



WORKGROUP FOR MULTIPHAS FLOWS

Gas turbines with water injection

Grant number

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Project title

Gas turbines with water injection

Mixed Air / Steam Turbines Fired by **Liquid** Fuel (Mast_B_Liquid)

Project leader

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Realized by

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Keywords

Combustion, nitrogen oxides

Short description of the project

Seven partner work together on this project which is supported by the European Union to improve the efficiency of stationary gas turbines for power generation. To realise an efficiency ratio of more than 50%, water vapour is sprayed into the combustion chamber in addition to air and liquid fuel. This leads to an increased power output as well as an increased efficiency ratio due to the higher density of steam in comparison to air. Additionally, temperature peaks in the combustion chamber are lowered which reduces the emission of nitrogen oxides. Although these gas turbines have already been brought to market, general design tools are still needed. The task of this project is to provide these design tools with the help of experiments in laboratory scale combustion chambers and real gas turbines as well as by numerical simulations.

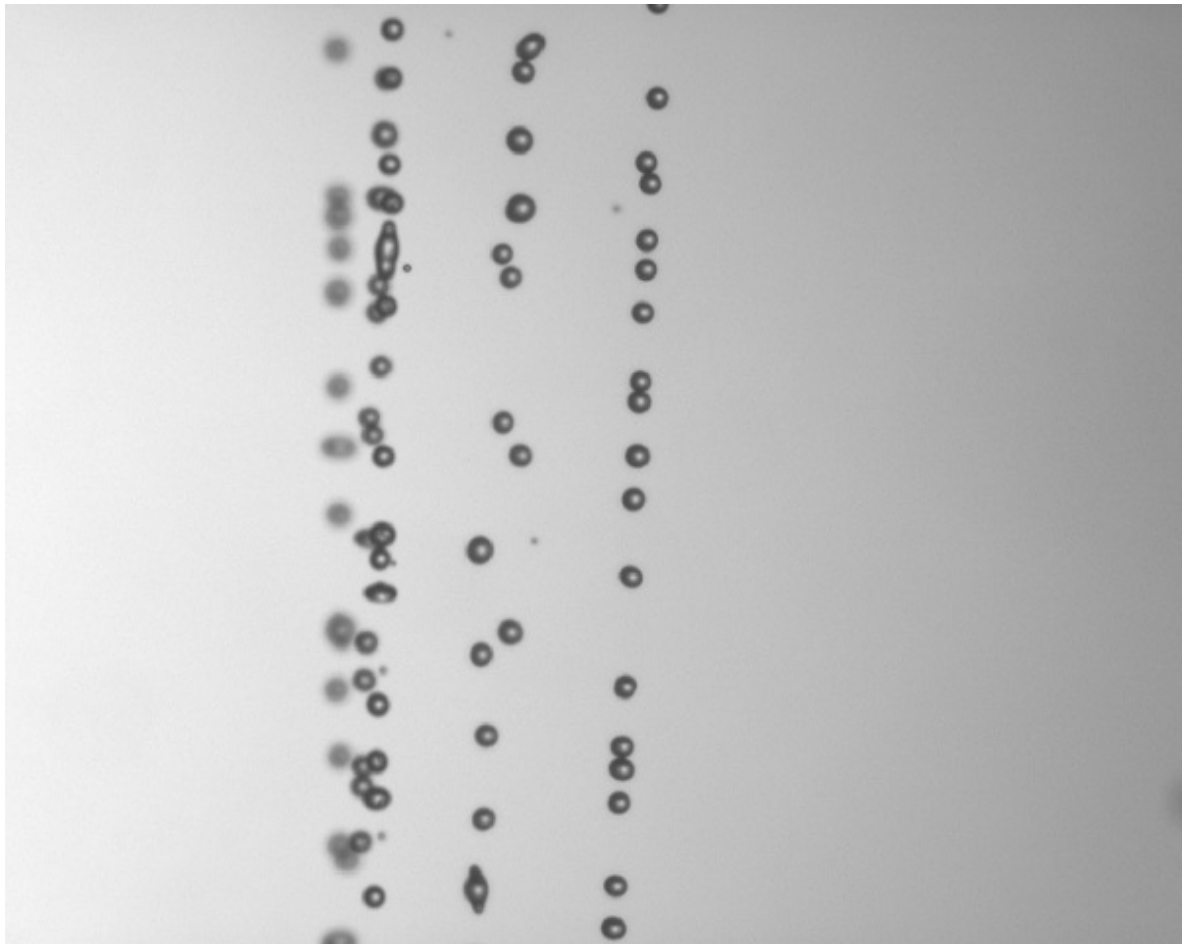


Photo: Water injection

The task of the Chair of Mechanical Process Engineering of the Martin-Luther University Halle-Wittenberg is the development of model which describes the evaporation of oil droplets within an air/steam atmosphere.