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The Forefront of Fuel Cell Technology

Hydrogen fuel cells improve productivity for natural foods distributor. United Natural Foods Inc. (UNFI) is the largest wholesale distributor of natural, organic and specialty foods and related products in the United States. In addition to 28 distribution centers in the U.S. and Canada, UNFI provides value-added services to its customers, including marketing and promotional materials, merchandising, category management and store support services. UNFI could not continually exceed customer expectations without the assistance of its lift truck fleet, which the company uses to move product efficiently through its distribution centers as part of its material handling operations.

Through its long-standing commitment to the environment and corporate sustainability initiatives, UNFI researches and identifies sustainable technologies for use in its facilities. During the past three years, the company has examined ways to reduce its energy consumption, which led it to investigate a new power source for its lift trucks — hydrogen fuel cells.

UNFI is a nationwide customer of The Raymond Corporation, so it was only natural that Tom Dziki, chief human resources and sustainability officer at UNFI, turned to Raymond and Abel Womack Inc., its authorized Raymond Sales and Service Center for more than 10 years, for an education on hydrogen fuel cell technology.

By working together, the companies identified UNFI's Sarasota, Fla., facility as an ideal site to begin using hydrogen fuel cell-powered lift trucks, and all of UNFI's *Raymond*® trucks in Sarasota were converted to hydrogen fuel cell technology in June 2010. The project required extensive planning and coordination between UNFI, Raymond, Abel Womack and Raymond Handling Consultants, the authorized Raymond Sales and Service Center responsible for serving UNFI's facility in Sarasota.

Making It Work

The *Raymond* lift trucks in UNFI's Sarasota facility consisted of Model 7400 *Reach-Fork*® trucks, Model 5500 orderpickers, Model 4200 stand-up counterbalanced lift trucks and Model 8400 end rider pallet trucks. Considerations needed to be made for the differences between lead-acid batteries and hydrogen fuel cells, including the size

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of the battery compartment; how the technology would withstand the temperatures of the Sarasota facility’s freezer, cooler and dry storage areas; and whether the fuel cell-powered lift trucks would perform to the same level as their battery-powered counterparts.

On electric lift trucks, battery compartments are designed specifically to accommodate the size and weight of batteries. Fuel cells are larger than lead-acid batteries, so Raymond engineers needed to ensure that the fuel cells would fit in the battery compartments and maintain the required counterweight for each truck.

Significant changes needed to be made to the orderpickers to create a larger battery compartment to accommodate the fuel cell. As a result, Raymond engineered the industry’s first hydrogen fuel cell-compatible orderpicker, which features a specially built 21-inch battery box to accommodate a hydrogen fuel cell.

Another consideration was how the hydrogen fuel cells would withstand multiple shifts in the colder temperatures of the facility’s freezer, cooler and dry storage areas. Raymond conducted extensive testing of the hydrogen fuel cell in cold temperatures at its Greene, N.Y. facility to ensure performance would not be affected.

Feedback from operators at the UNFI Sarasota facility has been very positive. Raymond’s research shows that, as a lead-acid battery is used over the course of a shift, the voltage drops and lift truck performance goes down. With hydrogen fuel cells, voltage delivered by the fuel cell remains constant until the fuel is depleted. Productivity also has increased because of the short time it takes to refuel the lift trucks, compared with changing a battery.

Positive Results

Since the installation of the hydrogen fuel cell-powered trucks and refueling infrastructure, UNFI has been pleased with the results it has seen.

“We know what our labor and productivity was before we installed the hydrogen fuel cells,” Dziki says. “We anticipate increased productivity because the trucks will be running with a full charge the entire shift, and the reduced amount of time spent refueling. We plan to track the changes over time to help us evaluate the return on our investment for possible future installations in other facilities.”

UNFI also is pleased with the support provided by Raymond, Abel Womack and Raymond Handling Consultants during the planning and execution of this project.

“We couldn’t have done this without Raymond’s partnership,” Dziki says. “Raymond has been at the forefront of new technologies, and is really a thought leader in hydrogen fuel technology.”

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