



BAE Systems High Tech Manufacturing



The Challenge

BAE Systems is a global high technology firm manufacturing flight controls, night vision systems, surveillance and reconnaissance sensors, and secure networked communications equipment. BAE's Lexington, MA facility includes offices, clean rooms, and laboratory environments for the manufacture and assembly of infrared thermal imaging devices. Each space has specific heating, ventilation and air conditioning (HVAC) requirements that are met with a mix of rooftop air-conditioning (AC) units. BAE Systems was seeking to reduce energy costs and enhance the control and operation of their HVAC systems while maintaining strict clean room and manufacturing environmental standards.

The Opportunity

Their utility, National Grid engaged B2Q Associates to identify energy efficiency and equipment performance improvement opportunities by conducting an engineering and cost-benefit analysis to recommend practical, cost-efficient retro-commissioning opportunities. Using the building's automation system (BAS) we collected trend data and plotted it using graphical analysis software to compare actual operation to intended operation, seeking out anomalies, out-of-spec conditions, and energy-efficiency opportunities. Many relatively low cost opportunities to cut energy costs and improve HVAC system performance were identified including repair and recalibration existing equipment and controls.

The Result

Of the many opportunities identified, the majority were no-cost to low-cost requiring changes to control algorithms and sequences of operations for the HVAC units. Total energy savings were calculated at 1,433,976 kWh per year with estimated cost savings of \$215,000 annually with a return on investment of 2.5 years. We also recommended upgrades to the BAS to allow for continuous retro-commissioning and estimated potential additional energy savings of 15% on top of those from the retro-commissioning and optimization of individual HVAC systems. We recommended most, if not all, of the changes could be done by BAE's in-house engineering staff, further improving project's return on investment.