

WASTEWATER TREATMENT PLANT OPERATIONS MODEL

WATER
OUR FOCUS
OUR BUSINESS
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Blue Plan-it® WWTP Operations Simulator

Operations Guidance Tool for WWTP

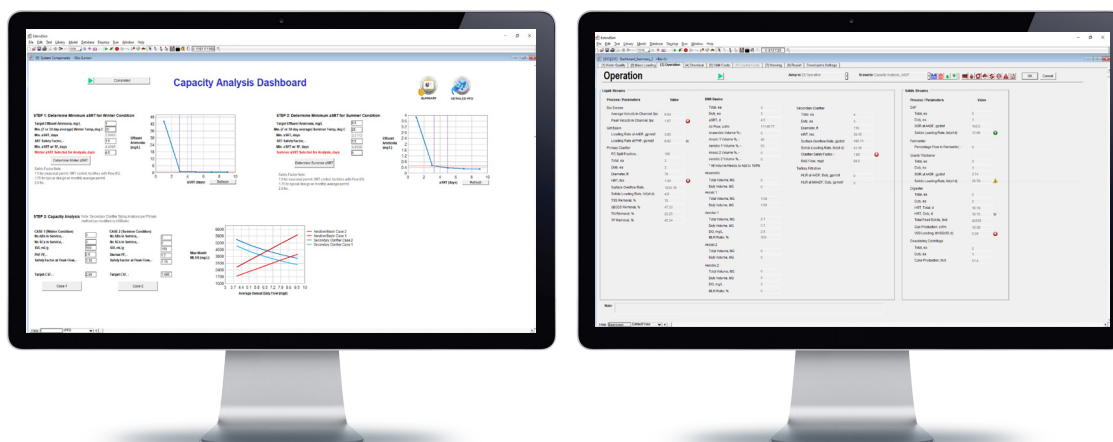
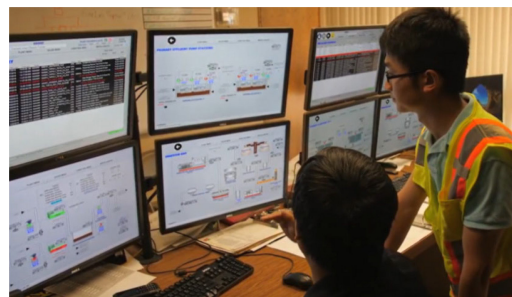
Building on the powerful platform of Blue Plan-it® Decision Support System, Carollo Engineers' WWTP Operations Model is useful tool for wastewater treatment plant managers and operators. On one hand, this tool can be used as a great communication tool in a real time decision support workshop to allow the managers, operators and engineers to **virtually experiment** their facility and understand the impacts of design and operation decisions before implementing them. On the other hand, it offers a simple-to-follow **training tool** for the operators on a day-to-day basis.

The model can be customized with several process flow diagrams in a style similar to SCADA (e.g., an overview, liquid streams, solid streams, more detailed process areas), several useful summary or detail dashboards (e.g., for O&M costs, chemical usage, power consumption, water quality, compliance, warning logs, or info on each individual unit operation). Using the built-in scenario manager, users

can create and manage model runs to assess a wide range of flow and water quality (e.g., BOD, COD, Ammonia, TSS, peaking factors, etc.) conditions. User can turn on and off optional process components to evaluate and optimize operation strategies (e.g., put one or more trains offline, change WAS and RAS flow, adjust swing zone DO setting, turn on and off existing or proposed unit process).

An Operations Simulator for WWTP Operators

The Blue Plan-it® Operations Simulator is a standalone tool for operators to explore the cause and effects of changes to unit processes virtually. This enhances water treatment process knowledge by allowing operators to explore complex relationships among various operational parameters, such as COD, TKN versus Nitrate, oxygen demand versus air requirements, SRT and effluent quality. In this way, it offers a dynamic troubleshooting guide and an easy-to-follow standard operating procedure (SOP). Moreover, it can assist communication between managers and operators. It tracks warning logs and generates a list of notes to inform the operator the actions to take when a given warning is triggered. Different user rights can be assigned to managers and operators to allow convenient updates of the notes to capture institutional knowledge.



Blue Plan-it® Operations Simulator offers a dynamic operator training and troubleshooting guide for WWTPs.

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Key Functionalities

Modeling algorithms for a wide variety of treatment processes have been integrated into the Blue Plan-it® Operations Simulator. It can be quickly customized to match the situation at your facility:

Capacity Analysis

- Determine operational strategy when incoming wastewater flow, concentration, and characteristics change.
- Evaluate impact of number of aeration basins and secondary clarifiers online on effluent water quality.
- Determine impacts of SRT, MLSS, SVI on performance.
- Virtually design and test possible upgrades without building it, optimize the current operation, and determine necessary improvements to postpone plant expansion.
- Optimize air requirement to lower energy consumption.

Carbon Management and Energy Optimization

- Evaluate performance and efficiency of the biological nutrient removal process and energy.
- Determine the best plant operating conditions to minimize energy and chemical costs while meeting the compliance requirements.
- For example, when influent nitrogen loading is higher, determine the adjustment of mixed liquor return ratio or the need of external carbon to meet effluent TN goal.

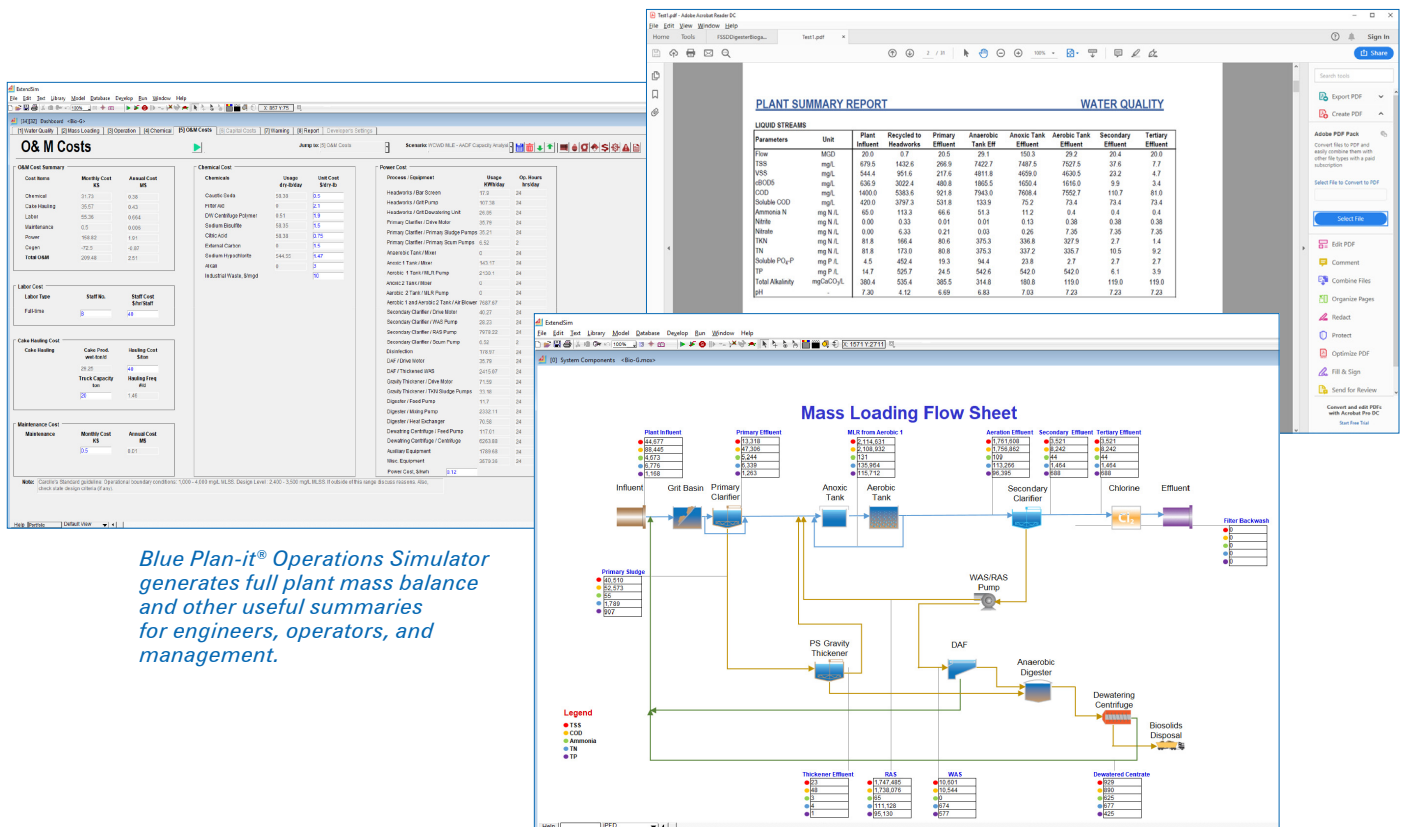
Multipurpose Wastewater Design Tool

- Assist engineers to investigate biosolids management and biogas utilization alternatives.
- Provide an economic feasibility assessment of food waste co-digestion with wastewater plant biosolids.

- Perform treatability assessment and optimization for direct and indirect potable reuse system.
- Assess the formation potential of minerals such as Struvite and Vivianite.

Other Functionalities

- Track chemical usage, power consumption, solids handling, labor, and other O&M costs.
- Generate PDF and Excel reports of model scenarios.
- Generate customizable reports and dashboards for clarifier safety factor and loading mass balance.
- Organize operations data in one central database.
- Import data from external database, Excel or CSV files.
- Generate warning logs. Present an interactive SOP and trouble shooting guide.
- Animated control to turn on and off existing and proposed trains and unit process.



Blue Plan-it® Operations Simulator generates full plant mass balance and other useful summaries for engineers, operators, and management.