

Carolina CAT projects almost \$140,000 annual savings while reducing energy footprint

By Kimberly Conley

CHARLOTTE – In September of 2006, Carolina CAT set out to reduce its utility costs, which totaled more than \$380,000 per year. Its 6 Sigma team (as Caterpillar spells it) embarked upon the arduous challenge and set a goal to reduce energy consumption by 5 percent.

[Carolina CAT](#), a dealer for Caterpillar, Inc., provides solutions for heavy equipment, compact equipment, rental options, power generation, truck engines and parts and services.

They enlisted the help of the [North Carolina State University Industrial Extension Service](#) (IES) energy program to support their mission. The 6 Sigma team determined that there were savings to be had but they needed more facts to determine the best opportunity for justifying the initial investment.

IES conducted three energy efficiency surveys including proposed cost savings, the payback period and environmental benefits. The surveys conducted were analyses of the lighting systems; heating, ventilation, air conditioning (HVAC) systems; and compressed air systems. Both electricity and natural gas usage were evaluated, and recommendations for reducing each were specified.



Jose Duque of Carolina Cat and Eric Soderberg of NC State University at Carolina Cat.

“Industries should take advantage of the services that NC State provides. They helped us to focus on the things we could change and saved us a lot of time,” said Jose Duque, 6 Sigma Master Black Belt for Carolina CAT. “We needed to know what we could afford to do that would have the biggest impact.”

Carolina CAT took NC State’s recommendations and put them into action. The company projects a 40 percent reduction in annual gas usage by using programmable thermostats with minimum and maximum settings. They have also exchanged fluorescent fixtures with T5 lamps, which actually provide more light while using less energy. Carolina CAT has reduced its lighting footprint by 52 percent.

The energy reductions are so great that they expect a return on capital investments in 1 ½ years. The projected annual savings for year one, which include federal tax credits, is \$140,000. In subsequent years, they expect to save more than \$115,000 annually.

And as for their 5 percent energy reduction, they will exceed it by 20 percent when all savings recommendations are implemented. “Carolina CAT is a great example of the kind of energy savings a company can achieve with a great return on investment,” said Eric Soderberg, IES energy partner. “It’s good for the company’s bottom line and it’s good for conserving natural resources and reducing environmental impact.”

Six Sigma and Master Black Belts

Six Sigma is a business philosophy focusing on continuous improvement, based on a statistical measure of variability. In a service or manufacturing environment, a Six Sigma (typical spelling) process would be virtually defect-free. In a million operations of a process, Six Sigma allows only 3.4 defects. Most companies operate at four sigma, which allows 6,000 defects per million operations of a process.

Master Black Belts are Six Sigma quality experts who are responsible for the strategic implementations within an organization. Master Black Belt main responsibilities include training and mentoring of black and green belts; helping to prioritize, select and charter high-impact projects; maintaining the integrity of measurements, improvements and tollgates; and developing, maintaining and revising training material.