



How Penn State Health Milton S. Hershey Medical Center reduced power demand by 1.7 million kWh per year with NLine Energy's Microsteam® Turbine

An Energy-Saving Culture

Penn State Health Milton S. Hershey Medical Center (MSHMC) provides adults and children with advanced patient-focused care for cancer, heart, vascular, and neurological conditions. In partnership with the Penn State College of Medicine, faculty and staff at the 640-bed academic medical center continue to create innovative medical advances through research and clinical trials.

When Pennsylvania deregulated the electricity market in 2009, MSHMC wasn't sure what would happen with energy costs. In a proactive move, MSHMC implemented an energy-savings program that had the long-term impact of reducing the medical center's annual energy spend from 14 million in 2010 to roughly 8 million in 2023.

"It was an extended process of implementing a wide array of energy-saving projects," said Kevin. "We converted air handlers from constant volume to variable volume, including associated control upgrades, and we installed various associated heat recovery processes. We also upgraded lighting, which resulted in a 20 percent reduction in energy usage." *(continued)*



▲ Penn State Health selected NLine Energy's Microsteam turbine to help the Milton S. Hershey Medical Center save energy.

Project Statistics	
Application	Pressure-Reducing Station
Steam Flows	12,000+ lb/hr
Inlet / Outlet Pressures	150 psig / 15 psig
Generation Capacity	69%
Availability	100%
Project Benefits	
Annual Generation	1,667,520 kWh
20-Year Generation	33.4 GWh
Annual Savings	\$135,000+
20-Year Savings	\$3.14MM
20-Year GHG Savings	22,700+ tons of CO ₂ e
Incentives	\$600,000+
Simple Payback	2.1 years



If you want to reduce your institution's reliance on the electrical grid by harnessing the power of steam with a turbine, you should talk to NLine Energy."

Kevin Kanoff
Campus Energy Engineer



To further reduce energy usage, MSHMC installed a 7.9-megawatt combustion turbine in 2018. That turbine was a combined heat-and-power unit, which immediately produced about half of the electricity used by the medical center.

In addition to having a combustion turbine in operation, part of the medical center's energy savings program involved evaluating the steam distribution system and maintaining the steam traps associated with the system. After studying the system, Kevin noticed a significant amount of wasted energy during the pressure reduction process, and he knew he could do something about that.

"Having success with our larger turbine unit, I looked at alternative ways to reduce pressure," said Kevin, "and I came across NLine Energy's Microsteam® turbine that did just that."

Increased Energy Savings with NLine Energy

NLine Energy's Microsteam® MST275 turbine is a compact energy recovery system that generates electricity from the pressure and flow energy previously wasted through a steam system's pressure-reducing valve. This was exactly what Kevin was looking for.

"Once I identified NLine Energy's quarter-megawatt turbine as a solution, I had to go through our institution's processes to approve capital funding," said Kevin. "The NLine team was extremely supportive of that process and provided the information I needed to get through the lengthy funding process."

As soon as the funding was approved, the NLine team stepped in with a turnkey process of installing the turbine. Even after installation, the team remains available to provide support and perform preventative maintenance tasks through an ongoing service agreement. Kevin considers the project to be such a success that he hopes to install turbines in other MSHMC buildings.

"The project is a huge success now that it's generating power around the clock," said Kevin. "Everything is functioning as expected."

Results

Efficient Energy Creation

"NLine is a key contributor to helping us harness energy that would have otherwise been wasted," said Kevin. "Now, we have the ability to create our own clean energy, and we can do it with a high level of efficiency."

Dramatic Reduction in Power Demand

Since its installation in early 2023, NLine's turbine generates power all year in parallel with the steam flow used in the hospital, reducing its power use by 1.7 million kWh per year.

Reliable Partnership

"The NLine team has been a reliable partner in our efforts to reduce our energy usage," said Kevin. "They were patient during the planning and funding process and helped us complete the project."

"No Brainer" Project

Kevin secured funds from Pennsylvania's Act 129 Electric Company Energy Efficiency Programs and tax credits from the Federal Inflation Reduction Act. These incentives paid for 60 percent of the project, making it a "no-brainer."