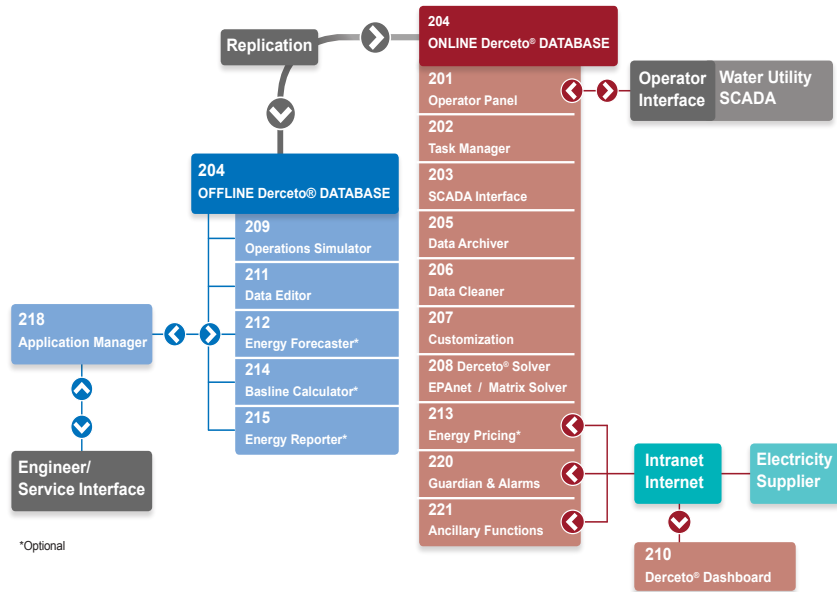


There are many occasions where an operator or an engineer might wish to investigate alternative strategies for optimization without disrupting the live Derceto® Aquadapt™ system. This is where the **Operations Simulator** can be used. It is an offline version of the Operator Panel and a full, independent version of the Aquadapt Solver. Using historical or synchronized real-time data it can be used to:

- ▶ Test “what if” scenarios;
- ▶ Train operators.
- ▶ Analyze the effect of electrical tariff structures
- ▶ Determine the likely impact of capital improvement projects.



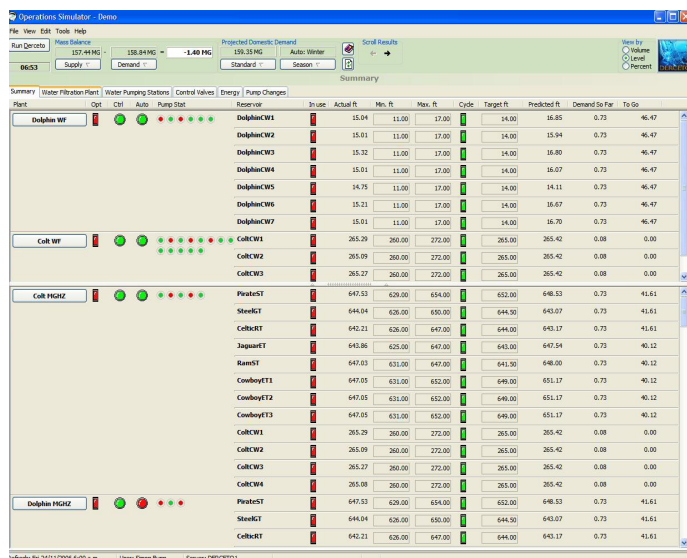
The **Operations Simulator’s** solver runs from the offline database and

during startup can extract real-time data from the online Aquadapt database for a current snapshot of a client’s distribution system, or use data from any selected time period in the Aquadapt software archive.

A separate operator’s user interface allows users to change normal operational parameters as well as some level and flow constraints, which usually require supervisory level access on the live system. Operators can test scenarios such as equipment failure or maintenance schedules, enabling them to see what effect it will have on their system including real-time calculation of cost. They can then investigate effective solutions before applying them to the live environment.

Management staff, engineers and planners can also modify physical characteristics of the distribution system, such as pump curves, storage tank dimensions and electrical tariffs. They can then run the solver to evaluate the operational and cost impact of these proposed changes. In a changing electricity market this will help management

to determine which tariff structure is the most cost effective for their individual system.



Plant	Unit	In Use	Actual ft	Min. ft	Max. ft	Cycle	Target ft	Predicted ft	Demand So Far	To Go
Dolphin WF	DolphinCW1	15.04	11.00	17.00	14.00	16.85	0.73	46.47		
	DolphinCW2	15.01	11.00	17.00	14.00	15.94	0.73	46.47		
	DolphinCW3	15.32	11.00	17.00	14.00	16.80	0.73	46.47		
	DolphinCW4	15.01	11.00	17.00	14.00	16.07	0.73	46.47		
	DolphinCW5	14.75	11.00	17.00	14.00	14.11	0.73	46.47		
	DolphinCW6	15.21	11.00	17.00	14.00	16.47	0.73	46.47		
	DolphinCW7	15.01	11.00	17.00	14.00	16.70	0.73	46.47		
Calk WF	CalkCW1	265.29	260.00	272.00	265.00	265.40	0.08	0.00		
	CalkCW2	265.09	260.00	272.00	265.00	265.40	0.08	0.00		
	CalkCW3	265.27	260.00	272.00	265.00	265.40	0.08	0.00		
Calk HGHZ	PrivateST	647.53	626.00	654.00	652.00	648.53	0.73	41.61		
	SteelCT	644.04	626.00	650.00	644.50	643.07	0.73	41.61		
	CalkRT	642.21	626.00	647.00	644.00	643.17	0.73	41.61		
	JapsanET	643.86	625.00	647.00	643.00	643.54	0.73	40.12		
Dolphin HGHZ	RunST	647.03	631.00	647.00	641.50	648.00	0.73	40.12		
	CowboyET1	647.05	631.00	652.00	649.00	651.17	0.73	40.12		
	CowboyET2	647.05	631.00	652.00	649.00	651.17	0.73	40.12		
	CowboyET3	647.05	631.00	652.00	649.00	651.17	0.73	40.12		
	CalkCW1	265.29	260.00	272.00	265.00	265.40	0.08	0.00		
	CalkCW2	265.09	260.00	272.00	265.00	265.40	0.08	0.00		
	CalkCW3	265.27	260.00	272.00	265.00	265.40	0.08	0.00		
	CalkCW4	265.08	260.00	272.00	265.00	265.40	0.08	0.00		
	PrivateST	647.53	626.00	654.00	652.00	648.53	0.73	41.61		
	SteelCT	644.04	626.00	650.00	644.50	643.07	0.73	41.61		
	CalkRT	642.21	626.00	647.00	644.00	643.17	0.73	41.61		

When running the **Operations Simulator** in synchronized mode users can select the option of receiving regularly updated data from the live system. Operators have the ability to continually work with the most up-to-date information. As a stand-alone application, operators can confidently manipulate settings and run scenarios without affecting the live Aquadapt system.

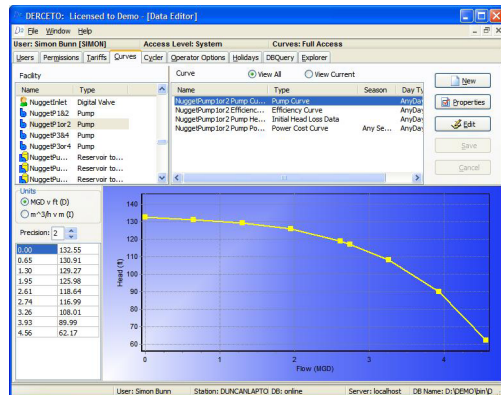
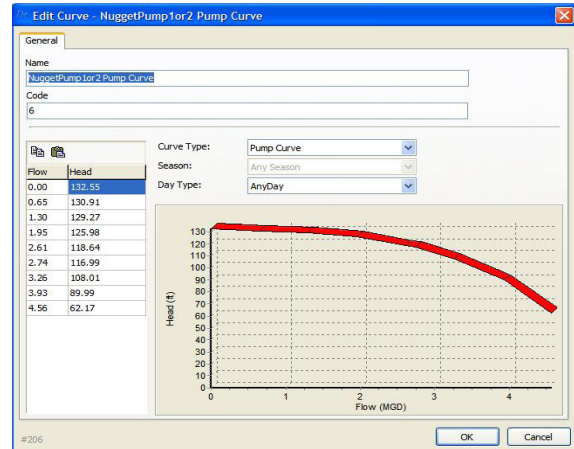
One of the strengths of Aquadapt software is its ability to predict levels and flows 48 hours in advance. It can preemptively identify problems, such as minimum storage, where proactive steps by the operator can lessen the consequences. Having identified the

issue the operator can use the **Operations Simulator** to develop effective counter strategies, often before the problem occurs.

The **Operations Simulator** can also be used as a training tool. As it is a complete reproduction of the Operator Panel it looks and feels like the live system and provides a realistic environment to safely train operators. Training can incorporate everything the live system can do including:

- ▶ Changing pump schedules – by zone or the entire system
- ▶ Setting water treatment plant rates
- ▶ Setting flow and pressure set points
- ▶ Response to alarms and warnings.
- ▶ Operation in different seasons

Operators can also be trained to deal with more infrequent situations such as extreme weather events or plant outages.



The engineer's user interface allows a greater range of changes

to be made including the addition of new physical equipment into the distribution system. The information produced by the Operations Simulator can be used with confidence for project cost/benefit justification and can be exported for further analysis if required.

Most changes can be made using a graphical interface, like the pump curve screen shown left, or through direct SQL access to the simulator database.

Derceto Aquadapt software is the unique real-time, on-line water distribution system optimization package from Derceto, Inc. It schedules pumps, flow control valves and production up to 48 hours in advance. Pump and flow schedules for large distribution systems can be derived in minutes enabling it to operate interactively. Aquadapt software can also be used in real-time energy markets. The Aquadapt system continuously adapts to refine its schedule in real-time in response to changing conditions including demand changes, equipment availability and treatment plant capacity. Aquadapt software also improves water quality by seeking to increase turnover of storage and minimize production flow disturbances. It is backed by an established and fast growing user base and has undergone four major feature upgrades since its inception in 1998. Payback from energy savings is rapid, typically under two years.

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