



IPSCO Steel Incorporated is an international steel manufacturing company with operations in the U.S. and Canada. Montpelier Works utilizes electric arc furnaces to melt and recycle scrap steel at an annual capacity of 1,250,000 tons. The plant produces hot-rolled discrete plate, coil, and slit coil for distribution across North America. Montpelier Works is ISO 9001:2000 and ISO 14001 certified for Quality and Environmental Management Systems, respectively.

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Project Background

In order to produce steel, IPSCO uses large amounts of energy and generates large quantities of waste. IPSCO wants to characterize the use of compressed air throughout the facility to eliminate unnecessary uses and consumption. Multiple waste streams including Electric Arc Furnace (EAF) dust and wastewater sludge also provide opportunities for savings through recycling or reuse options.

Incentives to Change

Montpelier Works states in its environmental policy “The company will strive to minimize waste and improve energy efficiency.” The compressed air system at IPSCO consumes 2.5 percent of the plant electricity, which can be greatly reduced with efficiency changes. About 27,000 tons of EAF generated waste enters a hazardous landfill each year and multiple other streams contribute more than 1,300 tons of reusable products to landfills as well. Reductions in these quantities will lead to cost savings and positive environmental impacts.

Results

Compressed Air Efficiency
With a possible aggregate savings of 8.38 GWh and more than \$336,444 per year, the compressed air network at the Montpelier plant provides multiple opportunities for cost savings. Repairing small leaks, upgrading air wipes, nozzling blow-offs, and replacing air motors with electric motors will save in plant-wide consumption and increase capacity for primary users. At the distribution end, the realignment of compressors to match demand in certain plant areas offers increases in system efficiency. Finally, a collection of flow meters

around the plant will allow future changes in order to balance the network and improve efficiency even further.

EAF Dust Disposal

IPSCO expects to generate 23,000 tons of K061 listed hazardous material in 2006. This material is currently landfilled but infrastructure improvements at the plant and emerging technologies could result in savings in disposal costs and regulatory burdens. Investigations into new treatment companies, delisting options, and recycling technologies show that significant savings on a cost per ton basis can be obtained with future developments.

Waste Stream Recycling

IPSCO currently sends 1320 tons of high-iron content sludges to the landfill each year. These have the possibility of being reutilized as feedstock for cement manufacturing saving not only that material from being landfilled but also saving as much as \$27,000 per year.

Oil-Water Mixture Treatment and Disposal

Two tanks of oil-water mixtures from wastewater streams are emptied of nearly 47,000 gallons each year. With a proper removal of water these streams could be reduced to 9,000 gallons of waste and 11,000 gallons of reclaimable oil saving up to \$24,917 a year.

Lighting Efficiency

A small-scale study of outdoor floodlights and administrative building fixtures showed that the lights, which currently run 24 hours a day, could benefit from being switched off for up to eight hours a day. This effort to switch the lights off offers a savings of more than 150,000 kWh and \$5,768 a year.



Air Pollutants Diverted in Tons

	Total for all sectors
SO2	20.4
CO	2.1
NOX	9.67
VOC	0.34
LEAD	0.0
PM	0.49

Green House Gases Diverted in Tons (CO2 Equivalent)

	Total for all sectors
CO2	3,802.0
CH4	125.4
N2O	41.4
CFCS	45.9

Project	Annual Cost Savings	Environmental Results	Status
COMPRESSED AIR END USE CHANGES	\$336,444	8,380,129 kWh	Recommended
EAF DUST	N/A	23,000 tons	Not yet feasible
HIGH IRON SLUDGE RECYCLING	N/A	1,320 tons	Needs further research testing in progress
OIL-WATER MIXTURE TREATMENT AND DISPOSAL	Up to \$24,917	Up to 37,394 gallons	Needs further testing research in progress
LIGHTING CHANGES	\$5,768	151,778 kWh	Recommended

