

Synopsis

Customer Profile

Astra-CFX SC, LLC (Astra-CFX) provides integrated supply chain solutions to manufacturers in North America and abroad.

The company was tasked to implement a facility in Greer, SC, to provide tires and wheels Just in Sequence to BMW to support the carmaker's production of the X3 SAV.

Solution

- Exacta Warehouse Management System
- Exacta Warehouse Control System
- Automated Storage and Retrieval System (ASRS)
- ARKK Vision System
- Pick to Light
- Bastian Controls system
- Human Machine Interface (HMI)

Benefits

- Provides increased wheel assembly speeds
- Accurate tracking without the use of bar codes and scanners
- Consistent, low error operation to prevent charge-backs

Astra-CFX Speeds BMW's Ship Times, Wins More Business using ASRS, Bastian Controls and an Exacta Warehouse Management System

"The benefit of the automated system is the ability to quickly pick many different SKUs in order to satisfy the complex and custom demands of BMW." – Tom Pryzvojewski, President Astra-CFX

The Challenge

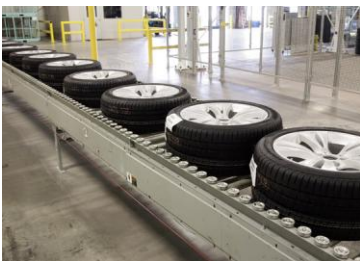
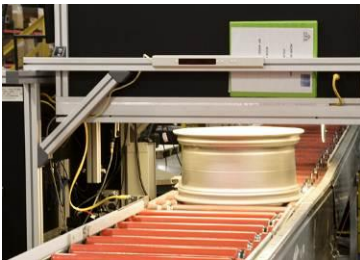
In order to deliver many different looks to SUV customers, BMW offers a wide range of wheel and tire styles on its X3 SAV. Astra-CFX, a tier one automotive supplier whose plant is located in Greer, South Carolina, supplies BMW with wheel assemblies on a just-in-time basis in order to make the BMW assembly line run smoothly and efficiently. At current production levels Astra-CFX is required to supply BMW with one assembly every 15-20 seconds.

Additionally, Safety-related component quality is paramount. If the potential exists for the drivers or passengers of a car or truck to become injured or killed as the result of a product defect, the automaker must have the ability to quickly access and retrieve product genealogy data to identify and recall the vehicles possessing the defective part. Therefore long term data storage is also a key component of what Astra-CFX must provide for BMW.

Contrast these demands with Astra-CFX's need to keep operating costs low and installing an automated system from Bastian quickly became the best solution to meet all of these goals. Developing a profitable business providing automotive components to a major automaker is extremely challenging. Some of the additional goals Astra-CFX had in undertaking the automation project were to:

- Minimize the amount of floor space leased and the amount of purchased parts inventory managed as these quickly drive up operating costs and reduce cash flow
- Cycle times had to be quick in order to meet BMW demands
- A high yield system was needed to reduce rework and scrap
- Plant labor hours needed to be kept in check so as not to drive up operation costs
- Product genealogy data had to be captured and archived in a cost-effective and efficient manner

To succeed, Bastian's automation system fully integrated with production planning systems and shop-floor controls to guide, trigger, and report on the activities and events occurring inside the plant from point of order receipt to point of delivery.



The Solution

Receiving and Putaway

Products are received and inducted into their respective storage zones using radio frequency (RF) mobile putaway. A putaway label is then printed and placed with each product received. All putaways for a trailer will be stored in the same yard lane, and Exacta splits that lane into multiple Exacta locations as necessary.

Build to Stock

Picking and De-Stacking

The ASRS module of the warehouse control system (WCS) finds the highest priority order and identifies which tire(s) needs to be picked and de-stacked. At the same time, the WCS signals a corresponding wheel's pick to light zone, so an employee can make the correct wheel pick to correspond with the tire coming from the ASRS.

Vision System

To prevent mistakes, each tire and wheel is examined by the vision system. The system sends a picture of each item to the WCS to ensure that the picked item matches the expected product ID for the current order. If the item is incorrect, the conveyor is stopped and an alarm sounds.

Tire Pressure Monitor Insertion

As each wheel travels down the conveyor, it is stopped at the tire pressure monitor insertion station. The operating employee choosing the appropriate monitor assembly from the pick to light station and mounts it to the wheel before it moves down the conveyor line.

Soap, Mount, and Inflate

After the tire pressure monitor is applied to the wheel, the tire and wheel enters the soap, mount, and inflate area. The components are cleaned, mounted together, and the assembled tire is inflated. From this point forward, the tracking IDs for the wheel and tire are joined together to create a new tracking ID for the assembled tire.

Tire Balancing

The warehouse control system passes the assembly ID to the balance machine, and the employee is instructed what weight to put on it. If any weights are applied to the assembly during the balancing process, the machine control sends the information back to the WCS to save with the order.

Final Inspection

The final inspection station process allows operators to do a final QA check, replace bad or missing assemblies with safety stock, and update PSI information where necessary.

Just in Sequence Shipping

Assembled wheels are stacked and placed in the finished goods side of the ASRS. As BMW requests orders the wheel stacks can be identified and picked to create the final order. To confirm orders have been sequenced properly, employees can use the RF Ship Verify application to scan rack sheets containing each product.

Bastian Material Handling

Bastian Material Handling, headquartered in Indianapolis, Ind., is one of the largest independent, material handling system integrators in the U.S. Since 1952, Bastian has been an innovator in the field of material handling and controls and has now grown to include offices in the U.S., Canada, Brazil, Saudi Arabia, and India. For more information on the company, please visit <http://www.bastiansolutions.com> or call 800-837-3760.

"The team was really a joy to work with. The expertise Bastian brought to the project, from project management down to the support, was world class!"

**Tom Pryzvojewski, President
Astra-CFX**

"The Bastian system is running much smoother than other systems I have used in the past."

**Jim Spaulding Plant Manager
Astra-CFX Greer, S.C. Facility**

"Not only did Bastian want to do the work, but they knew how."

**Jim Spaulding Plant Manager
Astra-CFX Greer, S.C. Facility**

The Results

Assembly Speed

The new system enables the Astra-CFX plant to consistently produce more than 180 assemblies an hour, meeting BMW's daily production quota over two eight-hour shifts. The plant can also ship a full trailer load of assemblies every 3-4 hours, meeting the key BMW project requirements.

Accurate Tracking

Historically tears in bar codes made tracking tires and wheels extremely difficult while also dramatically increasing the number of touches each tire and wheel required in order to be properly positioned. With the help of the Bastian automation system Astra-CFX is now able to manage the assembly operations without reliance on bar codes and scanners.

Consistency and Error Reduction

The facility has never sent a set of assemblies out of sequence, developing a truly reliable partner for BMW while preemptively preventing any charge-backs typically seen in other tire and wheel assembly plants.

The Future

"This may be the best tire and wheel sequencing facility we have ever seen in our travels" – BMW Management

Not only is the Bastian automation system exceeding Astra-CFX's and BMW's expectations, but the superior reliability and accuracy has helped Astra-CFX win the opportunity for additional business from BMW. According to Brian Lee, the head of the project from the Bastian side, "The quality and consistency of the automated process already in place has convinced BMW to engage Astra-CFX in quoting the tire and wheel supply operations for another vehicle currently in production. As you can imagine this was a big win for Astra-CFX and the Bastian automation system.

