

CASE STUDY

Developing my bioenergy knowledge at the Technical University of Munich



Rosanna Paradiso of the University of Pisa in Italy takes us through her trip to the Technical University of Munich (TUM) in Germany and the benefits a BRISK visit can make to the scientific community at large

While studying for my Masters Thesis at the Department of Chemical Engineering of the University of Pisa, I worked on the pyrolysis of second generation biofuels. Aiming to understand the influence of operative conditions on the pyrolysis kinetic models parameters, I needed to compare laboratory-scale facility results with the results of tests performed in industrial-scale facilities. After analysis of data obtained at the International Flame Research Foundation (IFRF) (one of the Italian partners of the BRISK project) I became aware of the opportunity to perform pyrolysis and gasification tests using the Pressurized High Temperature Entrained Flow Reactor (PiTER) at the Institute for Energy Systems of the Technical University of Munich (TUM).

I applied to take part in the BRISK Transnational Access programme and once I had completed the form concerning the purpose of my visit, I contacted the host organisation (TUM) to discuss the details. Thanks to their help, the application process was concluded within three months, although the experimental campaign began later due to technical problems arising during preliminary tests on the PiTER.

During my two week visit to TUM, the pyrolysis and gasification tests were carried out with PiTER in different temperature and pressure conditions on a bio-coal (made from beech) obtained via 8 hours hydrothermal carbonisation performed at 20 bar and 200°C. The experimental campaign was supervised by Markus Steibel, a PhD student from Professor Hartmut Spliethoff's team. Before starting work he showed me



Figure 1: Pressurized High Temperature Entrained Flow Reactor (PiTER).

the laboratory facilities and during testing we worked with other students and technicians as a team to coordinate activities and help each other.

I used the results I obtained to complete my Masters Thesis but the most important aspect of my BRISK experience was having been able to contribute to the creation of a growing database for biofuels which is fundamental to research progress and development. The need to share information is essential in a wide scientific community and my visit to TUM made me feel happy to be a part of this process.

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Figure 2: Aerial view of the Technical University of Munich.

Acknowledgments

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Figure 3: Laboratory equipment at the university.

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