



OPTIMUM INSTALLATIONS

BURNHAM

BUILDING STATEMENT/CHALLENGE

A corporate energy efficiency initiative, along with skyrocketing energy costs, led the Burnham Institute to seek out energy conservation methods. That led straight to Optimum Energy to optimize their buildings' HVAC energy usage.

Since the founding of the non-profit over 30 years ago, the facility has grown to occupy 9 buildings served by a main central plant, totaling over 210,000 sq. ft., one individual 75,000 sq. ft. facility, and employing over 750 partners. During this time, Burnham has grown to hold some of the world's leading medical researchers in cancer,



neurosciences, and infectious and inflammatory diseases. In fact, the Institute ranks consistently among the world's top 20 organizations for the impact of its work. This research powerhouse is also a huge consumer of energy. Out of the \$90 million annual operating budget, an excess of \$2 million was spent on utility costs.

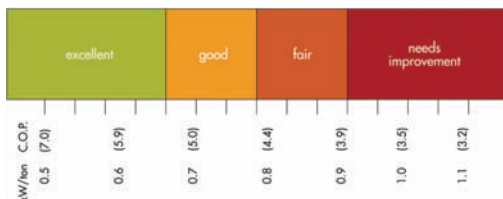
The goals laid out by the facilities department were straightforward: save energy, lower costs, and become a better corporate citizen in the San Diego region. The dollars recovered could be pumped right back into medical research.

RESOLUTION

The Burnham Institute turned to a technology that Maintenance Supervisor, John M. Reed recalled reading about in technical journals. "I remembered seeing an article about technology called the 'Hartman Loop' in an industry HVAC publication several years ago," Reed said, "and how it had been documented as a tool for massive energy savings using all-variable-speed demand-based controls."

That first generation technology, patented and licensed by Tom Hartman, is now the backbone of Optimum Energy's Ultra High Performance HVAC software, known as OptimumHVAC. The first step to reducing Burnham's energy usage was to bring in the San Diego Regional Energy Office to conduct an energy audit. From this audit Optimum Energy was able to

OPTIMUMHVAC FROM OPTIMUM ENERGY



The OptimumHVAC kW/ton assessment chart helps determine the operational efficiency of existing chiller plants. Pre and post efficiency for the two plants were as follows:

Pre retrofit:

Bldg 10 Plant (2x350-tons) = 0.98 kW/ton
 Main Plant (3x450-tons) = 0.87 kW/ton

Post retrofit:

Bldg 10 Plant (2x350-tons) = 0.45 kW/ton
 Main Plant (3x450-tons) = 0.54 kW/ton

“WE’RE ACTUALLY DOCUMENTING SAVINGS OF UP TO \$50,000 A MONTH AND HAVE BEEN SINCE NOVEMBER 2006.”

— JOHN M REED, MAINTENANCE SUPERVISOR

perform their own energy assessment. What was discovered was electrical energy savings of 2.4 million kWh/year, peak demand reduction of 275 kW, and 250,000 therms of gas savings.

Environmentally, the anticipated annual CO₂ reduction was calculated at 3.1 million lbs., in addition to the reduction of dangerous pollutants SO₂ and NO_x. On top of the energy and environmental savings, the local utility company, San Diego Gas and Electric, provided an incentive of over \$460,000 for this retrofit.

The results of implementing the Hartman Loop/OptimumHVAC and other energy saving strategies have exceeded Burnham’s energy savings expectations. “The whole system now works in unison based on the load and adjusts beautifully to save energy and money,” said Reed. “We’re actually documenting savings of up to \$50,000 a month and have been since November 2006.”

COST/BENEFIT INFORMATION

The cost/benefit information is a quick snapshot of the building savings realized year to date.

- A utility rebate of \$460,000.
- Annual electrical usage savings: 2.4 million kWh.
- Annual gas usage savings over 250,000 therms.
- Annual cost savings for entire project totaled \$290,000/yr.
- Annual CO₂ footprint reduction totaled 3.1 million lbs.
- Year over year electrical usage reduction on the main campus central plant: 32.8%.

Optimum Energy Motto:

Do Good. Do Well. And Prove It.

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- Year over year gas savings reduction for main campus: 56%.
- Year over year electrical usage reduction on building 10 central plant: 60%.
- Year over year gas savings reduction on building 10: 50%.
- Simple payback for entire project: 1.34 years.

ABOUT OPTIMUM ENERGY

Optimum Energy’s reliable, Ultra High Performance HVAC optimization software applications are guaranteed to reduce energy consumption and operating costs with no impact on occupant comfort. OptimumHVAC is based on patented Hartman Technologies and is designed to significantly improve operating efficiencies in centrifugal chilled water plants and variable air volume air handler systems.

OptimumHVAC is delivered in a multi-protocol appliance that is easily connected to, and compatible with, all Building Automation Systems, and can be installed by any licensed mechanical or controls contractor. OptimumHVAC tracks building performance remotely and measures and verifies equipment operations and savings on both a real-time and historical basis via our OptimumHVAC Performance Assurance Services.



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