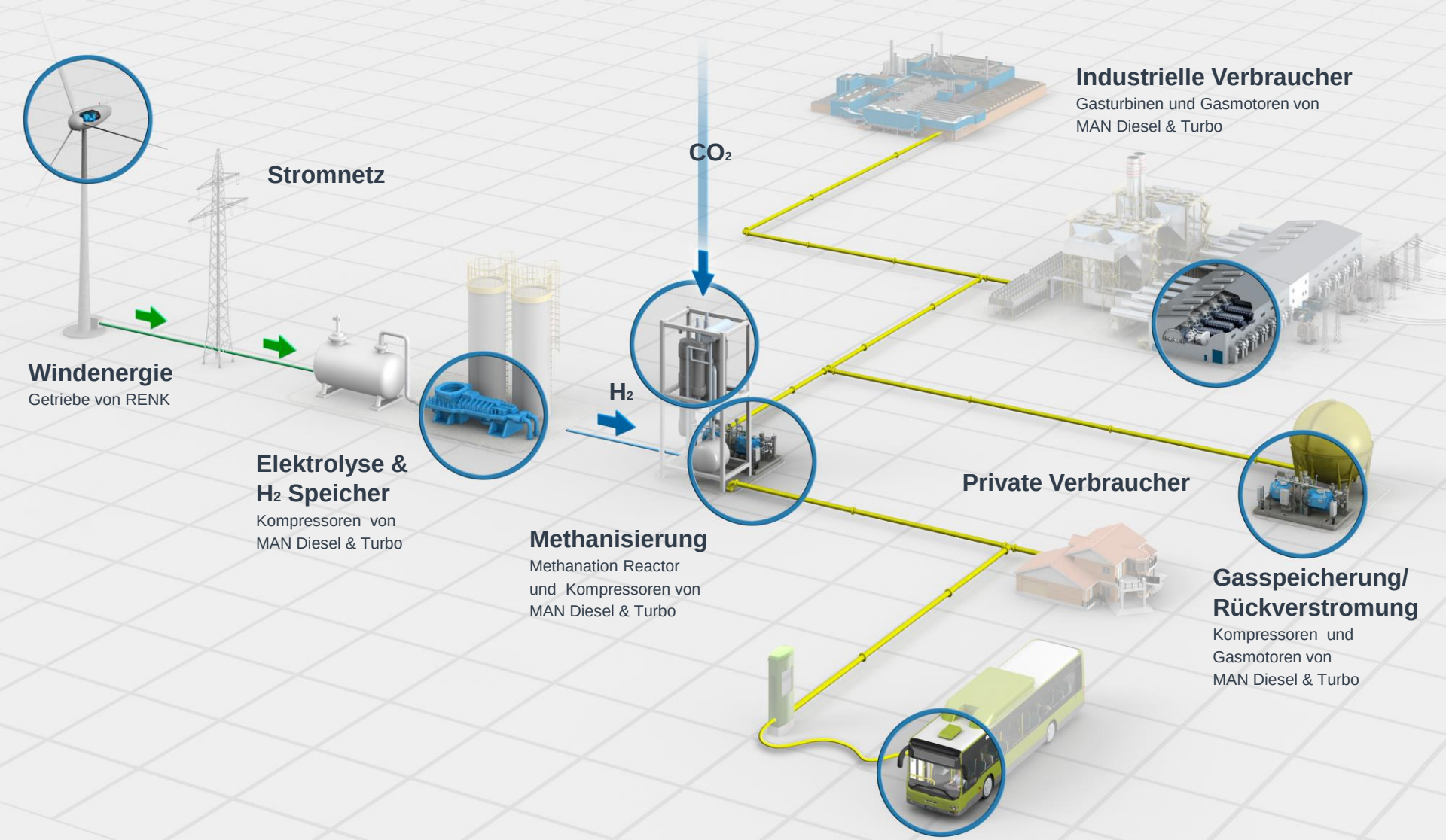
Power-to-Gas
Utilisation of Wind and Solar Energy

MAN Diesel & Turbo SE, Site Deggendorf

Power-to-Gas: CO_2-Methanation

A new Energy Supply Concept



MDT-Site Deggendorf

- Founded in 1924, shipbuilding
- Reactor and pressure vessel manufacturing since 1955
- 1955 – 2017 more than 60 YEARS TUBULAR REACTOR EXPERIENCE
- Technical Segments
  Apparatus: ETRA
  Reactors: ETRR
- Employees:
  about 450
- Engineers:
  about 60

Power to Gas - Methanation

Feedgas: Synthesis Gas (Erdgas, Biomass, Coal, Waste, …)

$CO + 3H_2 \rightarrow CH_4 + H_2O \quad \Delta H_R = -207\ kJ/mol$

Focus today:

Feedgas: Carbon dioxide + renewable Energy (Wind, Solar, …)

$CO_2 + 4H_2 \rightarrow CH_4 + 2H_2O \quad \Delta H_R = -165\ kJ/mol$

Methanation

Process Development in the Pilot Plant of MDT-Deggendorf:

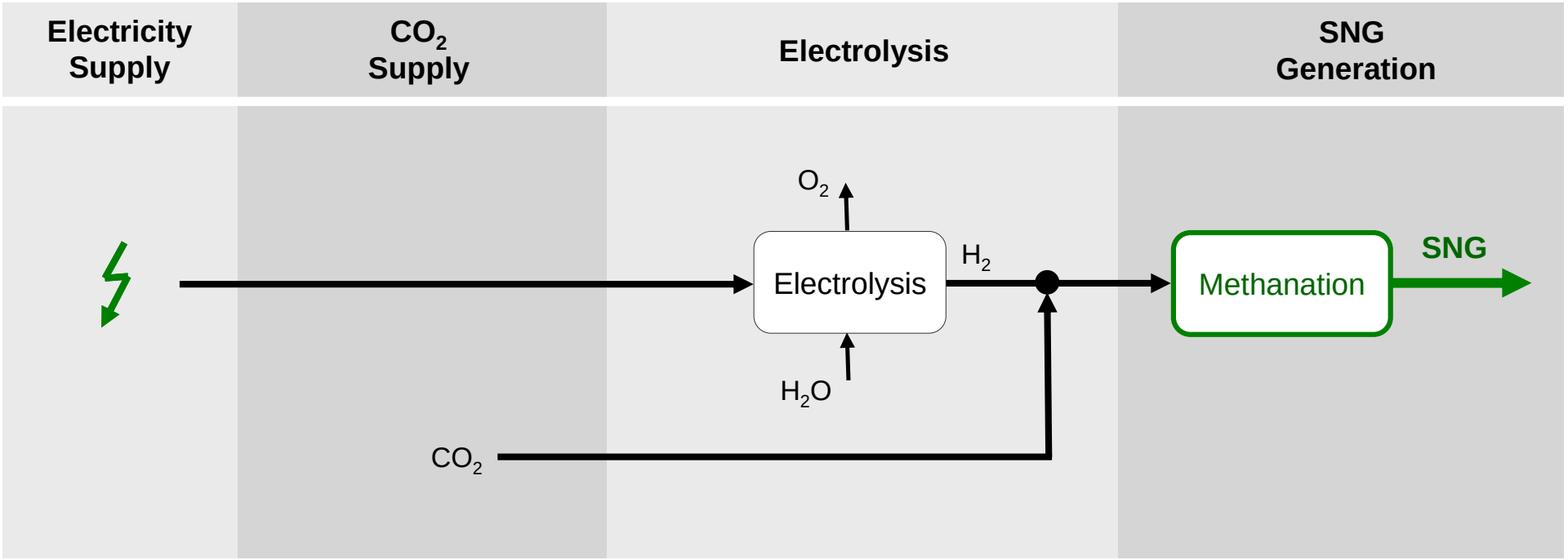
SNG Production from

- $H_2/CO/CO_2$ or
- H_2/CO_2 Synthesis Gas

DWE®-Reactor

Methanation

SNG from Electricity

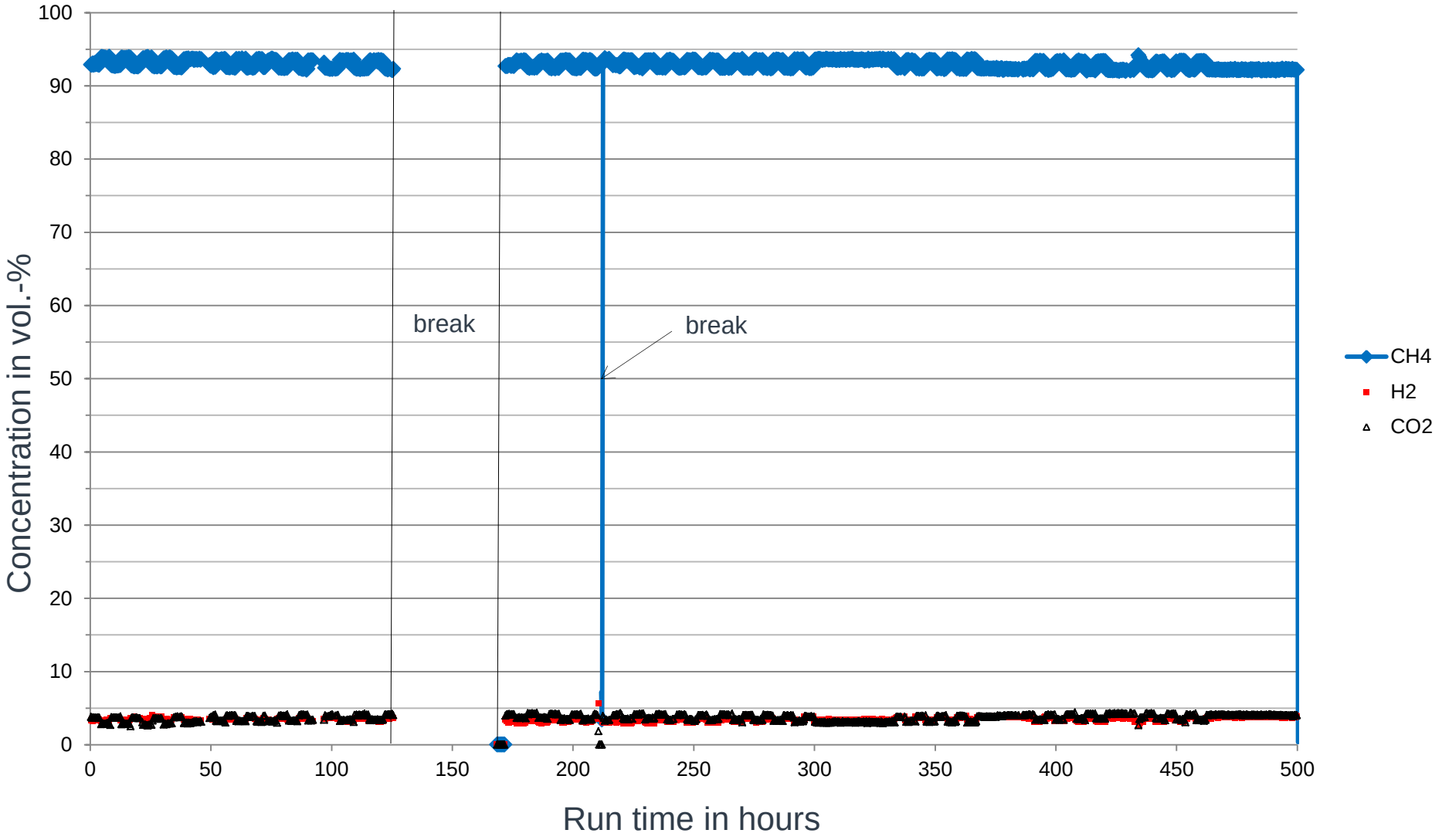


H_2/CO_2: Educt for SNG

- H_2 via water electrolysis
  - Flexible range for balancing power
- CO_2 from various sources e.g.
  - Power station with CO_2 capture
  - Biogas (digestion)

Methanation

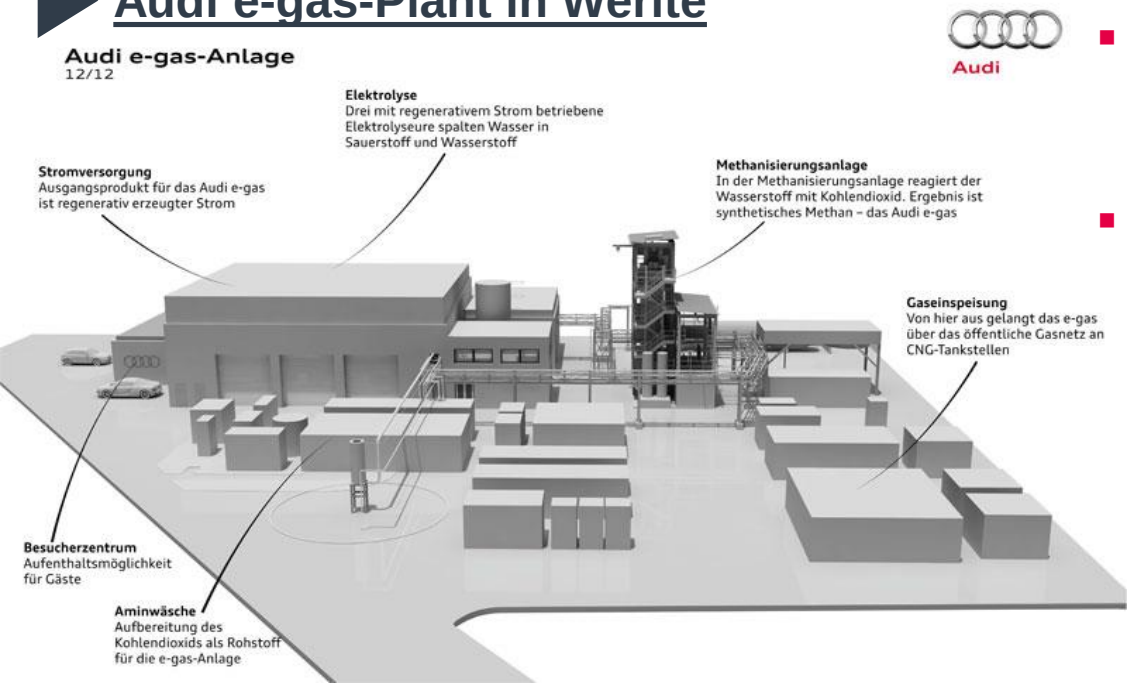
Dynamic Tests 500 hours



Power-to-Gas: Summary

Site „Werlte“

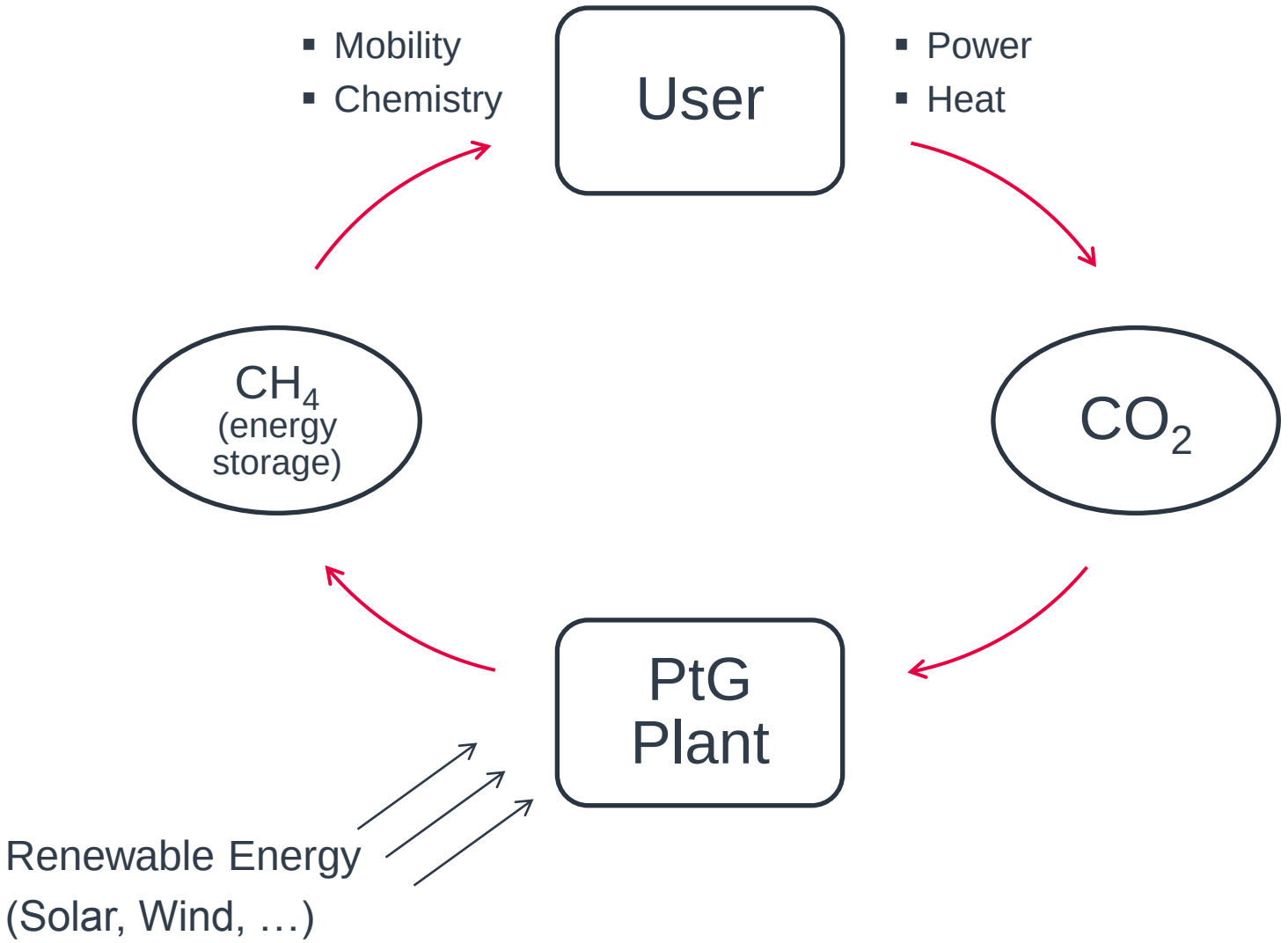
Audi e-gas-Plant in Werlte



- Power to Gas Plant in Werlte using Reactors from MDT-Deggendorf.
- Additional products of MDT could be used in PtG Plants: Compressors, Gas-Engines and Gas- & Steamturbines

The Feasibility of Technology is proven (on Stream since Dec. 2013)

Power-to-Gas:
A Sustainable Energy Concept without Waste



Thank You for Your Attention

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