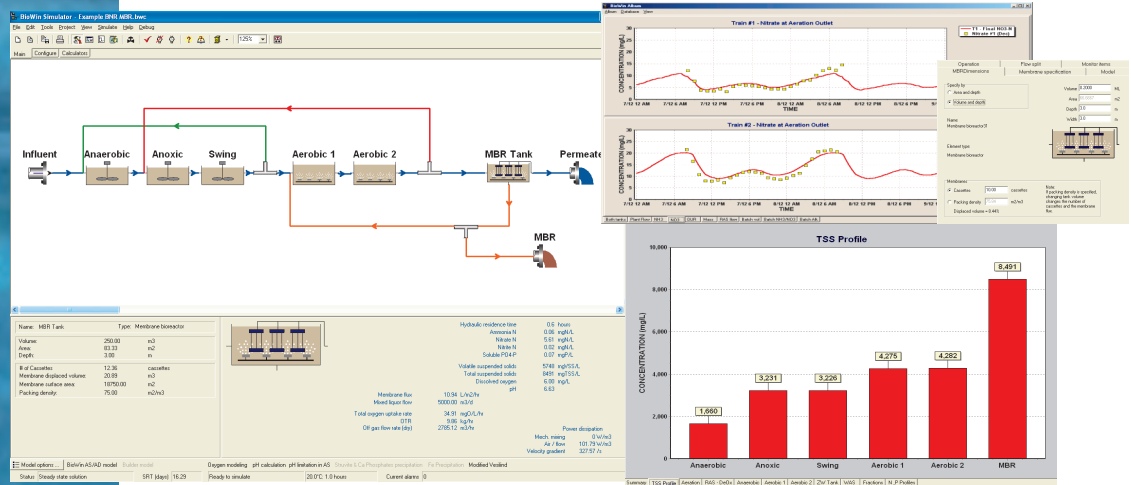


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FULL PLANT EDITION

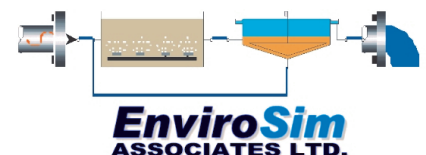
The only simulator that...

- Contains an integrated biological model for BNR activated sludge, fermenters, MBBR & IFAS systems, and anaerobic digesters.
- Models pH changes (not only alkalinity!) through the whole plant, in the liquid and the sludge line as well as sidestream processes.
- Provides accurate predictions with a variety of additional carbon sources by using specific components and a specific methanol-utilizing biomass population.
- Predicts struvite and hydroxyapatite formation.
- Predicts anaerobic digester pH and biogas composition including CO₂, CH₄ and H₂.
- Estimates how much ammonia and CO₂ is stripped from reactors, depending on pH.
- Includes dynamic settling tank state point analysis diagrams.



- Contains the best default parameters from the latest research publications and calibration to full plant data.
- Comes with a technically superior single model matrix (as opposed to interfacing multiple unit process models). This extensive and comprehensive solution results in greatly reduced calibration effort and more accurate designs.
- Is developed as a design and operations tool for engineers.
- Is powerful yet easy to use, delivers outstanding customer support and provides a tremendous return on investment.

Modeling Power and Precision



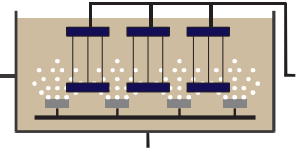
BioWin Version 3.1

FULL PLANT EDITION

Membrane Bioreactor (MBR)

BioWin now includes a **new** MBR module that simplifies system setup, and offers comprehensive operating and performance information.

Membrane modules are characterized by the surface area and displaced volume per module (cartridge or cassette). The user specifies either the number of installed modules or the packing density (membrane area per unit volume). BioWin accounts for displaced liquid volume.



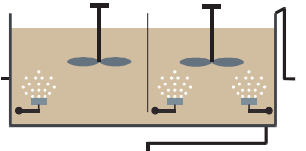
The module provides many useful features; for example, independent membrane solids and colloidal retention settings. Output information on physical data (e.g. number of modules, surface area, displaced volume) and operating data (e.g. membrane flux) is accessed easily, in addition to standard bioreactor information (e.g. MLSS, MLVSS).

Sequencing Bioreactor (SBR)

BioWin offers the most flexible and comprehensive SBR modelling capabilities and now includes a **fast** approximation technique which allows engineers to estimate a solution before applying more rigorous refinements. Now settling operations in an SBR can be simulated with:

1. all state variables, all biological / chemical reactions, and pH in all cells.
2. all state variables and pH calculations, no biological and kinetic chemical reactions.
3. only solids settling equations in all cells [**fast** approximation]

This engineering pragmatism adds to the existing flexible and comprehensive array of SBR modeling which includes; main zone settling modelled as thirty reactive cells for better representation in continuous feed systems, multiple SBR arrangements with hydraulically linked “always-mixed” and “mix/settled” prezone reactors, “Modified Vesilind” or “Double Exponential” settling models and, detailed modelling of aeration systems and gas liquid mass transfer.



Created by process engineers...for process engineers.

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