

**Final Thesis****Commissioning and Determination of Heat Release in a Fluidized Bed in Oxy-Steam Operation**

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**Contents:**

Biogenic CO<sub>2</sub> is needed as a carbon carrier in power-to-X applications and for CO<sub>2</sub> fertilization in greenhouses. In order to replace the predominantly "fossil" CO<sub>2</sub>, the OxyGreenCO<sub>2</sub> research project is investigating the provision of "green" CO<sub>2</sub> from biogenic solid fuels using oxyfuel combustion. The CO<sub>2</sub> can be separated from the flue gas using a partial condenser. Oxyfuel combustion is also suitable for the utilization of very moist fuels such as freshly harvested wood chips and biogenic waste materials from greenhouses.

For this reason, a 100 kW fluidized bed is being converted to oxyfuel operation at the Chair of Energy Process Engineering, and a process chain consisting of oxyfuel combustion followed by partial condensation is being set up. The aim of the thesis is to commission the experimental plant in oxy-steam operation and to conduct tests to determine the heat release. Furthermore, an orifice plate for determining the mass flow from a steam generator is to be developed.

**Tasks:**

- Literature review on oxy-steam-combustion, heat release in fluidized bed
- Commissioning of the experimental plant in oxy-steam operation
- Experimental investigation of the heat release
- Development of an orifice plate for determination of steam flow
- Written documentation of the thesis and clear presentation of the results

**Requirements:**

- Structured and independent working style
- Interest in practical work on the experimental plant
- Working language: German or English

**Start:** March 2026

**Contact:**

Hannah Cortnum, M.Sc.

**Phone:** +49 911 5302 99175

**E-Mail:** hannah.cortnum@fau.de