

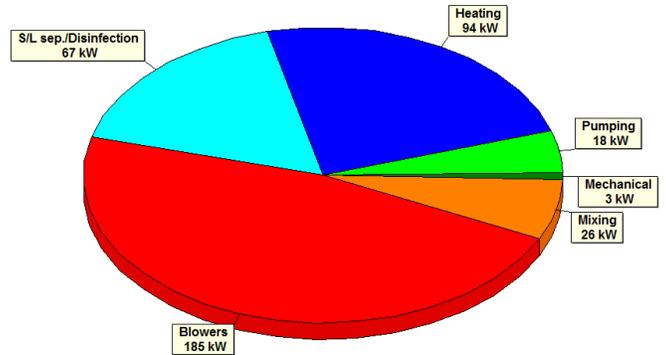
BIOWIN VERSION 5.0

NEW FEATURES + USABILITY IMPROVEMENTS

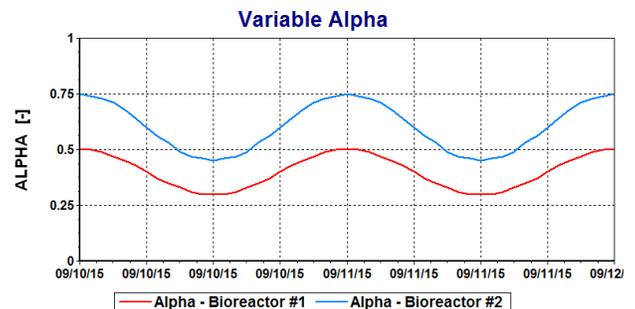
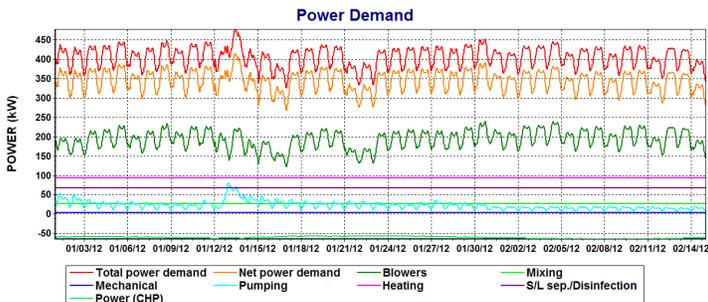
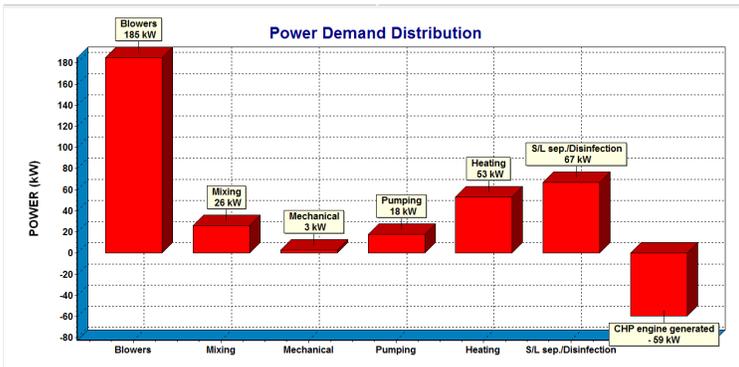
POWER REQUIREMENTS

- BioWin 5.0 enables users to capture a plant-wide inventory of power demand including: Blower Power, Mixing Power, Mechanical Power, Pumping Power, Heating Power, Surface aeration Power, Solid Liquid Separation/Disinfection Power, and HVAC. New output functionality includes the ability to add pre-defined power tables and generate power/energy use plots automatically.
- You can specify whether an aerated element is part of a group of bioreactors supplied by a common blower. BioWin will calculate blower power requirements taking into account factors such as inlet air temperature and relative humidity, pressure losses in the air delivery system etc. and running total energy consumption (in kWh).

Power Demand Distribution



- A pump element has been added to track the power required to pump various flows for a process flowsheet. BioWin accounts for detailed factors such as pipe material and diameter for dynamic head losses. 
- BioWin calculates the amount of power required to heat anaerobic digesters, accounting for parameters such as boiler efficiency and daily heat loss. Explore onsite power generation and heat recovery via use of a digester's biogas in a CHP engine and specify the fate of the generated power and heat.
- BioWin tracks all of these power requirements, and allows easy tracking of daily, monthly, yearly, and running total energy consumption (in kWh).



THE ENVIROSIM TEAM

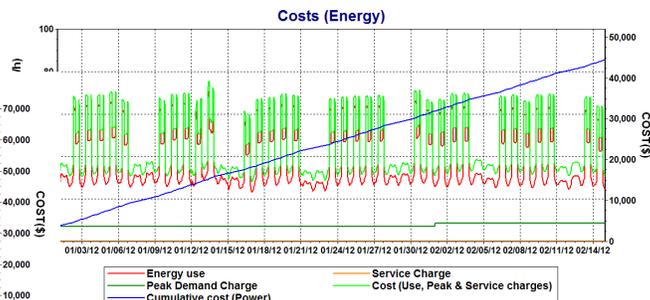
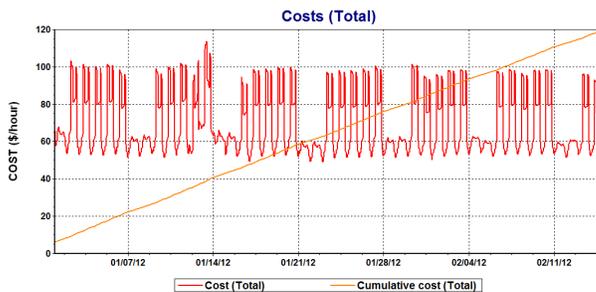
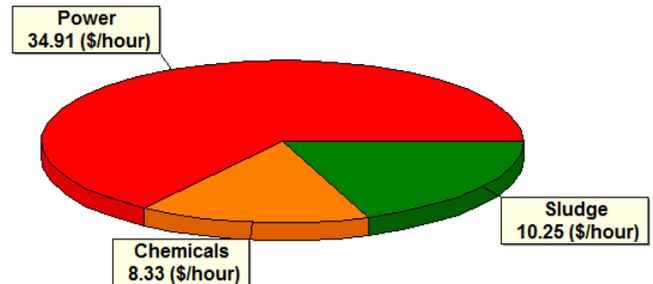
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BIOWIN VERSION 5.0

NEW FEATURES + USABILITY IMPROVEMENTS

OPERATING COSTS

- Track and totalize operating costs associated with energy consumption, consumption of chemicals/consumables and sludge disposal.
- New output functionality includes the ability to add pre-defined cost tables and generate cost plots automatically.
- BioWin 5.0 includes the facility to easily implement up to three different daily electricity tariff rates of the day (off-peak, mid-peak, and peak rates), and the daily pattern can be different across two seasons (e.g. summer and winter). Monthly peak demand charges and base utility charges can also be factored into the energy cost analysis.



Season	On-Peak	Mid-Peak	Off-Peak
Summer	\$ / (kWh) 0.124	\$ / (kWh) 0.088	0.058
Winter	\$ / (kWh) 0.095	\$ / (kWh) 0.041	\$ / (kWh) 0.036

USABILITY IMPROVEMENTS

- Input diffuser coverage as diffuser density, ATAD, or diffuser count. BioWin automatically converts from one basis to another.
- BioWin 5.0 has the ability to vary the alpha and beta parameters used in its aeration calculations with time. Use this option to fine-tune calibration of BioWin's aeration model. Buttons next to the alpha and beta entry fields will rapidly generate a time series of alpha and/or beta.
- Diffuser parameters are now globally applied by default along with new default fine bubble diffuser parameters.
- Diffuser parameters can now be quickly toggled between values representative of fine or coarse bubble diffusers.
- Right-clicking on any pattern input to BioWin now offers two options: **Copy** (copies the pattern without headings) and **Copy All** (copies the pattern with headings).
- Right-clicking on a blank album page opens a new enhanced menu that allows users to add a time series or current value chart directly, along with a power or cost table.

Diffusers

Density (%) 10.00

ATAD

Number of diffusers

