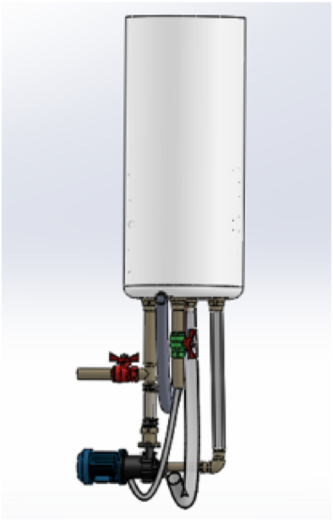
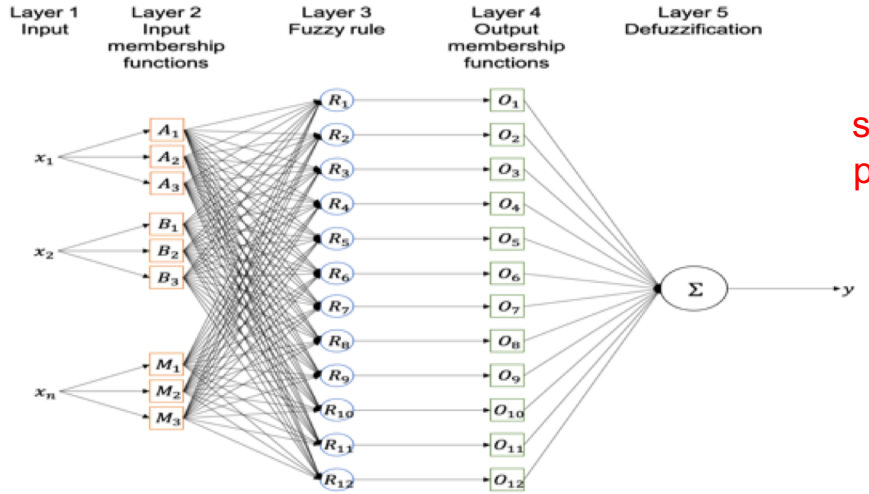
ANFIS MODELLING APPLIED IN BIODIGESTERS

Rego A. S.C.[1], Leite S. A. F.[2], Santos B. F.[1], Leite B. S.[2]

[1]Department of Chemical and Materials Engineering (DEQM), Pontifical Catholic University of Rio de Janeiro (PUC-Rio), Rio de Janeiro – RJ, Brazil.
[2]Institute of Science and Technology, Universidade Federal de Viçosa (UFV- Campus Florestal), Florestal, MG, Brazil; sibeleaugusta@ufv.br



- Biogas production (BVP)
- Digested effluent
  - → pH
  - → FOS/TAC



The modelling strategies used had promising results to predict BVP 24 h ahead.

Model performance:
R^2: 0.998;
RMSE: 2.51E-1

Rice Husk and Pig Manure → Effluent Mixture → Biodigestion Process → Process Monitoring Data → Neural Models → Output results → BVP 24 h in advance

Rice and Swine Meet production
↓
Important activities (Brazil)
↓
Hight amount of residues produced
↓
Potential use in codigestion for energy production

"The goal of this work was: improve the use of neural network models in order to predict biogas generation, as a function of monitored parameters and propose a capable tool to control the process and optimize biogas generation."

Methodology Strategy: Biodigestion runs; data collection (process parameters); neural models architecture and model evaluation- determination coefficient (R^2) and root mean square error (RMSE).

XXIV International Conference on Chemical Reactors CHEMREACTOR-24
September 12 - 17, 2021