Connected eH_2 Cycle: Industrial Sector Coupling

Dr.-Ing. Michael Reinstädtler

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Invented for Life

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Mobility Solutions

Industrial Technology

Energy and Building Technology

Consumer Goods

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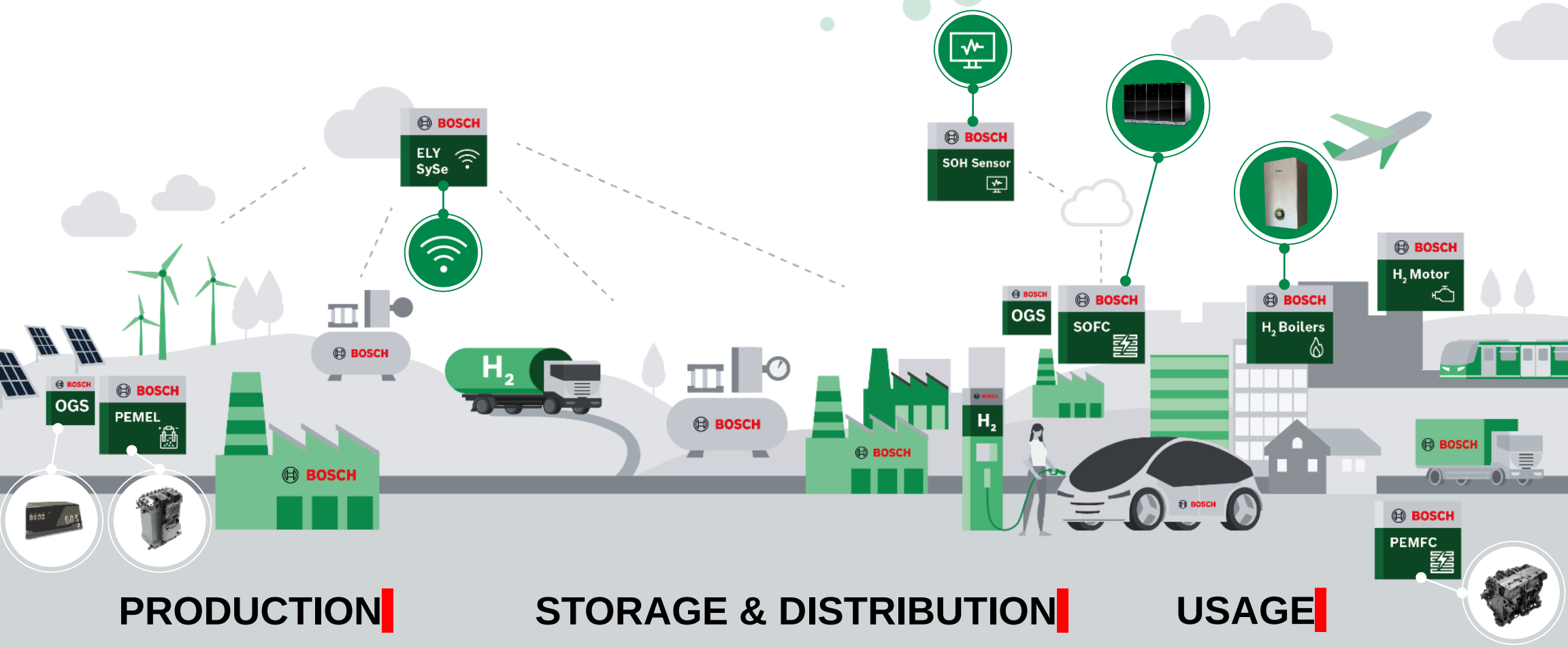
Bosch and the H_2-Society



PEMEL: Polymer electrolyte membrane electrolysis; OGS: Optical Gas Spectrometer; ELY SySe: Electrolysis Systems & Services; SOFC: Solid oxide fuel cell; SOH Sensor: Virtual Sensor for SOFC Stack State of Health; PEMFC: Polymer electrolyte membrane fuel cell

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Climate protection becomes specific:

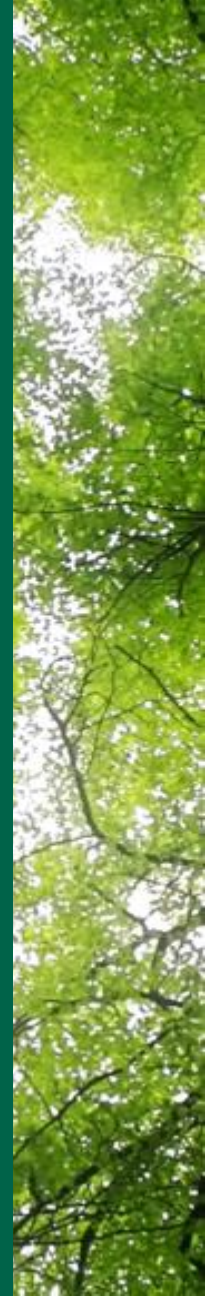
The four levers of CO2 neutrality

Increase energy efficiency

Supply with renewable energies

Green electricity purchase

Offset CO2 emissions



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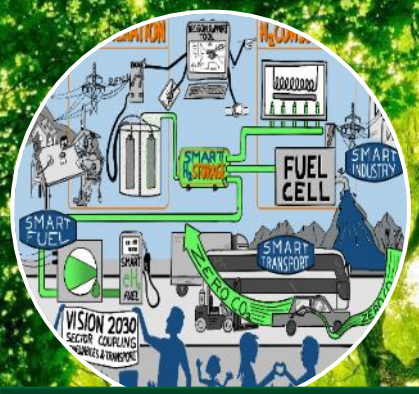
Reduced consumption through efficiency

Savings: **- 40% kWh/pcs.**



Connected eH_2-Cycle

Storage & sector coupling

Energy Platform

Cross-linking:

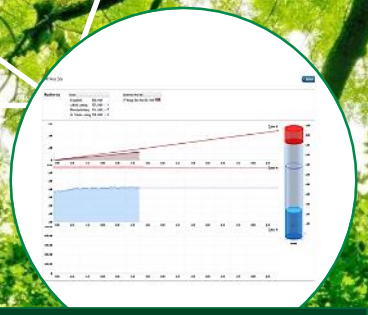
Datapoints: **15.000 Stk.**

Self-generated energy

PV, Solar thermal, heat pump, SOFC

Actual: 3,8MW_{Peak}

Plan: 8,3MW_{Peak}



Cost reduction through flexibility

Actual : **2MW**

Challenges

- Rising **costs**
- New **mobility concepts**
- High **volatility**

Strategy

- **Efficient** and **flexible** use
- **Connection** through the Energy Platform
- **Optimized generation** in regard to consumption
- **Storage** and **sector coupling,** e.g. through **H2-Cycle**

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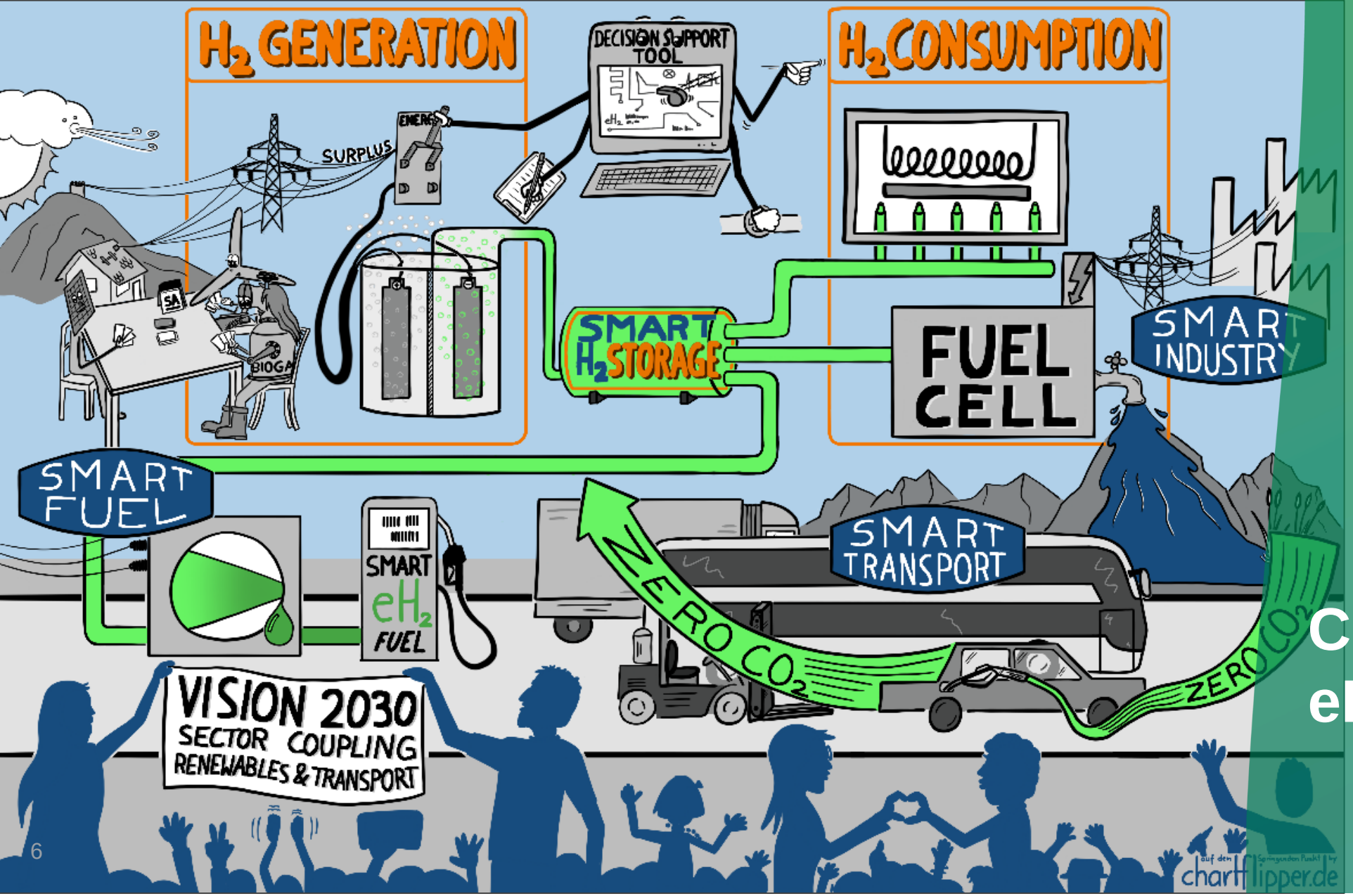

Connected eH_2-Cycle

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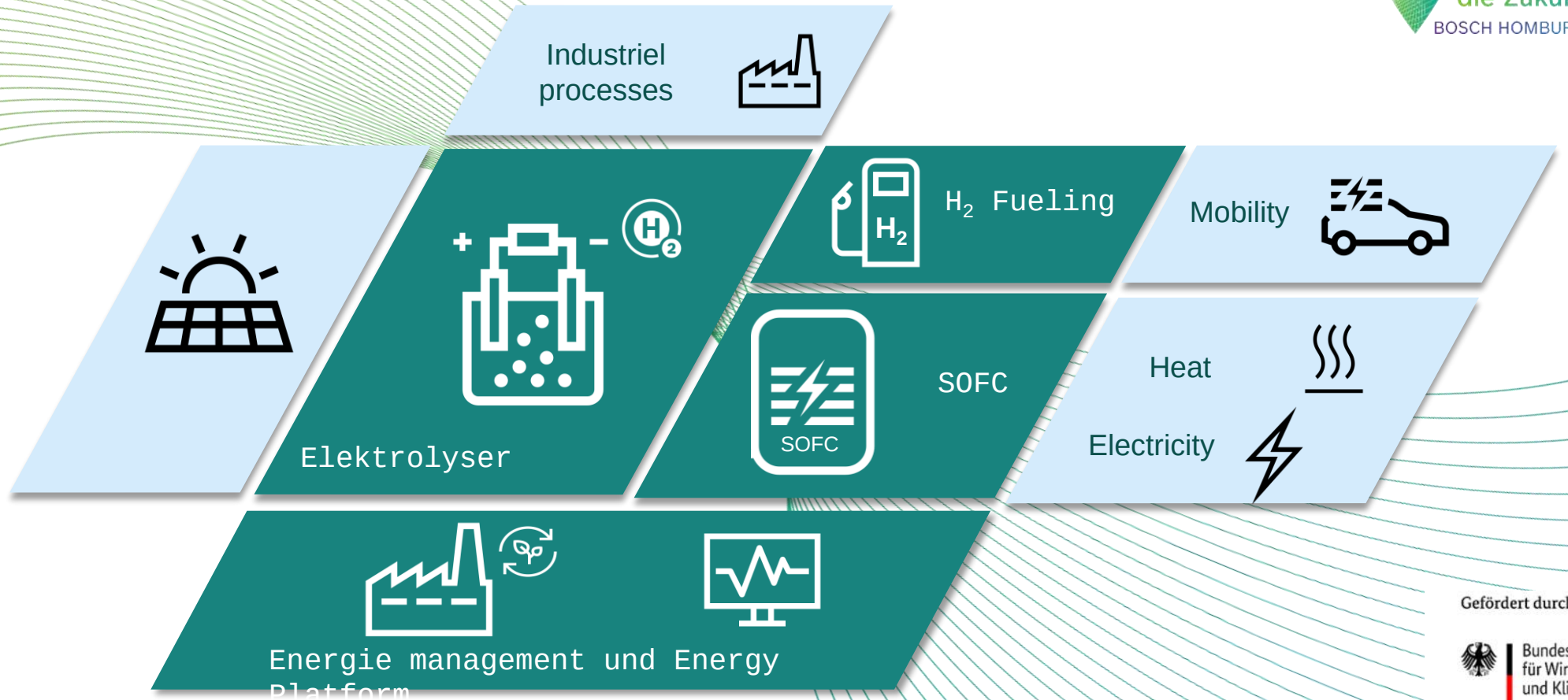

izes gGmbH
Institut für ZukunftsEnergie- und Stoffstromsysteme

Gefördert durch:
Bundesministerium für Wirtschaft und Klimaschutz
aufgrund eines Beschlusses des Deutschen Bundestages

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Connected eH_2 Cycle

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PV
3.8 MW_p
(2023: >8 MW_p)

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Electrolyser

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Electrolyser

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Electrolyser

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H_2 Storage
> 300 kg

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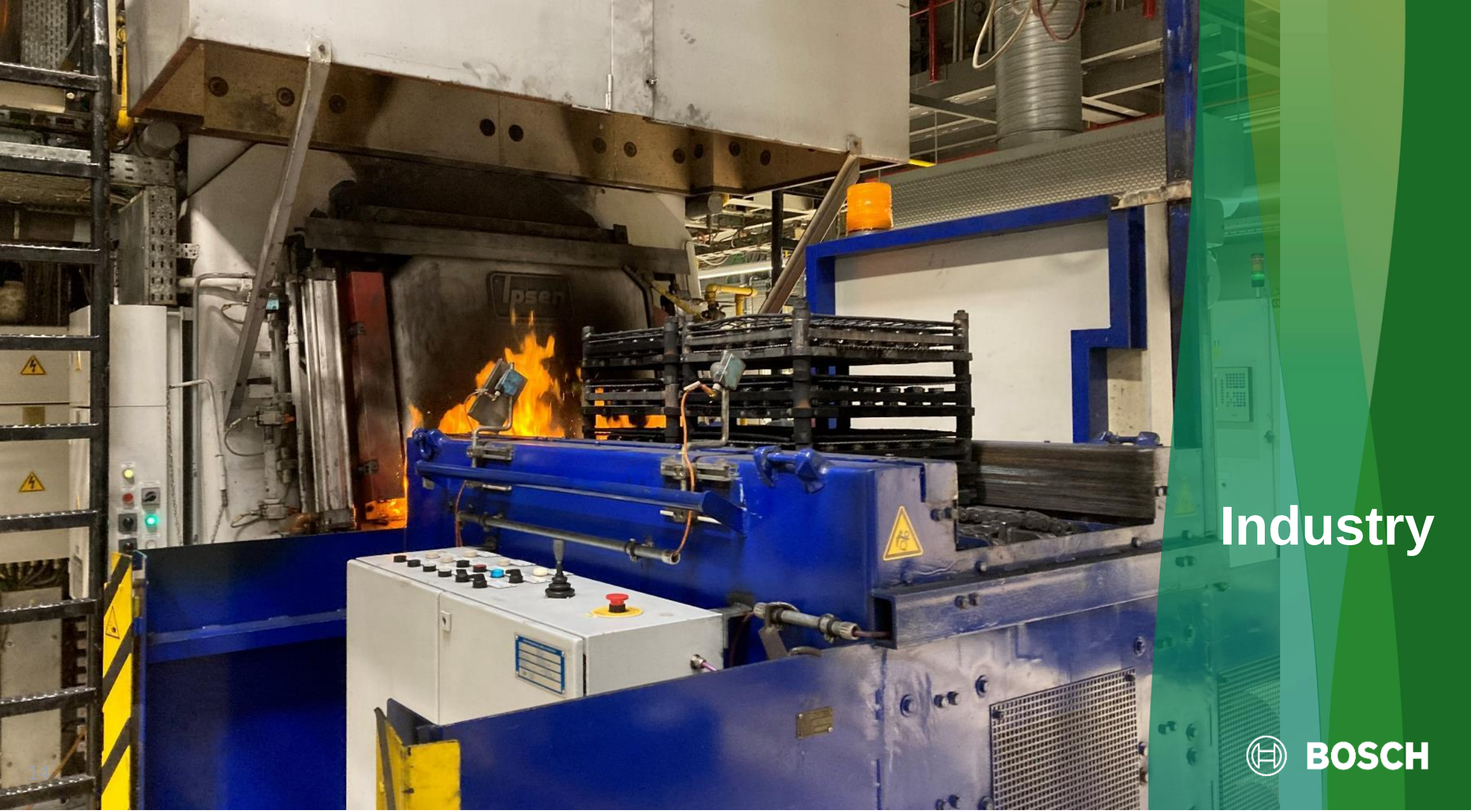


Industry


On
Status
29
Operating hours
0,2
Energy generated in MWh
60,5
Mean AC Energy Efficiency (in %)
Electrical AC Power Output
8,6 kW
Electrical AC Efficiency
61,1%

SOFC

Performance and application of SOFC

Performance

> 60 %
Electrical efficiency (AC)*

> 85 %
Overall efficiency*

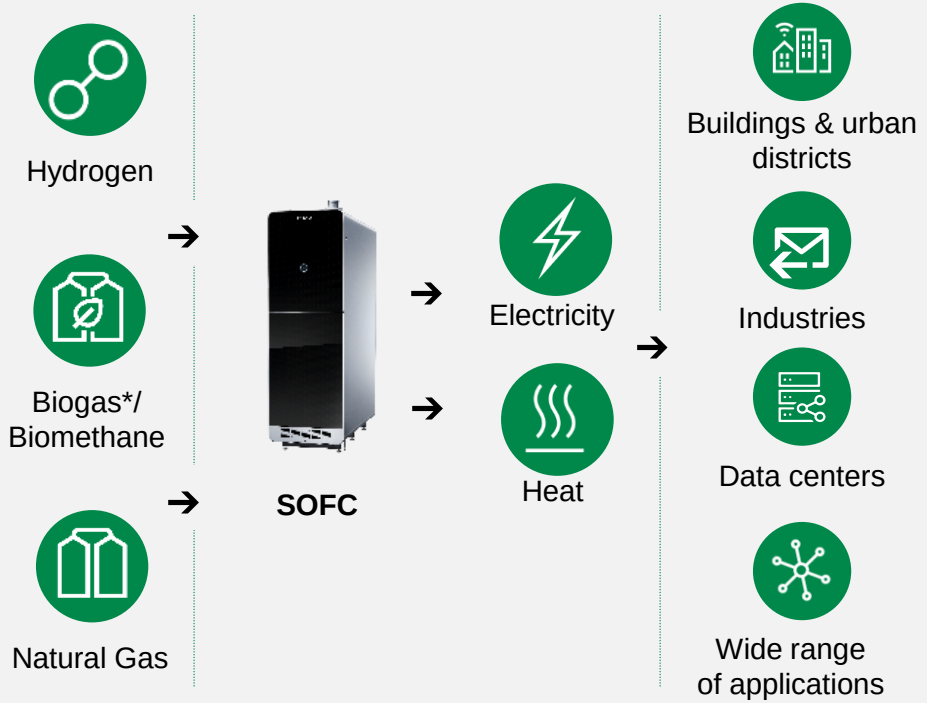
10 kW_{el}
Nominal power (AC)*

> 3 kW_{th}
Thermal output*

* Currently in the pilot phase, the Bosch SOFC system is to be mass-manufactured by 2024. All technical specifications given in this informational document are development objectives.

* Beginning of life

Multi-fuel system & flexible application



* Biogas processed according to DVGW G260

1 A stack of several hundred cells

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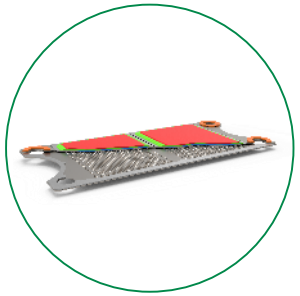
SOFC: Complete value stream covered at Bosch

Digital Twin

Bamberg plant



Cell

Stack

Homburg plant

Hotbox

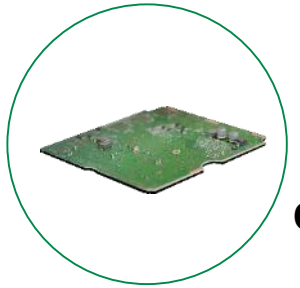
Wernau plant

Unit

Point of use

Decentralized energy supply system

Salzgitter plant



Control unit

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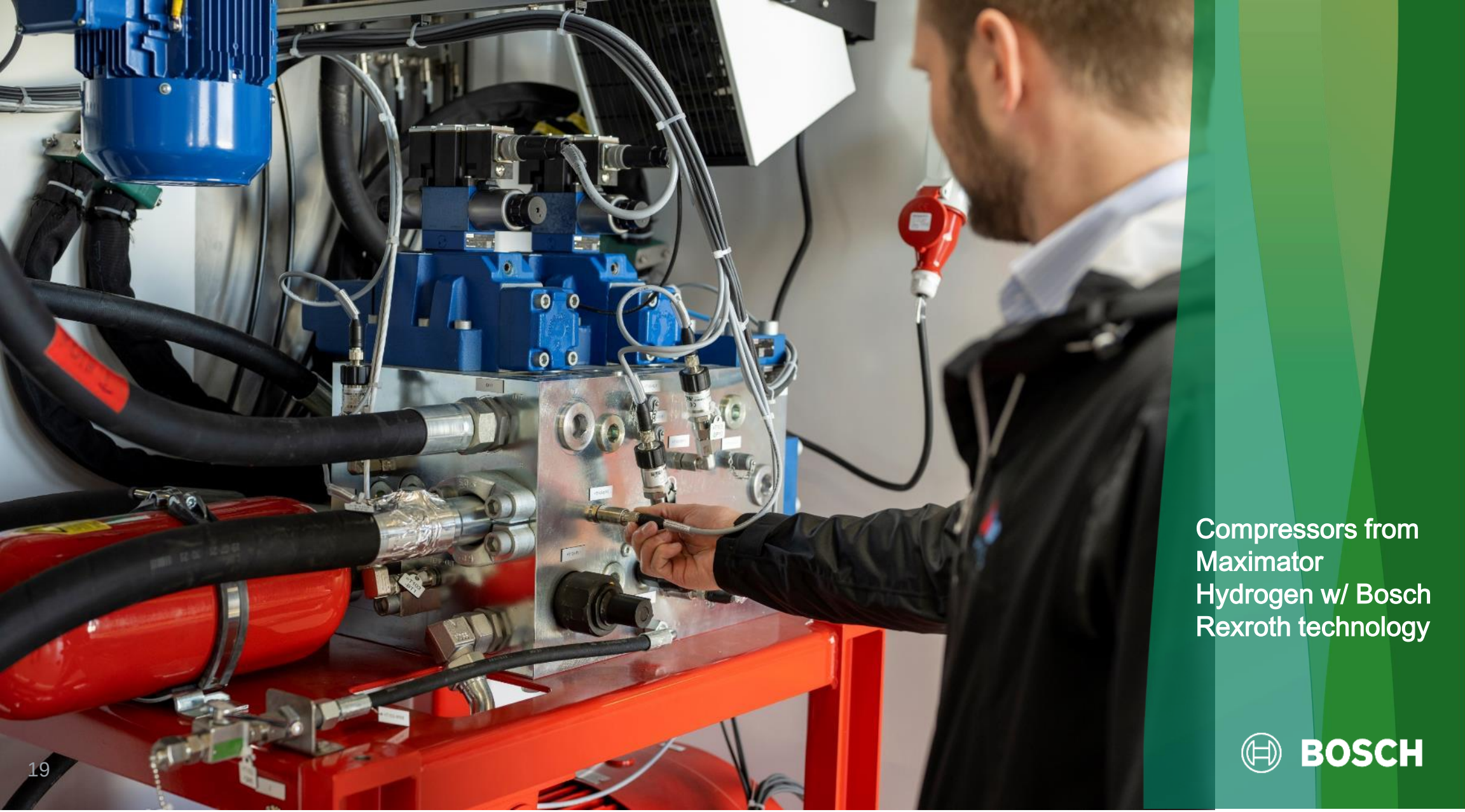
Compressor



Compressors from Maximator Hydrogen w/ Bosch Rexroth technology

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Mobility

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H_2 Fueling Station

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H_2 Fueling Station

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H_2 Forklifts

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On the way to series-
fuel cell technology
from Bosch
BOSCH
LB KL 884E

H_2 Van

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The industrialization of the Bosch fuel cell system

The fuel cell system

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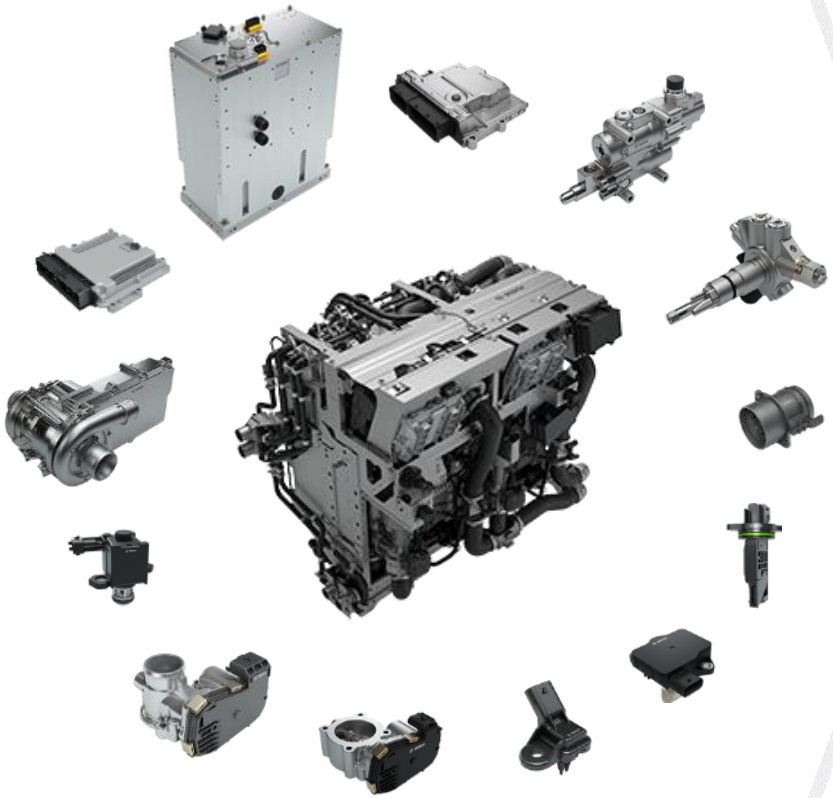
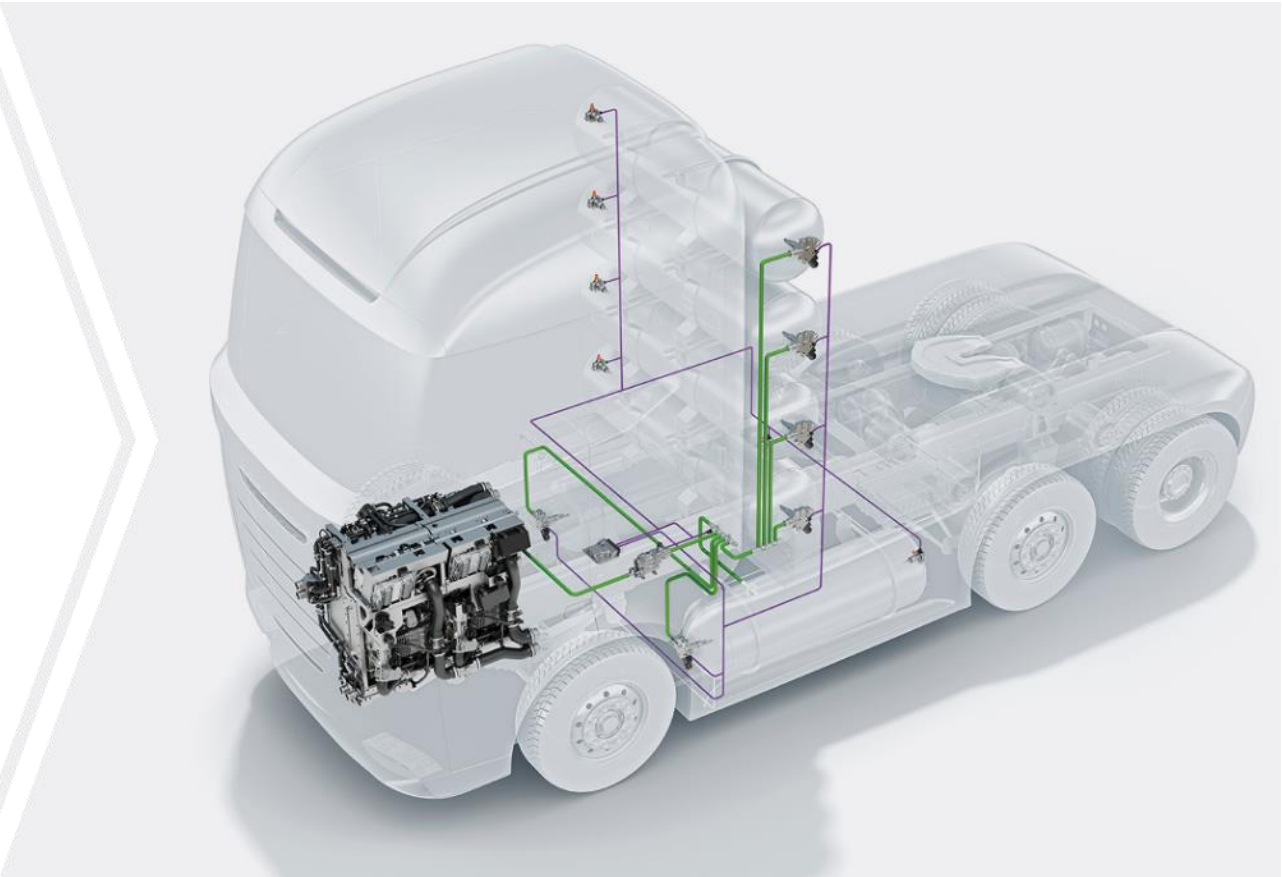




Bosch Homburg: Transformation of the Powertrain

PRESENT CORE DIESEL SYSTEMS

Lead Plant for injectors and rails (PC/CV), as well es inline pumps (Aftermarket)

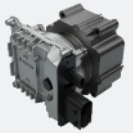
FUTURE CORE: H_2 TECHNOLOGY

Components for Fuel Cell Electrical Vehicles

Electronic Air Compressor

SOP 1.Q 2023

Anode Recirculation Blower



SOP 2022

Hydrogen Gas Valve

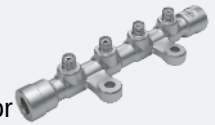
Components for Hydrogen Tank Systems

H2 Tank Plug

H2 Tank Valve

SOP 2.Q 2023

H2 Distributor



Components for Solid Oxide Fuel Cell (SOFC) Systems

SOP 2025

Solid-Oxide-Fuel-Cell (SOFC): Hotbox

- 6 H_2-Components w/ SOP 2022/2023
- 300 Associates in H_2 products

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1.310 Follower:innen
1 Monat •

Bosch Homburg unterstützt Aufbau der Wasserstoffwirtschaft im Saarland ... mehr

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https://www.linkedin.com/company/boschhomburg/

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More to come…

More to come…

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More to come…

More to come…

H_2 Bus

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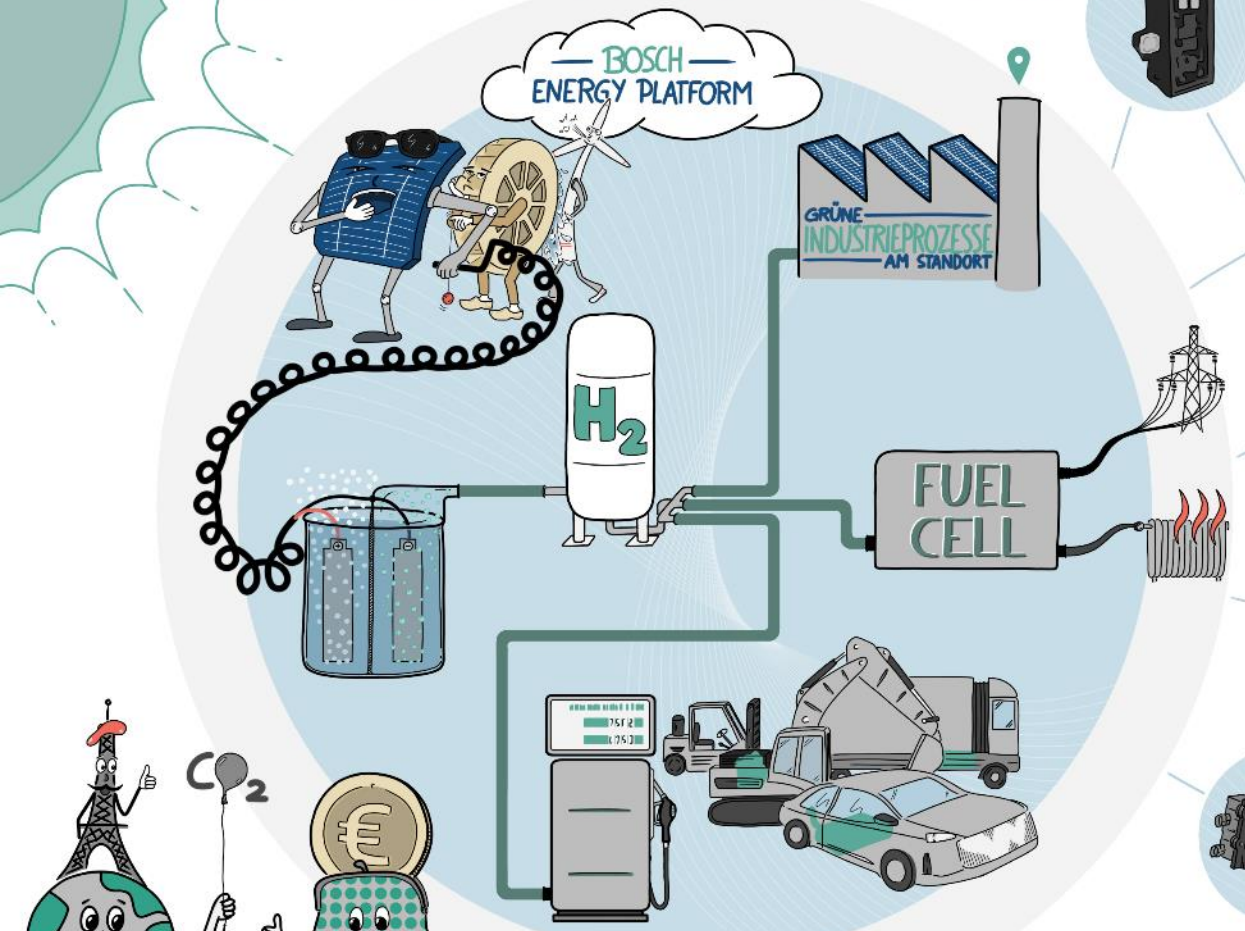
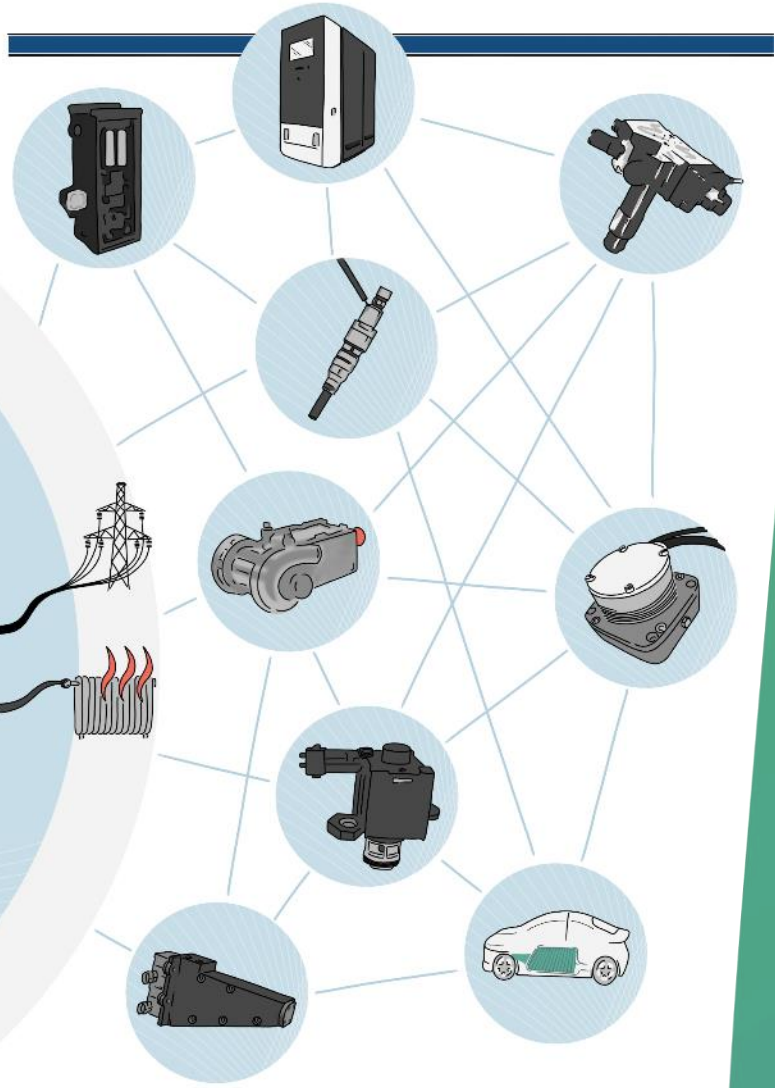
More to come…

iX5 Hydrogen

BOSCH

H_2 STRATEGIE BOSCH HOMBURG





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