

Pilot combustion chamber at power plant scale

BRENDA

Dr.-Ing. Hans-Joachim Gehrman, Prof. Dr.-Ing. Dieter Stapf

BRENDA

BRENDA (Brennkammer mit Dampfkessel) is a pilot combustion chamber at power plant scale for gaseous, liquid and dust-type fuels with a cylindrical, vertically arranged combustion chamber and a thermal output of 2,5 MW. The combustion chamber can be fed with gaseous, liquid and dust-type fuels through a swirl burner, an annular gap and centrally arranged lances (figure 1)

The swirl burner was designed by the company SAACKE and has a thermal output of 1 MW. In order to reduce the CO₂-Emissions caused by burning fossil fuels, biomass for generating power gain in importance. With BRENDA the combustion and emission behaviour of conventional and alternative fuels used in power plants can be analysed.

Beside the pilot combustion chamber, numerical models for assessing and supporting the combustion behaviour are developed. In the Course of the energy transistion, the focus lies upon the improvement of the load flexibility of consisting power plants. In combination with the fuel flexibility both challenges can mastered by using biogenic fuels during load changes.



Figure 1: Facility BRENDA

Quelle: KIT

Performance data BRENDA

Total thermal output	2.5 MW
Height of combustion chamber	17 m
Diameter of the combustion chamber	1.8 m
Dust firing	1 MW
Fuel throughput (depending on the calorific value)	50 up to 200 kg/h
Thermal output of the main burner	1.5 MW
Type of the burner: Horizontally arranged swirl burner with a central feeding and annular gap feeding system. Basic Flow through the main combustion chamber (rotary kiln)	
Flue gas treatment according to 17. BImSchV	

For further information go to:
<https://www.itc.kit.edu/>

Karlsruhe Institute of Technology
Campus Nord
Hermann-von-Helmholtz-Platz 1
76344 Eggenstein-Leopoldshafen



Dr.- Ing. Hans-Joachim Gehrman
Tel.: +49 721 608-23342
E-Mail: hans-joachim.gehrman@kit.edu