

International Truck and Engine Corporation Reduces Energy Consumption and Saves Natural Gas by Purifying Makeup Water

International Truck and Engine Corporation
Melrose Park, IL, USA

Challenge

International Truck and Engine Corporation has a longstanding reputation for its aggressive pollution prevention and energy conservation programs. Since 1992, International has been recognized 76 times by external parties for pollution prevention efforts. The company has saved more than US\$78 million from such efforts – both in raw materials and waste disposal.

As an example of this corporate-wide commitment to the environment, the managers of the International engine plant in Melrose Park, Illinois, worked with GE Water & Process Technologies to analyze boiler room operations for opportunities to reduce water, energy and chemical consumption.

Three boilers generate steam to heat the 2.5 million square foot (232,000 m²) Melrose Park facility, which include the manufacturing plant that produces 60,000-70,000 I-6 diesel engines per year, as well as the research and development functions for the entire company. Ninety percent of the steam production is used for heating, and 10% is used for manufacturing processes.

When steam is generated, impurities in the water become more concentrated in the boiler, causing a marked reduction in boiler efficiency. Chemicals are used to mitigate this problem.

When the impurities reach an unacceptable concentration, a “blowdown” process uses city water to flush out the boiler. The heated wastewater from the blowdown process must be mixed with addi-



tional city water to reduce the temperature before it can enter the city sewer system.

Solution

GE determined that significant reductions in water usage and energy consumption could be achieved by purifying the makeup water that enters the boilers in the first place. This makeup water comes from the city water system and passes through a softening process at the Melrose Park facility.

GE proposed dealkalizer beds as the most cost effective solution for pretreating the incoming water. Two dealkalizer beds were installed to feed the three boilers; when the periodic regeneration process is run on one bed, the other one serves as a backup.

Results

“The results from water purification have been dramatic,” according to Michael Church, Steel Machining Team Leader at the Melrose Park facility. “In the first year of operation, the dealkalizer beds reduced our water usage by 1.68 million gallons (2,400 m³) of water, due to the fact that we perform the blowdown process much less frequently.”

In addition to the reduced water consumption, the plant’s boilers are operating more efficiently. The



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company has also been able to save on natural gas and reduce chemical usage.

“We have saved 11.2 million therms of natural gas. The reduced scale in piping and heat exchangers has improved the efficiency of the entire steam system. Additionally, by reducing the frequency of the blowdown process, fewer chemicals are lost down the drain.”

International’s corporate responsibility statement on the environment declares its commitment “to use as little energy and other natural resources as possible.” The reduction in the use of energy, chemicals and water achieved by the Melrose Park dealkalizer beds exemplifies this commitment by producing both significant financial savings and important benefits for the environment.