

## CASE STUDY

# BRISK Transnational Access at work



Nichanut Prasopsaipornkul of Renetech AB in Sweden undertakes work on maximising the potential of cocoa pod husk residue at TUBITAK Marmara Research Centre in Turkey

My visit to the Energy Institute of TUBITAK Marmara Research Centre was a valuable and impressive experience. Working with the skilled researchers at TUBITAK provided me with an opportunity to learn from their expertise in biomass characterisation and gasification which greatly benefited my professional knowledge.

The purpose of my visit was to find and evaluate the maximum potential for energy production from cocoa pod husks, which are the residue from cocoa production and currently an underused resource in Côte d'Ivoire. The study was initiated by my employing organisation, Renetech AB ([www.renetech.net](http://www.renetech.net)) in collaboration with ANADER, our business partner in Côte d'Ivoire. The value addition of this residue could lead to future economic opportunities in the country's energy market and improve the profitability of the cocoa business.

Each biomass gasifier type has its own suitable range of applicability. The quality of syngas (the gas product from gasification) varies with the adopted oxidising agents. At the outset of my visit only thermochemical conversion of untreated and torrefied cocoa pod husk was planned, via a detailed fuel characterisation and air gasification study using a bubbling fluidised bed gasifier. However, through the efficient organisation of the TUBITAK staff a study of steam gasification using a fixed bed was also made possible during my visit, in addition to the original plan. Being able to conduct experiments using different gasifier types and oxidising agents enabled us to evaluate the characterisation of the feedstock at different operational scales and using different gasifying media.

During my visit to TUBITAK, I not only learnt about the equipment and how to conduct the tests, but also how to analyse and interpret the results to understand the behaviour of the cocoa pod husks as a feedstock for



Figure 1: Fresh cocoa pod husk residue after the beans are removed.



Figure 2: With Dr. Alper Sarioğlan at the bubbling fluidised bed gasification lab.



Figure 3: Tar samples collected from an air gasification study using a bubbling fluidised bed gasifier.

biomass energy conversion by gasification, all of which was of great value to my work. The opportunity provided by my visit to TUBITAK via participation in the BRISK project has been beneficial to my academic

*Continued on next page*

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Figure 4: Cocoa pod husk samples used in the detailed characterisation and gasification experiments.

development and professional knowledge via widening my experience in biomass energy conversion, particularly in gasification technologies, as well as by providing the opportunity to build connections to enable further cooperation between industry and researchers in the field. The application process was smooth and facilitated by Renetech AB with assistance from Professor Andrew Martin from KTH, with the application itself receiving collaboration from TUBITAK, and approval took only one month.

### Acknowledgment

I would like to thank the TUBITAK research team at the Energy Institute of the TUBITAK Marmara Research Centre and the kind support they offered me throughout my visit. I would also like to thank Tom Walsh and Dr David Bauner of Renetech AB, for providing me with this valuable opportunity.

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Figure 5: With the team at the Energy Institute of TUBITAK Marmara Research Centre.

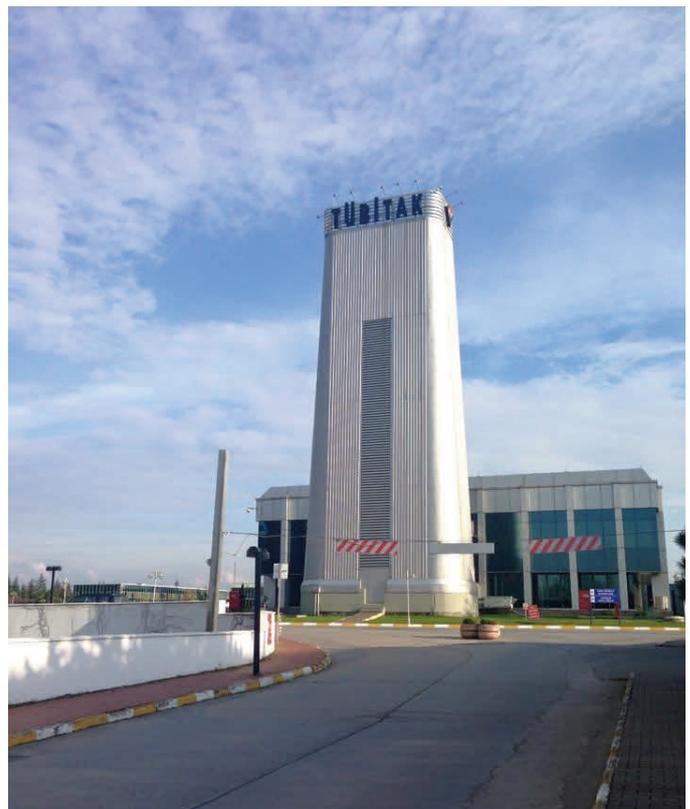


Figure 6: TUBITAK Marmara Research Centre campus in Gebze, Turkey.