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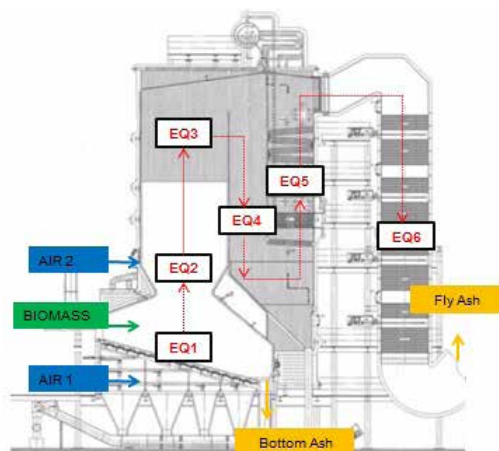
Modeling biomass behavior during combustion- A thermochemical approach to predict slagging; Effect of the S/Cl molar ratio

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Thermochemical modeling seems a promising tool in the biomass combustion field to avoid ash-related problems during combustion: slagging, fouling and corrosion. Several authors have used thermochemical software packages to understand and validate their experimental results in different biomass combustion studies, focusing directly on ash composition or ash streams composition. Besides, most of these studies are focused on operational issues, especially on those concerning de-fluidization phenomena, in pilot scale combustion plants. In this work, a thermochemical model was developed to predict inorganic elements' release during combustion and the melting behavior and composition of the fly ash in the downstream, allowing to evaluate the effect of biofuel composition on the ash composition and behavior. With the aid of experimental data obtained by common techniques, previously used in other studies, such as chemical fractionation, and chemical analysis to understand elements distribution during combustion, the model could be validated by comparison with real data. The results obtained with the model presented in this work, reveal the importance of the S/Cl molar ratio to reduce ash deposition problems during gas cooling in the combustion of wheat straw using large scale vibrating grate technologies.



Biography

Ibai Funcia has a Master's degree in Chemistry from the University of Navarre (Spain), a Course on Pedagogical Aptitude by the University of Navarre (Spain) and a Project Management Interuniversity Master's degree by the University of La Rioja (Spain). He is actually developing his PhD thesis at the Universidad Pública de Navarra (UPNa) on the Science and Industrial Technologies PhD Program. Since 2004, he has been working in CENER Biomass Department as a Biomass Researcher in the following main lines: Thermo-chemical route: biomass torrefaction, biomass combustion (ash behavior at high temperature) and biomass gasification (tar cleaning, sampling and analysis); Biochemical route: biomass pretreatment, enzymatic hydrolysis and fermentation; Biomass and Bio-fuel characterization; Chromatography methods development and; Laboratory quality and assurance procedures implementation.

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