



## Konecranes ASRS Crane Facilitates Enzyme Blending and Storage for Biofuel Manufacturers

### Features and Benefits

Less expensive than traditional storage and blending methods

Maximizes floor space, since containers can be stacked 4 units high

More efficient than manual handling

Improves safety, protecting workers and equipment

**Industry Group:** Crane Manufacturers Association of America (CMAA)



### The Opportunity

Novozymes, a world leader in bio-innovation, makes enzymes, a key component in manufacturing bioethanol. Various custom “blends” of enzymes are formulated to break down the starches and sugars in corn, switchgrass and agricultural residue, allowing these products to be processed more efficiently into ethanol.

Headquartered in North Carolina, Novozymes committed to build a new facility in Blair, Nebraska, where raw materials for biofuel are grown. This strategy allowed them to be located close to customers who manufacture the final product, and save on fuel and transportation costs. Harsh Nebraska winters mandated an indoor storage warehouse to receive and blend enzyme products.

### The Solution

“The nature of our business, which involves customblending specific enzymes to meet the requirements of ethanol producers, made automated storage and recovery an obvious choice,” said Fred Reikowsky, Novozymes Blair Plant Manager. “To effectively manage our inventory, we needed a crane-based automated storage and recovery system.” (ASRS) The enzyme

concentrates blended in Blair are produced all over the world, transported on container ships, and arrive at Novozymes' Nebraska facility by truck in 8-foot by 18-foot ISO tanks that fit within a rectangle matching the standard 20-foot container. Another option is a Flexi-bag container; a 20-foot container lined with heavy plastic that weighs 40 metric tonnes at half-full.

Konecranes' U. S. process crane group designed an automated system that had all the elements Novozymes was looking for.

Inside the 90 by 250-foot warehouse, Konecranes' radio-controlled, 40 metric tonne Class E automated crane operates on an 80-foot span, with a 50-foot lift under a 60-foot ceiling. Trucks drive in at one end of the building, and the spreader is manually attached to the ISO or Flexi-bag container. Then automation takes over. The crane turns the container 90 degrees, picks an xy location in one of four tier levels, stores it, and then records the location in memory. Each container can be recalled again automatically, and the crane can stack individual containers up to 4 units high.

When the facility receives an order, the crane automatically recovers the specified container, identified through container and batch numbers in a bar-code system and tracked through Konecranes ASRS system software. After arriving at the blending station, the crane lowers the container to blending position. Final positioning is manually conducted by an operator. After blending, the enzyme is loaded into tanker trucks and shipped to ethanol producers.

**And the customer says**

"Customers don't purchase just one enzyme," says Reikowsky. "They order a combination of two or three or several enzymes specifically suited to the raw material they are working with. That's why automation was such an important factor in the crane purchase. The warehouse control software knows what product is in what location. When we specify the elements of the recipe the customer requires, it knows where to move boxes to retrieve the container we need. It's an efficiency tool we're utilizing to improve our business."



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