

ADP or Bachelor's thesis

Construction of a flame detector for monitoring industrial flame systems

Motivation & background

In industrial process gas facilities, large flare systems are used to discharge process gases into the environment in a controlled and safe manner through targeted combustion in the event of an incident. If these systems fail, there is a risk of unburned process gases escaping in an uncontrolled way. To prevent this, it is essential to continuously monitor the function even under extreme environmental conditions. Innovative measuring principles have already been developed at the RSM to enable precise monitoring.

Objectives

The objective of this work is to first set up a burner on a test bench in order to simulate the conditions of a flare system under realistic conditions. Subsequently, the new measuring methods will be examined in detail and the first prototypes for monitoring flames will be developed. In addition, environmental and interference influences on the flame will be analyzed before a long-term test is carried out to ensure permanent functionality. Finally, a compact, robust measuring device is to be designed that functions reliably as a flame monitor and detects the presence or extinction of the flame.

Tasks

- Learning about the subject area
- Construction of a burner + simulation of environmental conditions on the test bench
- Testing and evaluation of measuring principles and prototype development
- Development of a compact measuring device for flame detection
- Thesis and colloquium

Focus areas

- | | |
|---------------|-------|
| Experiment | ● ● ○ |
| Construction | ● ● ● |
| Modeling | ● ○ ○ |
| Data analysis | ● ● ○ |

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Start from

Immediately

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