

# Fire behaviour of renewable raw materials

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Since September 2019, Wood K plus has been working on a strategic dissertation at its site in Tulln, which deals with a well-known but nevertheless red-hot topic. The focus is on research into the thermal decomposition of wood and other renewable resources. Old knowledge about pyrolysis, gasification, ignition and combustion is to be used and supplemented by new investigations and measuring methods. In addition to a better understanding of thermal degradation, the knowledge gained will contribute to a more targeted and efficient use of wood and renewable resources.

The material and also thermal use of wood is increasing worldwide. In timber construction, one lighthouse project overtakes the next and domestic and international companies have long been aware of the CO<sub>2</sub> neutrality of wood as an energy source. Combustion plays an important role in both areas. On the one hand, however, it is necessary to interrupt the individual steps of the thermal decomposition process and prevent combustion, and on the other hand to force it or allow it to proceed as homogeneously and completely as possible.

The domestic research landscape is very well positioned in the field of thermal use of wood as an energy source and material use in the construction sector. However, with the increase in large-scale projects in timber construction, the demands on safety are also increasing - not only in statics, but also in fire protection. There are several institutions and companies in Austria that carry out standardised tests for new products with regard to their fire properties, and university and non-university institutions that optimise the thermal use. However, the equally necessary basic research regarding the ignition and fire behaviour of wood and other renewable raw materials is at least underrepresented in international comparison.

At Wood K plus in Tulln, just that gap shall be closed. Therefore, a strategic dissertation was initiated which deals with this topic. For

example, one of the questions often discussed in recent years but never adequately answered is: "When and under which environmental conditions can spontaneous self-ignition of wood occur?"

New testing and measuring methods are being developed to answer these and other questions. In a hierarchical form, first parts of the ignition and combustion processes are analyzed in detail and then later on larger test specimens. In this way, a holistic picture of the thermal decomposition processes is to be created.

The dissertation is funded by the federal state of Lower Austria within the framework of the so-called Science Call. The funding of the project underlines the importance of the topic also for politics. The cooperation with Prof. Christoph Pfeifer from the Institute of Process and Energy Engineering (BOKU) allows for an interdisciplinary approach, which will continue to influence the work at the competence centre in the coming years. The topic is highly relevant to the research area Wood Materials Technologies and is to be further expanded. The location Tulln offers ideal conditions for this.



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