



## ***Boiler Upgrades Save Money & Energy: Boeing Philadelphia***

The Boeing Company, headquartered in the U.S., is the world's largest aerospace company and is a leading manufacturer of commercial jetliners and defense, space, and security systems. The company controls over 84 million square feet of facilities enterprise-wide and employs over 159,000.

Through its partnership with ENERGY STAR, Boeing has refined its corporate-wide energy management program. As a result, Boeing has been able to strengthen energy management across its sites, including the Philadelphia plant where the company produces the H-47 Chinook Helicopter.

Increases in production prompted Boeing to undertake a project to upgrade 223,000 square feet of factory. The planned major retrofit afforded the opportunity to look holistically at energy use at the site, and improved efficiency of the facility infrastructure would help offset increasing energy costs.

While the project planning focused on improving building wall systems and installing new air circulation units, the boiler system was also examined. A decision was made to modernize it by replacing two 80 year old 60,000 lb per hour boilers that burned No. 6 black oil with three 40,000 lb per hour natural gas boilers that use No. 2 fuel oil as backup. At this facility Boeing uses steam mostly for process heating loads which include painting, coating and cure booths, as well as for comfort heating and domestic hot water.

### **Savings:**

- ✓ Annual energy consumption of the boiler system reduced about 15%
- ✓ 30,000 MMBtu per year saved
- ✓ Lower NOx emissions and control costs
- ✓ Eliminated SOx and particulate (PM) emissions and control costs
- ✓ Significant reduction in CO<sub>2</sub> emissions

### **Additional Benefits:**

- ✓ The new boiler system combines higher system efficiency and higher efficiency of low-load operation. This makes the system more flexible to respond to the production needs of the plant.
- ✓ Fuel costs are reduced. Natural gas cost/MMBtu is roughly half that of No. 6 fuel oil. Also, in the region of the plant, suppliers of No. 6 fuel oil are limited which drove costs even higher than average No. 6 fuel oil pricing.