Bachelor's/Master's thesis

Optimal experimental design for improved parameter identification of agricultural biogas plants

DBFZ

BACKGROUND:

The more than 9000 agricultural biogas plants in Germany are likely to be operated dynamically in the future in order to balance demand peaks in a fluctuating renewable energy grid. This involves an advanced process control, which depends on process models with time-variant parameters. Identifying these parameters can significantly be improved by mathematically designing experiments in an optimal sense (optimal experimental design, OED). Hence, this research thesis focusses on different scenarios of an OED in simulations.

YOUR TASKS:

- Familiarize yourself with the topic and methods (modelling of anaerobic digestion processes, parameter identification, optimal experimental design)

- Implement methods in Matlab

- Investigate different design parameters, model classes, inflow of different substrates, etc.

YOU HAVE:

- Foundational knowledge in math and control theory

- Elementary knowledge in programming with Matlab and thermodynamics

- If possible: Elementary knowledge in modelling and identification of biological systems

WE OFFER:

- A good introduction to the topic as well as competent and motivated support in the processing of the tasks

- A family-friendly, modern working environment in a collegial working atmosphere

- A well-equipped workplace and advanced lab infrastructure

- Good public transport connections

BEGINNING:

1 November, 2022

DURATION:

3-7 months (depending on degree)

LOCATION:

Deutsches Biomasseforschungszentrum, Torgauer Straße 116, 04347 Leipzig

CONTACT:

Simon Hellmann
Phone: +49-341-2434-357

APPLICATION DOCUMENTS:

Please submit your compelling application (only in a single attachment, preferably as pdf, max. 5 MB)
e-Mail: bewerbung@dbfz.de

For an encrypted transmission of your application you can use the upload form Cryptshare.
www.dbfz.de/stellen