HY-VEE DISTRIBUTION CENTER

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COMPANY BACKGROUND

Hy-Vee is a supermarket chain with more than 235 stores in eight states and more than 56,000 employees. Its annual sales exceed $7.3 billion. The main distribution center is in Chariton, Iowa. The 1.5 million-square-foot facility includes three warehouses, a dry goods warehouse, a refrigerated warehouse and a health and beauty care warehouse (HBC), as well as office space, a print shop, a truck maintenance shop and a fuel island for the trucks.

PROJECT BACKGROUND

The project focused on reducing electricity and natural gas use for the dry goods warehouse, HBC, truck shop, offices and print shop. The major areas of energy consumption include the lighting and HVAC systems as well as the battery chargers for the warehouse forklifts and other vehicles. These areas were targeted for their potential to yield the highest savings.

INCENTIVES TO CHANGE

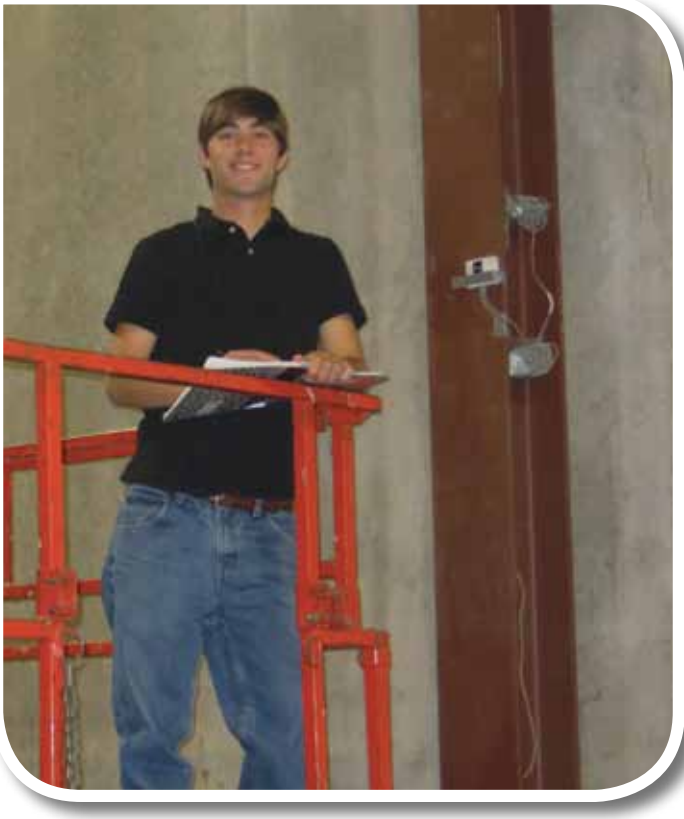
The cost of utilities and the environmental impacts of energy consumption encourage many companies to reduce utility use. Managing energy consumption allows companies to keep costs low and stay competitive. Hy-Vee's sustainability mission is "To promote the well-being of our customers, employees, communities and the global environment."

RESULTS

Lighting: The lights in the warehouse and HBC were burning out unusually quickly because they were set up on photo eye sensors that shut the lights off when the areas were unoccupied in order to conserve electricity. Two solutions were proposed: installing LED lights or changing out the instant start ballasts originally installed for programmed start ballasts. LED lights would produce greater savings in both electricity and increasing the lamp life, while changing the ballasts would require a lower initial investment.

Office HVAC Night Time Shut Down: In studying the HVAC system for each building, it was discovered that the system in the office ran continuously throughout the day and night. Shutting down this system during the night hours would greatly reduce the electrical consumption in the office.

Hot Water Piping Insulation: Two hot water boilers provide most of the heat for the warehouse. The pipes that carry the hot water to the air handlers are not insulated in most areas of the building. Some of these areas do not need heat and the heat lost from the pipes is wasted. Insulating the pipes in these areas would save a significant amount of natural gas, as well as electricity that is used to air condition the break room due to heat from two pipes in the ceiling.



Warehouse Ceiling Fans: Five industrial ceiling fans have been installed in the dry goods warehouse. These fans are designed to blow the heat down from the ceiling, reducing the amount of energy used in heating. In the warehouse, however, much heat is lost due to infiltration of cold air through dock doors, which decreases the effectiveness of the fans. Temperature readings should be gathered over the next twelve months to determine the savings potential for continued purchase and installation.

Conveyor Sensors: The HBC uses a conveyor system to load totes for shipping. The conveyor that takes empty cardboard boxes to the recycling baler runs continuously during the day and sometimes for extended periods when no boxes are being emptied. Putting sensors on these conveyors to start them only when needed would reduce the electricity used by the motors.

Vacuum Message System: A vacuum tube system is used to send messages between offices. As an alternative, it is recommended that messages be sent electronically, via email. This would allow the vacuum system to be shut off completely and would save electricity and maintenance costs associated with the system.

CONVENTIONAL AIR POLLUTANTS AND GREENHOUSE GASES DIVERTED IN STANDARD TONS

Total for all sectors					
CO_2	SO_2	CH_4	N_20	CFC	PM_{10}
743.28	3.81	27.55	0.04	8.65	0.09

PROJECT	ANNUAL COST SAVINGS	ENVIRONMENTAL RESULTS	STATUS
LED LIGHTING	$65,110	839,956 KWH	RECOMMENDED
PROGRAMMED START BALLASTS	$20,070	216,971 KWH	RECOMMENDED (ONLY IF LED LIGHTS NOT IMPLEMENTED)
OFFICE HVAC NIGHT TIME SHUT DOWN	$4,732	67,600 KWH	RECOMMENDED
HOT WATER PIPING INSULATION	$2,507	3,882 THERMS 2,540 KWH	RECOMMENDED
WAREHOUSE CEILING FANS	--	--	ON-GOING DATA GATHERING REQUIRED
CONVEYOR SENSORS	$109	1,552 KWH	RECOMMENDED
VACUUM MESSAGE SYSTEM	$45+	613 KWH	RECOMMENDED