Locking Up a Bike Rack Partnership

An **innovative alliance** reduces the risks of **launching a new product**.

by **Beverly A. Beckert**

From cities ranging in size from Chicago to Albany, NY, urban transit bus riders can now take advantage of an increasingly popular service—the ability to take their bicycles wherever they go. Thanks to a unique partnership between Midwest Bus Corp. and Altair Engineering, a new line of bike racks that attach to the front of buses has been introduced to the transit industry. This new bike rack system permits people to travel greater distances to bus lines, to which they would not traditionally walk. The upside for transit properties includes increased ridership and the ability to service suburban areas without adding to the fleet or modifying route schedules.

According to Dan Morrill, president of Owosso, MI-based Midwest Bus, the company had been working with Altair on various transit industry design projects when it became aware of an opportunity to provide a large number of bike racks to the Chicago Transit Authority (CTA). The racks had to be heavy-duty, durable and withstand the forces of the daily bus washer as well as the stresses associated with operating in some rough street conditions. In addition, the racks had to be easy to use, enabling riders to quickly store and retrieve their bikes. More importantly, the design of the bike racks could not infringe on the competitor's patent.

Midwest Bus is dedicated to bus repairs, replacement parts, used bus sales, bus leasing and field service. So Morrill approached Altair with an invitation to design the bike rack.

Bike racks specifically designed for urban transit buses enable riders to take their bicycles wherever they go.

Rather than provide Midwest Bus with a quote for developing the bike rack, Altair offered to design the bike rack in return for receiving royalties on the sale of the product. For its part, Midwest Bus would become the exclusive distributor of the bike racks.

According to Morrill, the agreement made smart business sense. "It allowed both parties," he says, "to share in the risk and rewards of the venture."

Altair Program Manager Jos Timmermans started work on the bike-rack design. He explains that it did not involve complex engineering; rather, it called for innovation. The competition had patented a mechanism that operated with a hook on a spring, so it cov-

An innovative business partnership between Midwest Bus Corp. and Altair Engineering has resulted in the successful launch of bike racks for buses. When deployed (left), the rack protrudes less than 36 in. from the front bumper; when stowed (right), it protrudes less than 7 in.

ered any retracting device. Altair had to devise a mechanism that did not retract in a manner that would violate the patent.

Altair's design team worked on a couple of prototypes. The final version includes a crank that rotates the wheel trap, which folds over the top of a bike's front wheel. The bike rack supports over 200 lbs. Manufactured with stainless steel, it fits all urban transit buses, protruding less than 7 in. from the front bumper when stowed and less than 36 in. when deployed. It accommodates two bicycles with wheels of 16 in. or larger and automatically locks in the stowed and deployed positions.

Timmermans explains that in the bike rack, a simple shaft and bushing hold the bikes in place. The only thing the trap touches is the rubber on the bikes' tires. He adds that the device took a lot of thought to develop even though it looks simple when you see it.

Altair used Altair HyperWorks and Altair OptiStruct to validate the design and evaluate the stresses. The virtual development process took into consideration that the bike rack had to withstand loads up to 3,000 lbs as it traveled every day through the bus wash. Therefore, ensuring that the bike rack was heavy-duty to withstand the loads was a top priority. Equally important, Midwest Bus and Altair vis-

ited the site where the bike racks were to be assembled and installed, allowing them to incorporate design criteria that would ease the installation process.

Altair and Midwest Bus developed the prototype for the bike rack in a matter of weeks. Following a lengthy CTA bid process, the partners' hard work paid off with Midwest Bus's first order to deliver 2,000 bike racks to CTA.

Initially, Altair handled all the product development details. "The knowledge relating to product develop-

ment and manufacturing was on our side," relates Timmermans. Today, the partners' main focus is on further reducing costs.

On the heels of its first order to Chicago, Midwest Bus has sold products

to the cities of Albany, NY; Flint, MI; and Lansing, MI. The current bike rack holds two bikes; plans are to accommodate three bikes in the future.

What benefits were derived from collaborating on this business venture? Altair's Timmermans remarks that the business alliance enabled Midwest Bus to enter a new market early and to generate profits sooner.

Morrill adds, "In the final analysis, we were able to produce a quality product. In the future, we hope there will be other opportunities for the two of us to work together to bring Altair's engineering and technological capabilities to bear on products we identify in the public transportation/heavy-duty bus market." **C2R**

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