



Influence of Adsorption and Absorption: Removal of Trace Substances in a Modular Syngas Cleaning Facility

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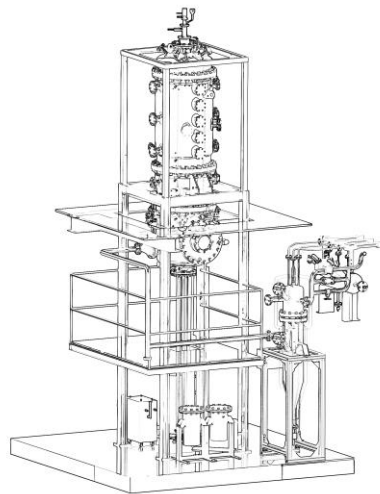
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Purpose of a modular gas purification system?

PROOF OF CONCEPT

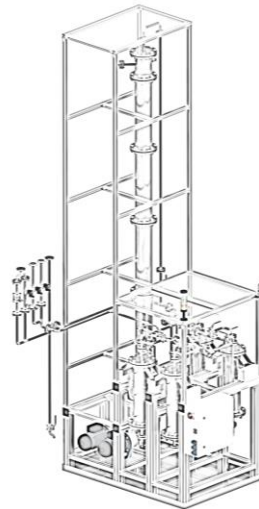
Gasification

- Characterization of the gasification performance
- Analysis of the formation mechanisms of impurities
- Further development of the primary reduction of trace substances



Gas purification

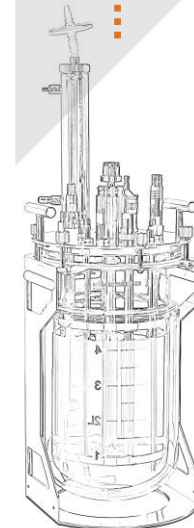
- Secondary reduction of trace gas elements
- Successful use of a modular gas purification system for fermentation standards
- Advanced gas analysis for trace elements



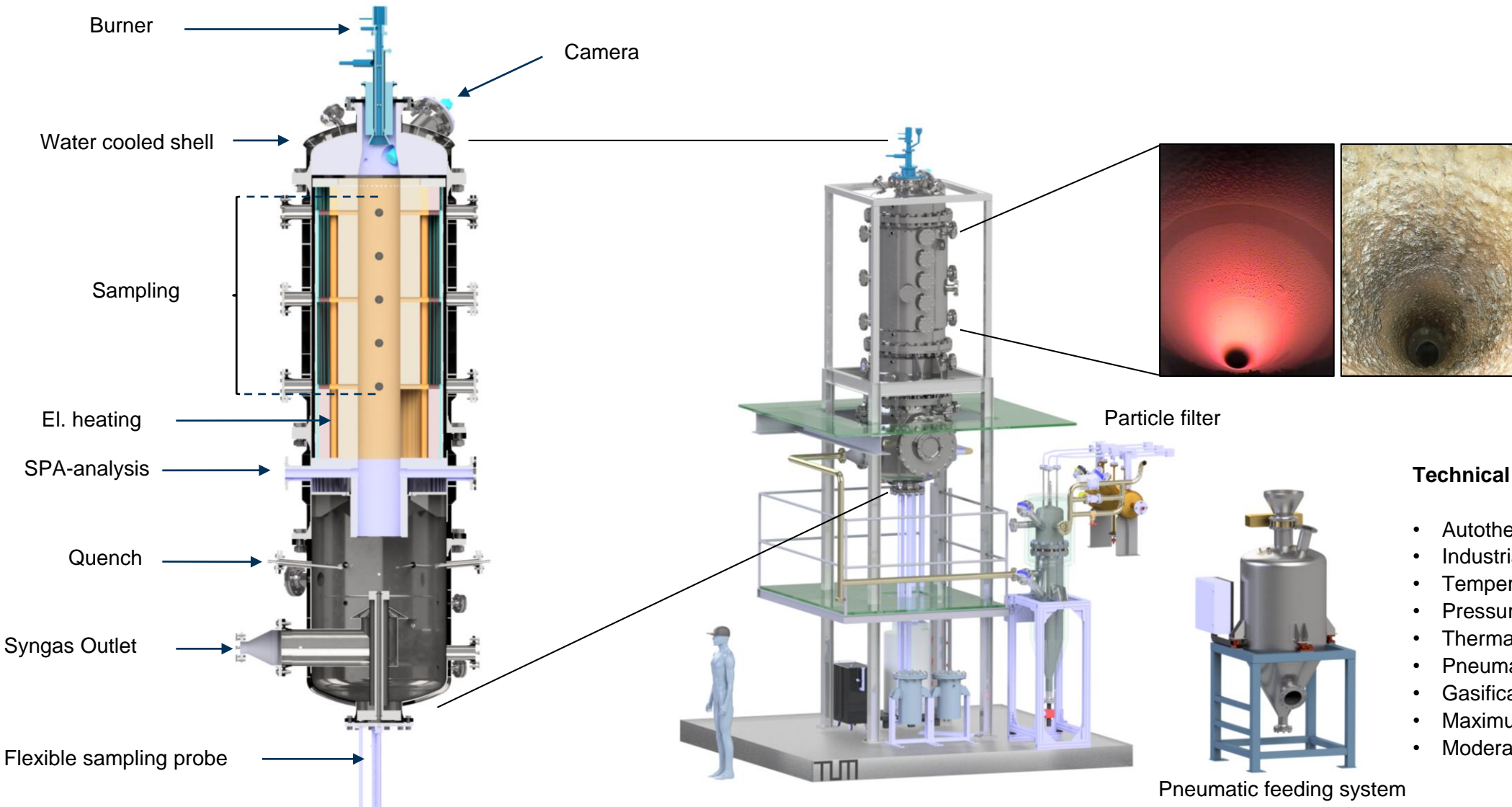
Compressor

Fermentation

- Characterization of critical limits for synthesis gas impurities
- Production and optimization of fermentative alcohols



Biomass pilot-scale EF Gasifier (BOOSTER)



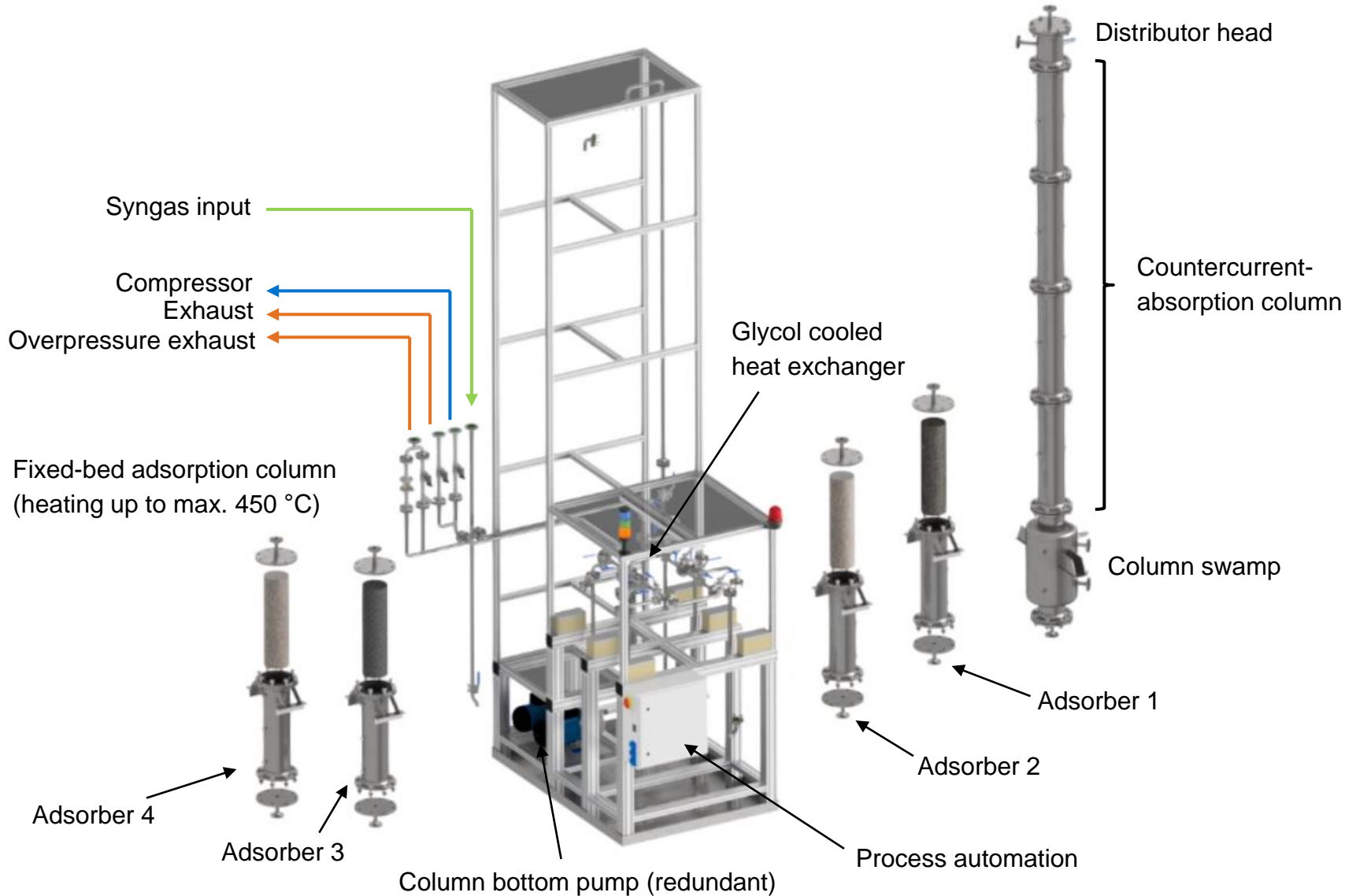
Technical data :

- Autothermal entrained flow gasification
- Industrial design
- Temperature up to 1600°C
- Pressure 0 to 5 barg
- Thermal power: 150 kW
- Pneumatic dense phase feeding
- Gasification medium : O₂ (/Air)
- Maximum operating time : ~10 h
- Moderator: H₂O, CO₂

Synthesis gas cleaning facility

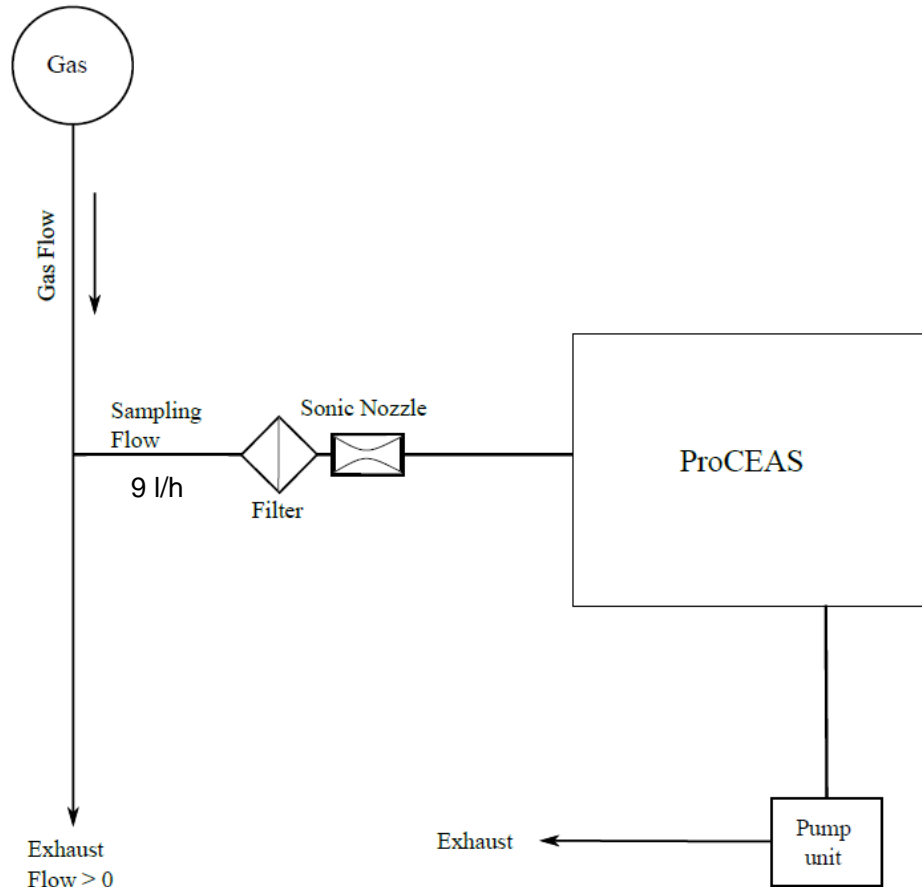
Technical data:

- Modular design
- Cold/hot gas cleaning
- Flexible arrangement
- Pressure 0 to 5 bar_g
- Flow rate up to 5 Nm³/h
- Operating time: >100 h



AP2E Laser spectroscopy TDLAS

Components: NH_3 , HCN , HCl , H_2S , (NO , H_2O)



Technical data:

- Infrarot Laserspektroskopie
- OFCEAS - Optical Feedback Cavity Enhanced Absorption Spectroscopy
- LPS - Low Pressure Sampling

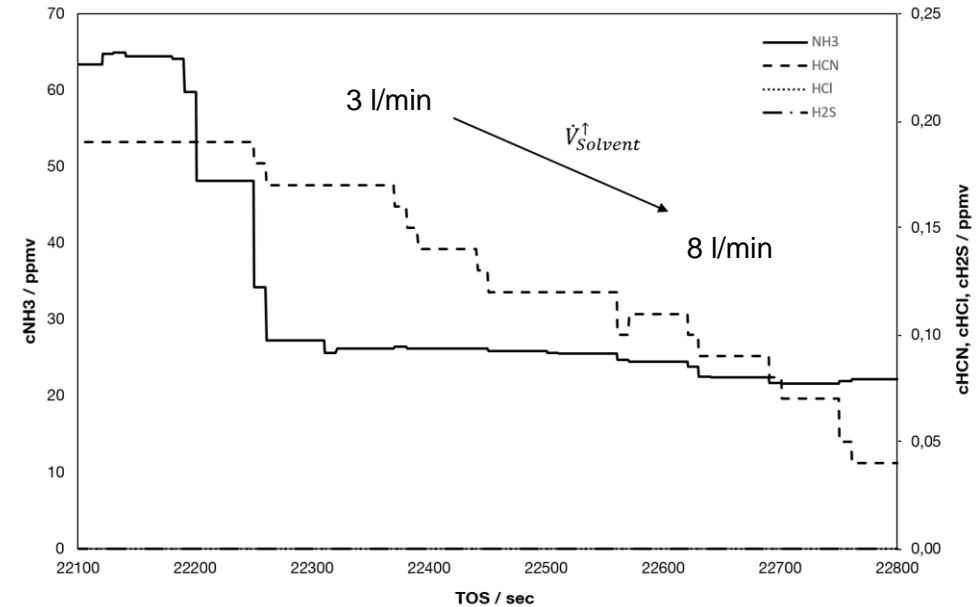
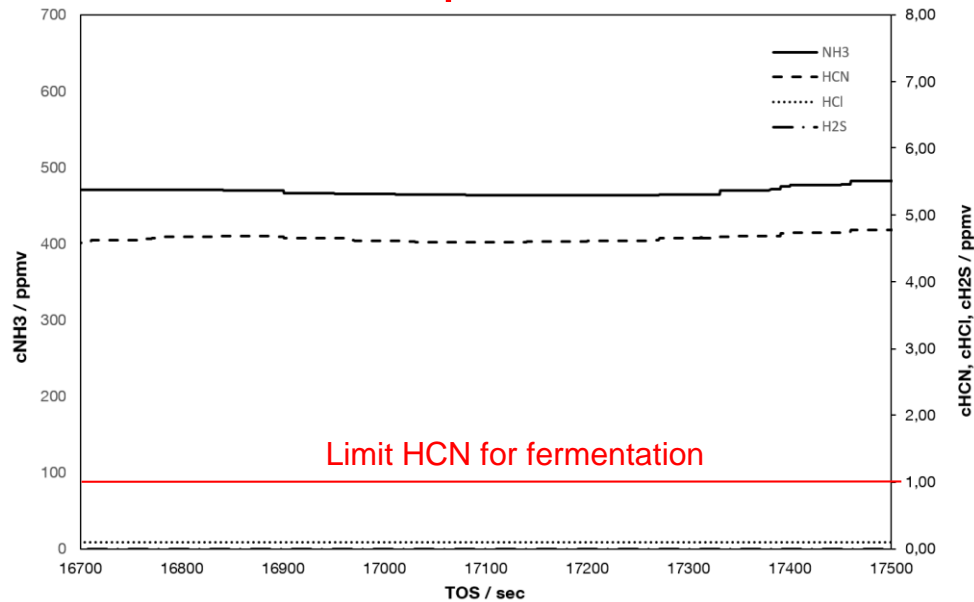
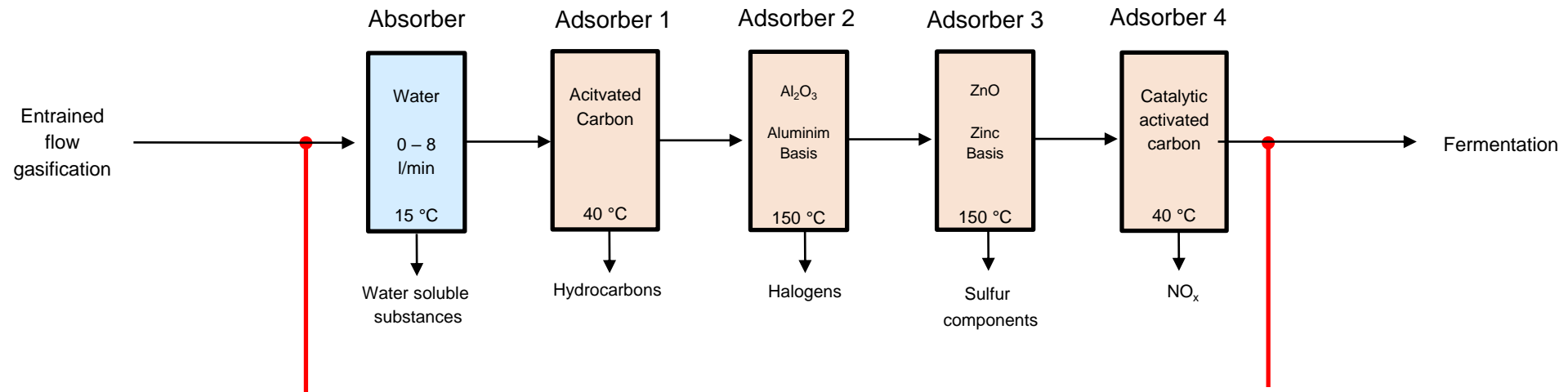
LOD trace components:

- 0,05 ppm HCN
- 0,1 ppm NH_3
- 0,1 ppm H_2S
- 0,1 ppm HCl
- 0,1 ppm NO

Measurement range:

- 0 – 300 ppm HCN
- 0 – 5000 ppm NH_3
- 0 – 200 ppm NO
- 0 – 300 ppm H_2S
- 0 – 60 ppm HCl

AP2E TDLAS in coupling mode / first examinations



Thank you for the attention!

Questions?

