

Anaerobic Digestion Model No.1 (ADM1)

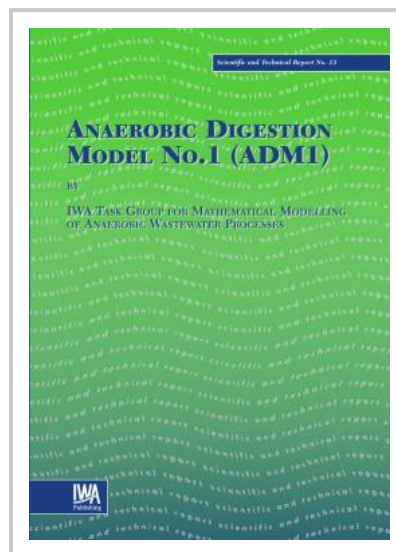
The IWA Task Group for Mathematical Modelling of Anaerobic Digestion Processes was created with the aim to produce a generic model and common platform for dynamic simulations of a variety of anaerobic processes. This book presents the outcome of this undertaking and is the result of four years collaborative work by a number of international experts from various fields of anaerobic process technology. The purpose of this approach is to provide a unified basis for anaerobic digestion modelling. It is hoped this will promote increased application of modelling and simulation as a tool for research, design, operation and optimisation of anaerobic processes worldwide. This model was developed on the basis of the extensive but often disparate work in modelling and simulation of anaerobic digestion systems over the last twenty years.

In developing ADM1, the Task Group have tried to establish common nomenclature, units and model structure, consistent with existing anaerobic modelling literature and the popular activated sludge models (See Activated Sludge Models: ASM1, ASM2, ASM2d and ASM3, IWA Publishing, 2000, ISBN: 1900222248).

As such, it is intended to promote widespread application of simulation from domestic (wastewater and sludge) treatment systems to specialised industrial applications.

Outputs from the model include common process variables such as gas flow and composition, pH, separate organic acids, and ammonium. The structure has been devised to encourage specific extensions or modifications where required, but still maintain a common platform.

During development the model has been successfully tested on a range of systems from full-scale waste sludge digestion to laboratory-scale thermophilic high-rate UASB reactors. The model structure is presented in a readily applicable matrix format for implementation in many available differential equation solvers. It is expected that the model will be available as part of commercial wastewater simulation packages. ADM1 will be a valuable information source for practising engineers working in water treatment (both domestic and industrial) as well as academic researchers and students in Environmental Engineering and Science, Civil and Sanitary Engineering, Biotechnology, and Chemical and Process Engineering departments.



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