Editorial

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CFD is gaining increasing relevance as an efficient tool to optimise industrial combustion systems. The application of this technology is also becoming ever more important for biomass combustion due to the steadily growing number of biomass plants worldwide and the strong commitment to this CO_2 neutral and sustainable energy source. In this field, CFD is used to support new technological developments for the series production of small-scale systems and to ensure optimal operation of large-scale systems by assisting in the design and monitoring of individual plants.

Biomass systems require special mathematical models for solid biomass combustion (in entrained flows and packed beds), gas phase combustion, pollutant modelling (e.g. NO_x) as well as aerosol and ash formation in order to be able to describe the underlying processes with sufficient accuracy and to deal with relevant problems. Appropriate models thus need to be developed and validated before they can be transferred to industrial application.

The overall goal of this special issue is to contribute to these research and development activities by providing a comprehensive overview of current R&D in this field and to give detailed insight into existing models in order to stimulate and accelerate R&D work, international cooperation as well as the application of CFD for biomass combustion systems.

This special issue initiative was warmly welcomed by the invited authors and referees, and a large number of papers was submitted. Of these, 12 were finally accepted for publication by a refereeing panel consisting of 18 internationally recognised experts in CFD modelling and/or biomass combustion.

We would like to thank the participating authors for their contributions and all the reviewers who have spent a considerable amount of time to guarantee the high quality of the papers accepted. We would also like to thank Professor M.A. Dorgham, Editor-in-Chief, for inviting us to edit this special issue and Professor A.C. Benim, Executive Editor, for his advice and help during the editorial process of this special issue.