Extension Of Adm1 For Modeling Unsteady Anaerobic Reactor

Durmus Cesur
GIS/Database Administrator, Information Technology Division, San Antonio River Authority, San Antonio, TX

Abstract:
There are many models developed for AD process. These range from mass-balance approach to knowledge models. Each of these models has their advantages and disadvantages. Their applicability limited by time, expertise (knowledge of the process structure), and available data. The models developed are generally applicable for certain cases. Generic dynamic model development based on the process dynamics, application and extension of the models for different cases, such as different reactor types, environmental conditions, organic waste types for the AD process are needed (Chynoweth et al. 1998, Batstone et al. 2002). In this paper, extension/modification/implementation of ADM1 model for Colorado Pork Anaerobic Digester will be made. Accuracy of the extended/modified ADM1 model for Colorado Pork reactor process will be evaluated. The model extension includes identification and estimation of AD parameters for piggery waste, methodology to solve for quasi steady state (i.e., variation in hydraulic retention time, HRT) and to estimate the increase in retention time caused by accumulation of particulate matter in the reactor. The reasons for the differences between the modeled and observed values will be examined. The structure and implementation of ADM1 model for the simulation of Colorado Pork Anaerobic Digester is presented in the proposal.