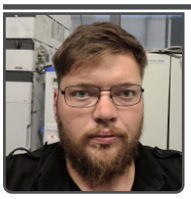

Experimental Analysis of the Pyrolysis Dynamics of Single Wood Particle- Presentation of the Radiographic Technique

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Pyrolysis is an oxygen-free process for the thermal decomposition of raw materials. The heat conduction and flow of pyrolysis products (i.e., the gas fraction and liquid vapor generated during pyrolysis) influence the process and products. In this work, the influence of the orientation of wooden particle fibres with respect to the direction of the heat source on the dynamics of the process was investigated. The novelty in this work lies in the use of a radiographic technique for the analysis of the degradation process. The progress of the process over time was documented with the use of X-ray photos. The research showed that during pyrolysis, the mass loss rate in the particles with fibres oriented across the heat source and along to the heat source were different. A similar tendency was characteristic for the drying process.

The author propose to use the novel radiographic technique to study density changes during the process. The dynamics of pyrolysis of a single wood particle depends on many factors - particle size, process parameters, arrangement of fibers in wood, etc. The analysis of the dynamics based on the analysis of the dynamics of mass loss, which is a very large simplification. The progress of the process over time was documented with the use of X-ray photos. The result of the research is the determination of trends regarding the shape of the particle and the arrangement of fibers on the process, which provides knowledge that can be translated into industrial pyrolysis processes.

Biography:

I have a strong passion for scientific research and engineering. I am particularly interested in the fields of pyrolysis, waste management, as well as chemical and mechanical engineering. I have accumulated almost 10 years of professional experience working at a Institute of Fluid Flow Machinery, where I have had the opportunity to deepen my knowledge and expertise in these areas. Throughout my career, I have actively participated in numerous conferences, sharing my insights and findings with fellow researchers. I am author of more than 20 scientific publications, contributing to the advancement of knowledge in my field.