



Empowering you to make
smart energy choices

BUSINESS ENERGY SOLUTIONS

ENERGY EFFICIENCY CASE STUDY: CNC Software, Inc., Tolland, CT

This program is for business customers planning new construction, major renovations, new production or process equipment, or replacement of existing equipment near the end of its useful life. Benefits include financial incentives to offset the premium costs associated with energy-efficient technology. This program is one of several innovative solutions offered by Energize Connecticut and administered by Connecticut's utility companies.

To find energy solutions for your business, call 877-WISE-USE (877-947-3873) or visit: EnergizeCT.com

Energize Connecticut and Eversource Helped CNC Software:

- Save approximately \$6,430 and 40,401 kilowatt-hours annually.
- Defray their investment with a \$17,517 incentive.
- Achieve a lifetime savings of approximately 571,002 kilowatt-hours.

The electricity saved over this project's lifetime is equivalent to:

- 23,523 gallons of oil not burned, or
- 306 tons of carbon dioxide (CO²) emissions avoided, or
- 143 tons of coal not burned, or
- 68 homes provided with electricity for one year, or
- 53 cars taken off the roads.



VARIABLE FREQUENCY DRIVE CONTROLS ON GROUND-WATER SOURCE HEAT PUMPS REDUCE ELECTRICITY USE.

Background

An original technology innovator, CNC Software has evolved from serving the needs of small companies since 1983 to supporting the precision machining requirements of Fortune 500 companies today with world-class software to drive CNC (computer numerically controlled) machinery. This privately held, family-run firm is renowned for providing state-of-the-art software tools for CAD/CAM manufacturing markets and for its Mastercam product line, featuring the most widely used CAD/CAM software in the world, long regarded as the program of choice for CNC applications. The company's goal is to provide superior products that can solve all manner of design and problems, from the simple to the complex, and to give its customers the additional benefit of exceptional support and service.

With a staff of 115 employees, CNC also prides itself in being a conscientious corporate citizen. Its efforts along these lines include minimizing its environmental impact by maximizing efficiency and employing as many local individuals and using as many locally manufactured products as possible. Also, CNC permits people to work from home whenever possible to reduce energy use and pollution.

The Challenge

Just as it strives to be ahead of the curve in software design and production, CNC is continually endeavoring to keep its operation as energy efficient and environmentally friendly as possible while making employee comfort one of its top priorities, with a radiant heated floor in its building and a window in every office. This future-oriented approach has been reflected in both the design and upgrading of the company's facilities throughout its history. For example, CNC uses geothermal heat pumps to heat and cool both its previous plant, completed in 1989, and its present one, which was built a decade later. The new plant also uses solar energy. In addition to lowering its operating costs, Mark Summers says the company's ultimate objective is to demonstrate the practicality of such energy-saving measures and to "make a statement that if it's something that can be done, people should do it — to kind of walk the walk."



GEOTHERMAL HEAT PUMPS IN THE ADDITION, LIKE THE MAIN BUILDING, ARE A KEY PIECE OF CNC'S ONGOING EFFORTS TO REDUCE ENERGY CONSUMPTION.



Naturally, CNC wanted to incorporate any new energy efficiency features that might be available into a 13,000 square-foot addition it was planning in 2008 to accommodate the continued growth of its work force. While options of this sort may be more expensive up front, “over the life of this building, there are considerable savings to be had from them, so we

“Any energy-saving measure is certainly worth looking at. If someone’s willing to help you do that, it certainly helps you make that decision.”
— Mark Summers,
President,
CNC Software

businesses to incorporate energy-efficiency measures into the initial building design to save the most money. The program uses a financial incentive structure to help cover the incremental costs compared to more conventional, less energy-efficient technology.

considered it a long-term investment,” Summers noted. Before designing the addition, CNC contacted Eversource, with whom it had previously worked to reduce energy consumption. That’s when CNC learned about the new equipment/new construction program — an option that enables

The Solution

Lighting Systems and Controls

A significant energy-saving measure facilitated through the program was the design and installation of a high-performance lighting system to light office, training and manufacturing lab spaces. The fixtures installed use .76 watts per square foot — approximately 30 percent less than conventional systems would use. CNC also installed occupancy sensors that automatically turn off the lights when an enclosed area is unoccupied. The total annual energy savings was 26,172 kilowatt-hours, with cost savings estimated at \$4,270 per year.

Total lifetime savings from energy-efficient lighting and lighting controls: 351,070 kilowatt-hours.

Heating and Cooling

The program also enabled CNC to install high-efficiency ground-loop water source heat pumps for both heating and cooling. By utilizing loop piping in vertical wells, these heat pumps derive heat from stable underground earth temperatures and reject it when switched to a cooling mode. Additional savings are anticipated from a 600 CFM (cubic feet per minute) energy recovery ventilation unit that reclaims approximately 70 percent



of the energy that would otherwise be exhausted. The unit comes equipped with a CO² ventilation control sensor that reduces any oversupply of outside air. These combined climate-control measures are expected to yield annual energy savings of 4,923 kilowatt-hours, which should amount to approximately \$870 a year.

Total lifetime savings from energy-efficient heating and cooling systems: 61,797 kilowatt-hours

Pump Controls and Motors

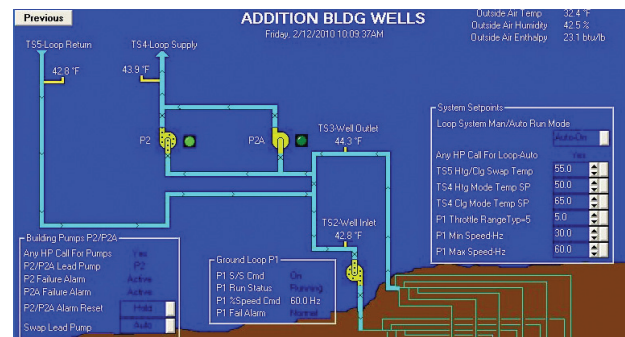
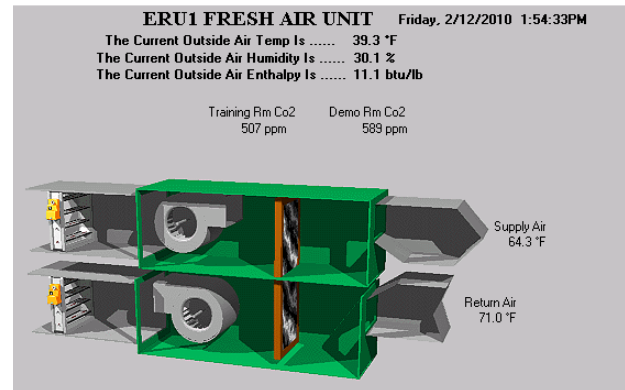
Other energy-saving steps included the installation of variable frequency drive controls on groundloop water pumps and the heat pump fans, reducing electricity use by modulating motor and fan speeds to match load sizes, and upgrading motors to high efficiency ones. Total annual energy savings from these devices are estimated at 9,306 kilowatt-hours, resulting in projected energy savings of \$1,290 a year.

Total lifetime savings from energy-pump controls and motors: 147,650 kilowatt-hours

Benefits

- Energize Connecticut's offers a variety of incentive structures to offset the cost of energy-efficient equipment that can reduce capital and operating costs.
- Energy upgrades translate into customer savings on monthly electric bills for the life of the equipment.
- Eversource provides oversight and inspection.

(All commercial and industrial customers are eligible. Call 1-877-WISE-USE to discuss potential financing options. Program measures subject to change without notice.)



REPORTS SHOW THE CO² VENTILATION CONTROL SENSOR REDUCING ANY OVERSUPPLY OF OUTSIDE AIR.

The Bottom Line

Total cost for all project	
upgrade measures:	\$ 18,567
Energize Connecticut incentive paid to CNC Software, Inc.:	\$ (17,517)
Annual estimated electric savings based on rates at time of project:	\$ 6,430

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