



Bachelor Thesis / Master Thesis:

Sample Preparation for Sensor Calibration in Flexible Biogas Plant Operation

Are you intrigued by the intersection of sustainable energy and cutting-edge technology? Do you have a passion for solving complex challenges in the realm of biogas production and sensor calibration? Join us for an engaging Bachelor/Master thesis opportunity centered around sample preparation for sensor calibration in the context of flexible biogas plant operation.

Project Description:

In this thesis, you will delve into the critical task of preparing samples for the calibration of Near-Infrared (NIR) sensors, which are instrumental in estimating essential parameters for flexible biogas plant operation. The overarching goal of this project is to address the profitability challenge faced by biogas plants due to rising electricity prices and the absence of government funding. The proposed solution involves operating biogas plants in a flexible manner—increasing production during periods of low costs and decreasing it when costs are high.

Tasks:

Sample Collection and Preparation: The initial phase of the thesis will involve collecting digester samples from the biogas plant and preparing them for subsequent analysis. This step is crucial as accurate parameter measurements are essential for sensor calibration.

Data Collection for Machine Learning: To calibrate the NIR sensors, a robust dataset is required. You will meticulously gather data encompassing dry matter, acetic acid concentration, and VFA/TA ratio from the collected samples. This phase lays the foundation for the subsequent machine learning calibration.

Laboratory Work: The core of this thesis will involve working extensively in the laboratory. You will engage in a range of sample preparation techniques, measurements, and data recording. This phase requires meticulous attention to detail and a methodical approach.

Data Preprocessing: Once the dataset is compiled, the next step involves preprocessing the data to prepare it for machine learning calibration. This stage is pivotal in ensuring the accuracy and reliability of the eventual sensor calibration.

Contact:

Interested in this exciting opportunity? For further information or to apply, please contact:

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