Busbars	 Outcome <ul style="list-style-type: none">To develop a system that can produce 1,100 normal cubic metres of green hydrogen per hour (Nm3/h)	 Benefits <ul style="list-style-type: none">Optimum operational performanceUnleash the full environmental and economic potential of hydrogen	 ABB solution <ul style="list-style-type: none">ABB's scope will include an integrated electrical package comprising transformers, rectifiers, DC Chokes and Busbars. Hydrogen is very energy intensive to produce sustainably - everything in the production process, each little component adds a little bit of inefficiency, so this integrated portfolio approach will ensure that every single, possible improvement in efficiency is made.	 HydrogenPro, Norway	 Lyfe's first green hydrogen clean energy production project, France

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 Project information Lhyfe, the French producer and supplier of green hydrogen, has chosen ABB, the world leader in control systems and advanced technologies, to implement an automation solution at its first green hydrogen production site.	 Application <ul style="list-style-type: none">• Freelance DCS• S500 and S500-XC IOs (~1000 HW IOs)• ABB Ability™ MOM (Dashboard, Trends & Events, Excel analyze)• Electrical cabinet through local System integrator (BOSSARD SA)	 Outcome <ul style="list-style-type: none">• Integrated automation with common and centralized database	 Benefits <ul style="list-style-type: none">• Improving industrial efficiency• Productivity and quality• Minimizing environmental impact	 ABB solution <ul style="list-style-type: none">• ABB supports a wide range of industries in their digital transformation and will supply the first Lhyfe production site with its Freelance distributed control system and ABB Ability™ Manufacturing Operations Management (MOM) digital platform.• These solutions will control all the elements involved in the hydrogen production process at the Bouin site in the Vendée region, France and ABB's automation technology is being installed to deliver improved efficiency, safety and productivity across the operation.	 HydrogenPro, Norway	 Lyfe's first green hydrogen clean energy production project, France

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