



Data-driven modelling of an industrial anaerobic digestion reactor

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Data-driven modelling of an industrial anaerobic digestion reactor

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Abstract:
This study presents model simulations of an industrial anaerobic digester using two-data driven models, Random Forest and Cascade-forward Neural Network. The two models are compared with a detailed first mechanistic multi-scale model in terms of prediction of methane production and volatile fatty acids formation. Faster simulation times ($3E4$ times) and the need for only a limited number of input variables (6 instead of 35) are found as key advantages of data-driven models over their more complex mechanistic counterparts, while maintaining similar prediction capabilities. The model will be later used for rapid scenario analysis under different loading and operational conditions.