BioOszi
Reduction of NO_x-emissions in small combustion plants for energetic utilization of biomass via oscillating combustion air supply

Funded by the Federal Ministry of Education and Research under 01LY1823B, Duration 01.01.2019-31.12.2020

Project Partners:

- POLZENITH GmbH & Co. KG (Coordinator)
- Karlsruher Institute of Technology (KIT),
  Institute for Technical Chemistry
- Ruhr-University Bochum

At present, approximately 40 000 t of nitrogen oxides (summarized as NO_x) per year are emitted from biomass combustion plants in Germany. Similarly to CO_2, NO_x impacts the climate. This amount translates into CO_2-equivalent of 400 000 t/year. The NO_x emission limits are steadily tightened. The compliance with the new regulations is possible with excessive, additional modernization efforts of the available technologies. In this project, a new process for NO_x reduction, based on oscillating combustion air supply will be developed and examined. The process can be realized cost-efficiently and promises about 50 % comparative cost advantage to conventional technologies. At the same time the energy efficiency can be improved too. The following aspects have to be enabled by the venture:

- Investment cost reduction for new plants through avoiding of additional (secondary) measures (50% cost reduction for NO_x – diminution)
- Reduction of NO_x-emissions in compliance with the updated (revised) technical code of practice for air (TA Luft)
- Competitive ability improvement on the European market, as well as long-term opportunities for market penetration.

In essence, KIT will conduct exploring combustion tests at a pilot-plant scale. Correlations between NO_x-content in the flue gas and the oscillation frequency, in addition of the air distribution have to be established.

The project aims the development of a cost-saving, high-efficient and environmental friendly process for the reduction of NO_x-emissions from up to 20 MW biomass incineration facilities, which can be implemented in new along with already existing plants in such a way, that also in future the tight emission limits of the technical code of practice for air (TA Luft) can be kept with a modest economical effort.

Contact:
Dr.-Ing. Hans-Joachim Gehrmann
Karlsruhe Institute of Technology (KIT)
Institute for Technical Chemistry
Hans-Joachim.Gehrmann@kit.edu