Recommissioning is a tune-up for a building’s mechanical system that can help get your building back to peak efficiency, and you can qualify for rebates as part of the package. Read on to learn how our Recommissioning program gets real results.

**Recommissioning Improves Reliability and Saves Energy at Airport’s Energy Management Center**

**Case Study:** Central Chiller Plant and Loop tune-up at the Energy Management Center, Metropolitan Airports Commission, Minneapolis-St. Paul International Airport

**Customer:** Steve Shuppert, Chief Engineer, Metropolitan Airports Commission (MAC) Energy Management Center, Minneapolis-St. Paul International Airport

**Situation Analysis:** The Energy Management Center (EMC) at the Minneapolis-St. Paul International Airport provides non-stop heating and cooling to the Lindbergh Terminal and its concourses, through which nearly 100,000 travelers pass daily. The Metropolitan Airports Commission (MAC), through its Facilities Management Office, operates the EMC’s four 2,000-ton chillers, each with its own cooling tower pumps and piping, which comprise the central chiller system that cools 2.8 million square feet of space in the Lindbergh Terminal and its concourses. Central chiller plants and pumping loops are common in multiple-building settings such as university campuses, hospital complexes and business campuses.

During the summer before the recommissioning project, the EMC chiller plant delivered only about 5,400 tons of cooling, well below its design capacity. In addition, the plant was wasting energy because too much air in the condenser water pipes prevented the cooling towers from taking enough heat out of the chillers. Under these circumstances the system struggled to cool the main Lindbergh Terminal, its concourses and the adjacent nine-story parking ramp.

**FINANCIAL SUMMARY**

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
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<tbody>
<tr>
<td>Estimated total project cost</td>
<td>$488,200</td>
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<td>Xcel Energy rebates earned</td>
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<td>After-rebate cost</td>
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<td>Annual energy saving (electric and gas)</td>
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<td>Payback term</td>
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Challenges:

- Remove system inadequacies to provide comfortable, consistent temperatures in all areas of the main terminal and its concourses
- Solve a serious air entrapment problem in the condenser water system to quiet the system, conserve energy and reduce chiller and pump maintenance issues
- Improve the chilled-water distribution system to increase the cooling capacity of the existing chillers and cooling towers

Required Results:

- Reduce overall energy consumption and costs
- Eliminate air entrapment problem in the condenser water system
- Improve the computerized energy management system that monitors and controls the chillers, pumps and towers
- Cut back on chiller operation without sacrificing temperature control and comfort
- Without using extra pumps, distribute chilled water to the farthest points in the system for consistent comfort in all areas
- Help the operating engineers find ways to operate the system more efficiently
- Bring in adequate fresh air to maintain air indoor quality while reducing fan operation in response to occupancy levels and outside air temperatures

Recommissioning Solutions:

Through our Recommissioning program, the engineering firm toured the EMC chiller plant, evaluated the condition and operation of the mechanical systems, and developed recommendations that would qualify for Recommissioning program rebates. After reviewing the drawings and the physical condition of the EMC chiller plant, the engineering firm presented its assessment, which became the Recommissioning plan. Xcel Energy paid 50 percent of the cost to assess the EMC. The engineering firm and EMC facility engineers implemented the following solutions and earned rebates that covered up to half of the construction cost:
• Installed and calibrated pressure sensors throughout the chilled water distribution system

• Improved the computerized monitoring system, enabling operating engineers to see exactly how much electricity they’re using at all times

• Adjusted and calibrated the existing Variable Air Volume (VAV) boxes throughout the system

• Added or adjusted parts of each loop of the chilled water system, getting better control of pump pressures and of chilled water flow through the coils, and enabling it to operate at maximum efficiency. These changes allow the MAC engineers to rotate or cycle chillers to avoid running all the chillers at once all the time, which they were forced to do before recommissioning

• Improved fan operation, enabling the fans to run less often and more efficiently in response to changes in the cooling loads and the ventilation requirements of the occupied spaces throughout the main terminal and its concourses

The MAC implemented the improvements listed in the Recommissioning plan in three projects or phases. The first phase, which is covered in this case study, focused on improving the condenser water system to eliminate air problems, and on improving water filtration and makeup water control. The second phase included construction of a 3,000-ton chiller plant addition to improve the overall performance of the EMC chiller plant and increase the airport’s cooling capacity. The third phase focused on the chilled water distribution systems outside the EMC.

Benefits and Results:

• **Energy savings:** Reducing chiller head pressures resulted in lower compressor energy consumption and annual savings of an estimated $46,600

• **Operating efficiency:** Four 200 horsepower (hp), 6,000 gallons per-minute (GPM) condenser pumps run much more efficiently because air is no longer trapped in the system. Pump maintenance was drastically reduced

• **Project continuity:** No major service interruptions have occurred during the project

• **Customer/employee satisfaction:** Cooling is more consistent and comfortable, and now the system operates quietly

• **Reliability:** The entire chiller system has had far less downtime and is more reliable

• **Productivity:** The system needs less repair and maintenance time, and additions to the energy management system are providing more information to the operators while giving them more flexibility and control of the entire system

According to Steve Shuppert, the MAC’s chief engineer, the implemented first phase of the Recommissioning plan reached its goal to cool the airport terminal and concourses consistently. “The project was basically painless. It has made life easier; the plant runs better, and the EMC is more successful in terms of serving the the needs of the airport community,” he says.

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**Recommissioning Your Facility is a Two-Step Process**

1. **Diagnosis** — We provide study funding that covers up to 75 percent of the cost of a Recommissioning study, with a maximum potential study rebate of $25,000. The study reviews your facility’s existing mechanical systems and makes recommendations based on the diagnostic assessment. The study details how best to run your building’s current mechanical systems at peak efficiency. You can select your own contractor or choose from our list of providers who have completed a study in the past. We will review the study preapproval application and proposal to determine the amount of your potential study rebate. A typical study shows potential ways to reduce energy costs up to 20 percent.

2. **Implementation** — When you implement the study’s recommendations, you can earn cash rebates that total up to 60 percent of the cost of conservation improvements. You’ll save energy (and money) over the life of your equipment and building systems. In addition, Recommissioning provides education for your staff and guidance for maintaining the efficiency of your building’s mechanical systems.
Act Now to Tune Up Your Building

The goal of Recommissioning is to optimize your existing system with low-cost and no-cost measures, and help you plan for future energy-saving projects down the road. These cost savings can help you meet current budget demands and may even allow for future improvements.

Call our Business Solutions Center at 1-855-839-8862 or visit xcelenergy.com/Recomm to help boost your bottom line through improved performance and energy savings.

Program restrictions may apply.