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ENERGY SOLUTIONS

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CASE STUDY

AEROSPACE COMPONENT MANUFACTURER

Client/Facility Type - Aerospace Component Manufacturer

The client manufactures various aerospace components in a complex that is comprised of three separate buildings. The building uses include component manufacturing, core forming and a tool shop. The manufacturing process is 24 hours/day, 5 days/week. Energy/utility expenses are approximately $2.3 million annually including electricity, natural gas, propane and water/sewer.

Energy/Utility Audit Process

A comprehensive site visit and corresponding energy/utility savings assessment was conducted. The following were evaluated to identify potential savings opportunities:

- Energy/utility tariffs
- Available energy efficiency incentives/rebates
- Plant layout, function and operating characteristics
- Review of all manufacturing processes
- Compressed air systems
- Process heating & cooling systems
- Exhaust, ventilation and make-up air systems
- Lighting
- Electric motors & drives
- Energy Management Control System (EMCS)
- Power factor
- HVAC equipment & systems
- Demand control & management
- Water & sewer

Potential energy/utility savings opportunities were identified. The details provided for each measure included (i) scope of work, (ii) capital cost, (iii) energy, utility and operating savings and (iv) project payback period.

Findings

The following savings opportunities were identified:

- **Autoclaves** - Optimize the use of autoclaves.
- **Compressed Air** - Combine and reconfigure the compressed air systems and add automation controls.
- **Energy Management Control System (EMCS)** - Optimize the operating sequence of all connected equipment to gain additional energy savings.
- **Heating Ventilating & Air Conditioning (HVAC)** - Retro-commission various HVAC units.
- **Lighting** – Retrofit existing lighting with more energy efficient alternatives.
- **Power Factor Correction** - Install equipment to increase the electrical power factor to avoid utility penalties.
- **Process Cooling (Water)** - Install VFDs on the process cooling loop. Implement automatic reset of cooling water supply temperature.
- **Process Heating (High Temperature Water)** - Install VFDs on the high temperature process water circulating pumps to reduce energy consumption and to balance the flow of the pumps.
- **Process Heating (Steam)** - Reduce the steam distribution pressure to better match the existing pressure requirements.
- **Process Refrigeration** - Optimize the refrigerant system efficiency through various means.

Client Benefits

Implementation of the energy/utility conservation measures delivers a 7% reduction in annual energy cost, with a 3.7 year payback and a reduction in annual carbon emissions.