



NJME is a technical assistance program for NJ industries that is operated through the Center for Advanced Energy Systems (CAES) at Rutgers, The State University of New Jersey.

Funded by the New Jersey Department of Environmental Protection's Office of Pollution Prevention and Right to Know, the purpose of the program is to improve the competitiveness and efficiency of New Jersey companies, while also reducing the impact on the environment. NJME accomplishes this by promoting energy efficiency and pollution prevention.

For more information:

**New Jersey Program for
Manufacturing Excellence**

73 Brett Road

Piscataway, NJ 08854

732-445-5540

njme@caes.rutgers.edu

www.njme.rutgers.edu

Eastern Tea: NJME Brings Lighting and Compressed Air Savings to Prominent Tea Company

Summary

The Eastern Tea Corporation has offered great tasting teas to millions of Americans for over 28 years. Eastern Tea Corp was the first company to offer decaffeinated teas. Eastern Tea continues to expand its line of teas to include flavors from around the world. The **New Jersey Manufacturing Excellence** program, operated by Rutgers University, worked with Eastern Tea to identify solutions for energy and cost savings as well as the minimization of pollution; recommendations are projected to yield up to a 11% reduction in electricity expenses and up to an 85 ton reduction in carbon emissions annually.

Company Background

Eastern Tea boasts an assortment of flavorful teas from around the world, all the while maintaining the credo of decaffeination. Eastern Tea's reported energy usage for the 2005 year was approximately 1,492,640 kWh of electricity and 242,050 Therms of natural gas, making a combined 6,133 MMBtu of total energy consumption, and \$175,505 in utility costs.

Assessment Approach

The NJME team of engineers conducted an assessment of Eastern Tea in March 2007. Once recommendations were thoroughly reviewed, they were compiled in a report by the director and presented to Eastern Tea's plant managers in May 2007.

Energy Conservation and Awareness

- During the assessment, NJME noticed that the numerous exit signs throughout the facility were using incandescent lamps. Typically exit signs use fluorescent or incandescent lamps which both consume 10 or more watts per bulb than LED exit signs depending on the quality. NJME realized the opportunity to replace these lamps with LED retrofits, which would increase efficiency as well as the longevity of the bulbs, decreasing the frequency of maintenance.
- NJME noticed that the 150 HP and 60 HP compressors located in the back warehouse were drawing air from and exhausting into the same room. By ducting the intake it would allow for a cooler air supply, the energy required for the compressors to reach a given operating pressure is reduced, since cooler air is usually denser and requires less work. In addition the hot exhaust from the compressor could also be used for space heating in the winter offsetting some of the facility's heating load.
- While on the tour of the facility, NJME noticed that the warehouse was using 400W Mercury Vapor lights. New high-bay fluorescent lights would not only improve the CRI (color rendering index) of lighting, but in addition, alleviate energy costs.
- NJME noticed that the company was using T12 fluorescent lamps in their office hallways and bathrooms. These lamps use old inefficient magnetic ballasts. NJME recommends switching to T8 lamps that run on a much more efficient electronic ballast.

Projects Identified

Below is a table citing opportunities for reducing energy consumption and pollution at the facility that NJME observed during the assessment:

Description	Annual Resource Savings	CO ₂ Reduction (Tons/yr)	Annual Cost Savings (\$)	Imp. Cost (\$)	Payback Period (years)
Current Exit Sign Lamps with LED Lamps	3,434 kWh/yr	1.22 tons/yr	\$1,531/yr	\$486	3.8 months
Move Air Compressor Intake and Exhaust Locations	4,735.73 kWh/yr	27.23 tons/yr	\$ 7,879/yr	\$2,800	4.3 months
Replace HID Lights With T8 Fluorescent Lights	62,470 kWh/yr	22.17 tons/yr	\$7,670/yr	\$12,312.50	19.2 months
Replace T12 lamps with T8 lamps	5,000 kWh/yr	1.78 tons/yr	\$720/yr	\$3,745	5.2 yrs
TOTAL	75,639.73 kWh	52.4 tons	\$17,800	\$19,343.50	1.09 yrs

Results

Twenty months after the report was submitted to Eastern Tea, NJME is proud to say that the above **4** assessment recommendations have all been implemented.

When asked about the status of these recommendations, Eastern Tea responded by saying that decisions were quickly made about implementing them, as they felt NJME provided them with sufficient information and savings benefits to move forward. The three lighting recommendations were the first to be granted and implemented, as Eastern Tea felt that improvements to their lighting conditions, in correlation with NJME's suggestions, were long overdue. The ducting of outside air to the compressors and exhaust air to other parts of the facility has been approved as well; the company is now working on the logistics of the venture.

Our contact at Eastern Tea obliged to comment on the professionalism exhibited by NJME during the assessment as well as in the report, saying that it would definitely recommend the team to other facilities. By NJME's estimation, Eastern Tea could save approximately **10%** on its annual energy costs, an enormous improvement for any manufacturing firm.

