

The Spruance Plant, located at Richmond, Virginia, is a large and diversified manufacturing facility for specialty fibers, nonwoven sheet products, and engineering resins. The site has had an aggressive energy management program for many years, with the plant's Power organization providing technical and organizational leadership. Two particularly notable long-term programs which were completed in 2006 were 1) improved powerhouse efficiency by use of a sophisticated Excel optimization model, and 2) a site steam trap management program, in which Power personnel accepted the responsibility for inspection and repairs of 4,000 steam traps throughout the site including Power and manufacturing areas. The technical approach for the powerhouse optimization program was, using plant and corporate expertise, to build performance models of key power plant systems (generators, chillers, compressors, etc.) in Excel. Using process data add-ins to provide plant data and optimization tools, the application advises plant operators and managers of the best system loadings, as a function of plant loads and electrical price changes. The approach for trap management was to use Six Sigma techniques to analyze the opportunities for improvement, determine the best solutions, and verify the program benefits. These accomplishments have improved knowledge of the best operating strategies in Power and reinforced the importance of efficient operations in the manufacturing areas. The optimization program has set a new standard in DuPont for implementing optimization techniques using desktop software tools. The trap management program required effective teamwork between management, craftsmen, and engineering. A sustained site communication plan has built site understanding of energy management needs and benefits. Both programs have direct application at other companies in the chemical industry. The software add-ins used in the Excel optimization model exist for most brands of process control software. The organizational challenges met in the steam trap management program are common to many manufacturing sites. Annualized energy savings were 3.2%, equivalent to 136,406 MMBtu, with associated CO<sub>2</sub> emissions reductions of 7,912 tons.

**AMERICAN CHEMISTRY COUNCIL**  
**RESPONSIBLE CARE® AWARDS**  
**ENERGY EFFICIENCY AWARD PROGRAM**  
**FOR THE YEAR 2006**  
**APPLICATION FORM**

NOTE: All information requested on this form must be provided.

Company    E. I. DuPont de Nemours & Co., Inc.

Nominated Entity    E. I. DuPont de Nemours & Co., Inc.

Address    1007 Market Street, Brandywine Bldg Rm 9442

City, State, Zip    Wilmington, DE 19898

Title of Entry    Energy Management Achievements by Spruance Plant Power Org

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**ABSTRACT.** Provide a brief abstract of the nomination.

The Spruance Plant, located at Richmond, VA, is a large and diversified manufacturing facility for specialty fibers, nonwoven sheet products, and engineering resins. The site has had an aggressive energy management program for several years, but the production demands have made it difficult for manufacturing areas to fully participate. During this period, aggressive leadership in the plant's Power organization, particularly in the areas power plant optimization and site steam trap management, have delivered major improvements and been examples for the site to emulate.

**For the activity being nominated, please provide information in each of the seven categories below.**

The site's Power organization has provided technical and organizational leadership to the site's energy management program. Two particularly notable achievements were

- implementing improved powerhouse efficiency by use of a sophisticated Excel optimization model, and
- implementation of site steam trap management program where Power personnel accepted the responsibility for inspection and repairs of 4,000 steam traps.
- ~~sharing Power expertise in trap management to various manufacturing areas.~~

These programs resulted in substantial savings, as follows:

Provide either (a) or (b); AND provide (c) and (d) for all nominations.

	(a)	<b>OR</b>	(b)	<i>and</i>	(c)	<b>AND</b>	(d) <sup>Note</sup>
Project Start-Up Date	2006 vs. 2005 Annualized % Energy Savings		2006 vs. 2005 Annualized % Energy Savings Per Unit of Production		Annualized Energy Saved in 2006 (MMBtu/Yr.)		Annualized Net CO <sub>2</sub> And Other GHG Emissions Reduction (Tons CO <sub>2</sub> or CO <sub>2</sub> Equiv)
2006	3.2%				136406 MMBtu/Yr.		7912 Tons CO <sub>2</sub> /Yr.

The basis of this savings data are validated calculations from associated Six Sigma projects.

The technical approach for the powerhouse optimization program was, using plant and corporate expertise, to build performance models of key plant systems in Excel, using process data add-ins to provide plant data and optimization tools to indicate best system loadings, as a function of plant loads and electrical price changes. The approach for trap management was to use Six Sigma techniques to analyze the opportunities for improvement, determine the best solutions, and verify the program benefits. Both the trap management and power optimization ~~were lengthy programs, requiring several years to implement.~~ required a concentrated effort of key resources in 2006.

These are very significant achievements. The results have improved knowledge of best operating strategies in Power and reinforced the importance of efficient operations in the manufacturing areas. The trap management program required effective teamwork between management, craftsmen, and engineering. The optimization program has set a new standard in DuPont for implementing optimization techniques using desktop software tools. A sustained communication plan has built site understanding of energy management needs and benefits.

Both programs have direct application at other company sites and other companies in the chemical industry