



ERA-NET Bioenergy Project FutureBioTec

“Future low emission biomass combustion systems”

Public Abstract

The ERA-NET Bioenergy project “FutureBioTec” aimed to provide a substantial contribution concerning the development of future low emission stoves and automated small- and medium-scale biomass combustion systems (<20 MW_{th}). In order to reach the aims of the project, a consortium of 9 internationally recognised R&D partners as well as 2 industrial partners from 7 European countries has been formed. The 3 year-project has been coordinated by the Austrian Competence Centre BIOENERGY 2020+ GmbH. In September 2012 the results of the project have been presented at an international workshop in Graz to interested stakeholders (in total 67 participants from 7 countries attended).

Work package 1 focused on the further development of wood stoves towards significantly decreased CO, OGC and PM emissions by primary measures (air staging and air distribution, grate design and implementation of automated process control systems). Figure 1 exemplarily demonstrates that by appropriate technological measures and process control a considerable reduction of emissions can be achieved. Within the scope of work package 2 improvements of automated furnaces in the residential and the small to medium-scale (<20 MW_{th}) capacity range towards lower PM and NO_x emissions by primary measures have been examined (staged combustion, utilisation of additives and fuel blending concerning new biomass fuels, development of a new combustion system for pulverized fuels). Figure 2 exemplarily shows the wide variation of NO_x emissions measured during test runs performed and demonstrates that low NO_x emissions are also achievable for fuels with high N contents by efficiently applying primary measures. Finally, work package 3 and 4 focused on the evaluation, development and optimisation of secondary measures for PM emission reduction for residential biomass combustion systems.

Concluding, the project “FutureBioTec” resulted in a considerable know-how gain regarding future low-emission small- to medium-scale biomass combustion systems. To widely disseminate this knowledge all guidelines and state-of-the-art reports compiled as well as additional publications generated within the project are publicly available on the webpage futurebiotec.bioenergy2020.eu.

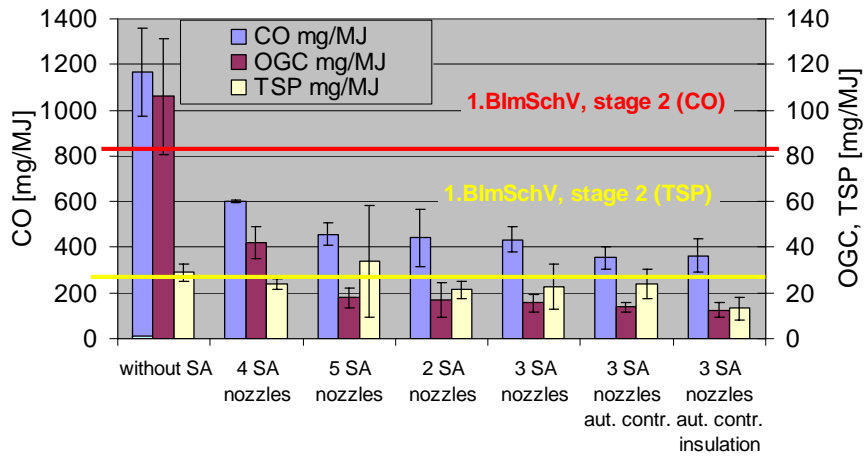


Figure 1: Emission reduction potential of a state-of-the-art stove by implementing secondary air injection, an automated control system as well as a better isolation of the burning chamber
Explanations: BlmSchV ... limit values according to the German BlmSchV; SA ... secondary air; aut. contr. ... with automated control system

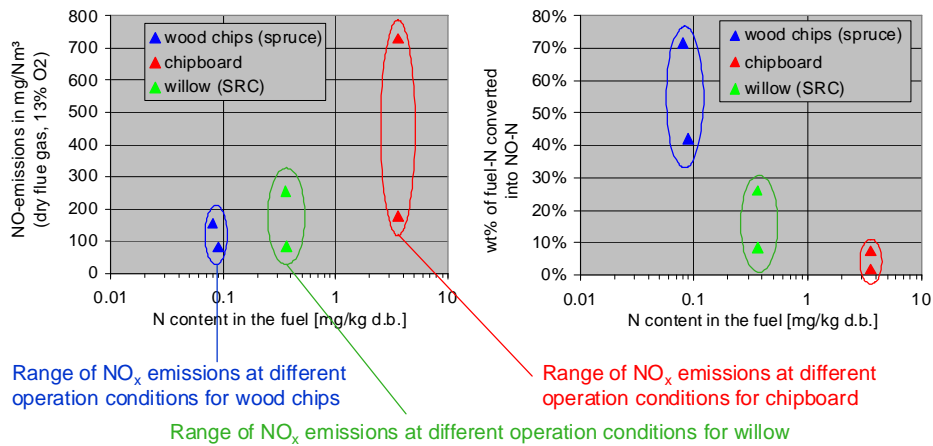


Figure 2: NO_x emissions and N conversion to NO_x for various biomass fuels in biomass grate combustion systems