



YASKAWA

*AC Drive
Retrofit
Equals
Short Payback
Cycle & Increased
Margins*

Federated Department Stores, Inc., one of the nation's largest operators of premier department stores, is slashing energy costs with technically advanced

Yaskawa drives. Greatly improved energy savings derived from Yaskawa's variable frequency drive technology, is helping Federated's A&S/Jordan Marsh stores generate higher returns, increased margins, and short equipment paybacks.

Federated is a billion-dollar company that conducts its retail business through eight divisions, which operate 355 department stores in 35 states. Federated stores include: A&S/Jordan Marsh, Burdines, Bloomingdales, Lazarus, The Bon Marche, Stern's Rich's/Goldsmith's, and Macy's. The full-line chain department stores contain an average of 172,000 square feet of selling space.

The management at Federated decided to initiate an energy savings pilot program. The program involved two of its Northeast stores that carry the A&S/Jordan Marsh name. The task of finding a more energy efficient way to heat and cool the pilot program stores fell to Frank Wolfe, Federated's Energy Manager based in New York. "The results of a building management study indicated that we needed to make some major changes to improve the comfort levels within these stores, while also attempting to substantially reduce electrical consumption," notes Wolfe.

Familiar with the benefits offered by variable frequency drive technology, Wolfe requested bids from various contractors to install new drives and other energy saving equipment in the two pilot stores. One of the early responses was from John Gandolfo at K & G Power Systems, a Yaskawa distributor in Wantagh, New York.

"I told Frank that we had installed Yaskawa drives in similar retail installations, and that our customers were always surprised by the performance and savings they obtained," notes Gandolfo.

It wasn't long before Gandolfo and Yaskawa's northeast sales representative paid a visit to Wolfe. They explained how using Yaskawa variable frequency drives would result in significant energy savings and the features incorporated into the Yaskawa drive were designed to meet the requirements of centrifugal fan applications. Upon leaving Wolfe's office, the pair had an order in-hand for 10 Yaskawa variable frequency AC drives.

The first installation required three drives at the A&S store in the Smith Haven Mall in Lake Grove, New York. One 30 HP drive was mounted on the store's air handling unit (AHU), while a 125 HP and a 200 HP drive were connected to the store's return/supply air fans. Later, work crews at the A&S store in Huntington, NY, installed a pair of 200 HP drives to the return/supply fans, four 20 HP drives to the AHU and a 50 HP drive to a chilled water pump. New building management systems manufactured by Carrier completed the retrofit packages.



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A year after the pilot program was initiated, Wolfe's reports showed that the Lake Grove store's kilowatt hour (KWH) usage decreased 13.69 percent, for an estimated savings of \$67,327. Kilowatt usage at the Huntington store dropped 12.9 percent, reducing energy costs some \$50,594.

"What's interesting about these two installations is that maintenance on the AHUs decreased markedly," says Wolfe. "It never became necessary to replace any of the motor belts. The units ran quieter, and also maintained comfortable temperatures and humidity levels within each of the stores. More importantly, the payback on the investment for the drives was less than one year. Needless to say, these results exceeded my most optimistic projections."

Wolfe subsequently submitted a plan to the management at Federated to install an additional 174 Yaskawa variable frequency AC drives, along with the new Carrier building management systems in 13 other A&S/Jordan March stores located in seven northeast states. The management at Federated approved the \$1.5 million project. The Yaskawa drives used in the retrofit varied in horsepower ratings, ranging from as little as 5HP up to 200 HP, and cost \$626,000.

Delivering the drives to the 13 scattered job sites sometimes proved to be a challenge. "In order for us to meet our firm completion deadline to install the additional 179 drives, the people at Yaskawa continued to run a plant production line over the Thanksgiving holiday," explains Wolfe. "They even went as far as to send us 10 drives by air cargo when a bad ice storm caused delays in ground transportation. Yaskawa gave us excellent support during the course of the entire project, and always made themselves available if we had questions concerning the equipment."

Operating these stores more efficiently has allowed Federated to create additional value by offering lower prices at retail. Over the next three years, the renovation and expansion of Federated stores is

expected to generate very high and fast paybacks.

In all, Federated expects to remodel about 45 stores during this period. The installation of additional Yaskawa drives is expected to play a key role in helping Federated reach its goal of achieving new energy cost efficiencies.

Since the last drives to be installed were put on-line, Wolfe has kept track of the operating expense data obtained from the 15 stores. The results of this 12-month study are shown below.

<i>Store Location</i>	<i>% KWH Decreases</i>	<i>Dollar Savings</i>
Huntington, NY	-12.90	\$55,653
Lake Grove, NY	-13.69	\$74,060
Manhasset, NY	-8.31	\$95,708
Elmhurst, NY	-8.18	\$70,173
Brooklyn, NY	-11.13	\$45,671
Valley Stream, NY	-12.77	\$88,933
White Plains, NY	-12.91	\$67,772
Woodbridge, NJ	-15.38	\$111,536
Paramus, NJ	-14.08	\$95,916
Trumbull, CT	-19.12	\$94,617
Burlington, MA	-20.06	\$131,304
Braintree, MA	-5.48	\$24,772
Bedford, NH	-5.22	\$18,380
Portland, ME	-16.73	\$69,513
Warwick, RI	-8.53	\$49,811
Total Savings		\$1,093,819
Cost of Drives		\$626,000
Net Savings 1st Year		\$474,819

Simple Payback Period - (Less Than 1 Year)