

John Deere Ottumwa Works

COMPANY BACKGROUND



Deere & Company, founded in 1837 (collectively called John Deere), has grown from a one-person blacksmith shop into a corporation that today conducts business around the world and employs approximately 47,000 people. John Deere consists of three equipment operations (agricultural, commercial and consumer, and construction and forestry), credit operations, and three support operations (parts, power systems and technology services). It is one of the oldest industrial companies in the United States, and was named one of the "100 Best Corporate Citizens" in 2007 by CRO business magazine.



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PROJECT BACKGROUND

Integrity, quality, commitment and innovation, are the four key values John Deere holds highest. Motivated by these core values, the environmental department strives to continuously improve. Environmental improvements such as conserving water are projects John Deere Ottumwa Works (JDOW) is willing to put into practice. The company's 2007 Environmental Goals and Objectives included tracking water usage to find ways to implement reduction.

INCENTIVES TO CHANGE

Water consumption has historically been high at JDOW. In recent years JDOW was the highest water consumer in the John Deere enterprise. Tracking systems for process wastewater were limited, and current treatment methods expensive. Some wastewater has been double charged with treatment costs because it is shipped offsite rather than sent to the city sewer-adding the cost of transportation to the offsite facility.

RESULTS

Reduce Wastewater Shipping

Every month JDOW sends wastewater to an offsite facility for treatment. Metals in the wastewater deter it from going to the city with no pretreatment. By pretreating the wastewater onsite there will be no need to ship it offsite. This will greatly reduce process and transportation costs. On average, JDOW could save \$46,000 per year in treatment costs and \$15,000 per year in transportation costs. Air pollutants and greenhouse gas equivalents for driving a tanker truck to and from Ottumwa 30 times per year are included in the analysis for this opportunity.

Replace Reverse Osmosis (RO) System

There are two reverse osmosis systems at JDOW. One RO is fairly new and runs at an acceptable efficiency. The other RO is much older and runs at a significantly lower efficiency. Replacing the older RO system with a new, more efficient system would allow for a three year payback. The results of this project include a reduction of 2.4 million gallons per year of water use.

Eliminate Single Pass Cooling

Single-pass cooling is used on one machine in the factory. A temperature sensor is being installed in the machine. When the temperature of the machine goes above a set temperature, i.e. 80° F, the single-pass cooling will start running. The existing heat exchanger is being repaired to operate



Air Pollutants Diverted in Tons

	Total for all sectors
SO2	0.01
CO	2.07
NOX	0.15
VOC	0.15
PM	0.00

Green House Gases Diverted in Tons (CO2 Equivalent)

	Total for all sectors
CO2	28.90
CH4	0.05
N2O	0.40
CFCS	0.00

at optimum efficiency and with the use of the heat exchanger, almost all need for single-pass cooling will be eliminated.

Office Paper Recycling

John Deere Ottumwa Works already does a great job at recycling. Cardboard, wood, plastic bottles, aluminum cans, paper and other items are recycled. Through a proposed process change, office paper will be recycled more effectively in the offices located on the shop floor. Gaylords are being placed by those offices so the janitorial service can collect the paper more effectively.



Project	Annual Cost Savings	Environmental Results	Status
REDUCE WASTEWATER SHIPPING	\$61,000	EMISSIONS REDUCTION	UNDER INVESTIGATION
REPLACE REVERSE OSMOSIS SYSTEM	\$13,200	2,400,000 GALLONS WATER	IN PROGRESS
ELIMINATE SINGLE PASS COOLING	\$34,000	6,200,000 GALLONS WATER	IN PROGRESS
OFFICE PAPER RECYCLING	N/A	N/A	IN PROGRESS