

Carbon 2 Chem®

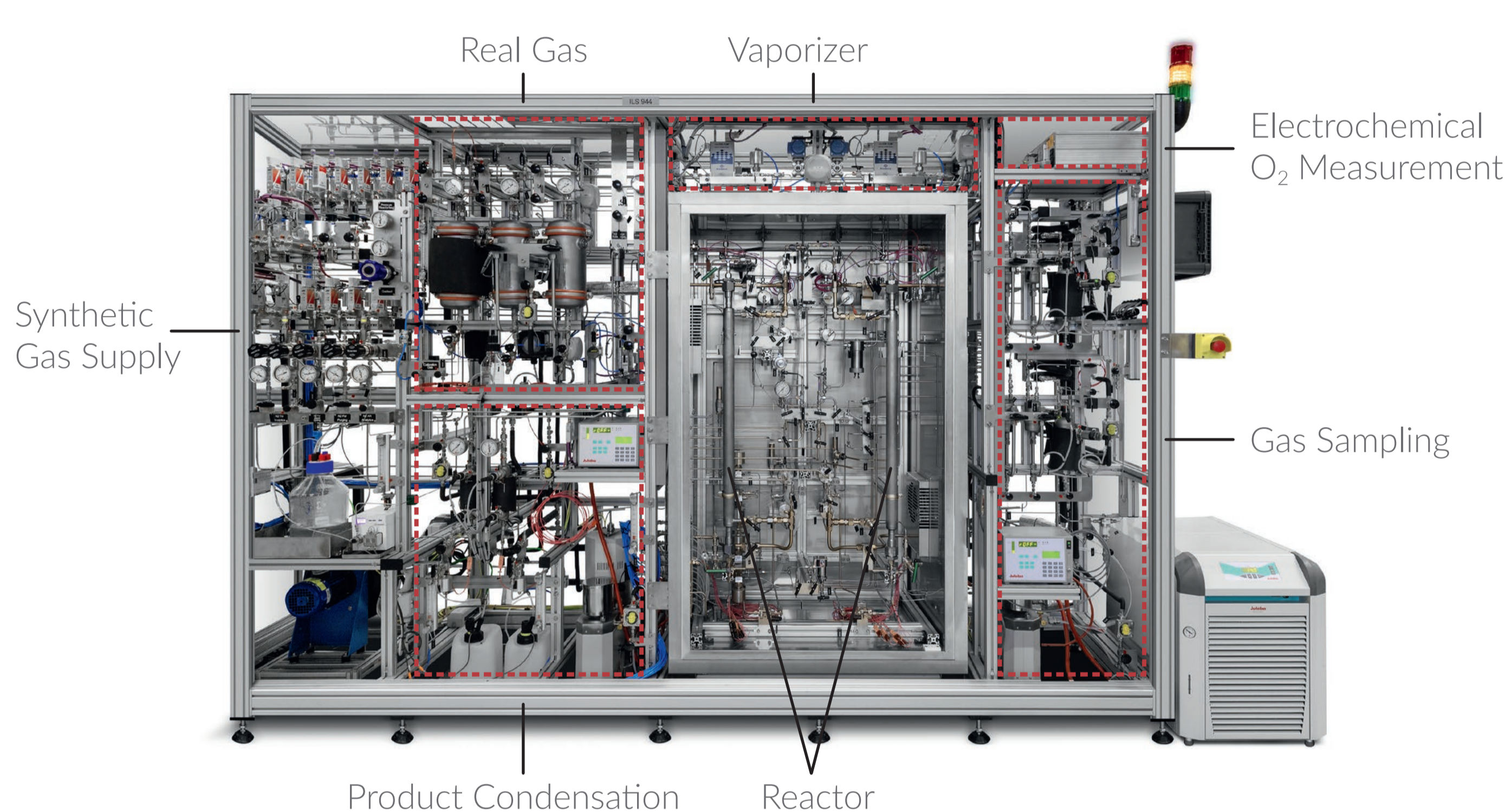
L-IV | Test System for Catalytic Investigation of synthetic and real sulfurous Process Gases

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The transfer of catalytic investigations with synthetic gases to real applications represents an important step in process and catalyst development. The presented test set-up of Fraunhofer UMSICHT offers the possibility to perform catalytic tests with both real and synthetic gas mixtures. The test system is connected to an online analytic system. The entire system is installed in a transportable container. It is independent of location and can be connected to large-scale process plants in industry.

Synthetic feed gas

- The system provides complex synthetic gas mixtures. The following pure gases are available as synthetic gas compounds:
 - N₂, CO, CO₂, CH₄, H₂, Ar, synth. air, sulfur-containing gas mixtures
- Evaporation of liquids e.g., alcohol or water



Test system for catalytic investigation of synthetic and real sulfurous process gases

Reactor

- Two oil-heated stainless-steel reactors
- Serial and parallel operation possible
- Long isothermal zone (approx. 70 cm)
- Temperature measurement with 5 freely selectable measuring points

Reaction conditions (adjustable for each reactor)

- 20 - 330 °C
- 0 - 85 barg
- Isothermal operation by temperature-controlled oil-heated reactor jacket
- Automated test runs with optional recipe-control system

Real feed gas

- Dosing and pre-cleaning of real process gases
- Continuously heated real gas line to prevent condensation
- Flow rates up to 16 l/min
- Pressurized gas feeds can be used



Test system is transportable by using a container set up

Analytics

- Online GC-analysis of feed- and product gas by
 - 2x FID, 2x TCD and 1x FPD
 - hydrocarbons, alcohols, ethers, aldehydes, water, permanent gases (CO, H₂, N₂, CO₂, O₂)
- Additional electrochemical O₂ measurement
- Continuously heated analytic lines to prevent condensation

Special characteristics

Reactors, pipes and fittings are sulfinert coated with (SilcoNert®)

- Very low blind activity
- No surface adsorption of compounds such as sulfur

A KEY BUILDING BLOCK FOR THE CLIMATE PROTECTION

SPONSORED BY THE



CO₂ reduction by cooperation of process industrial sectors