

Kawasaki's assembly staff goes Mobile

Kawasaki
Let the good times roll.

Kawasaki Motors Manufacturing Corp., U.S.A.'s consumer products division in Lincoln, Nebraska (KMM), has replaced its card-based Kanban system with an electronic solution. The new eKanban solution was developed by KMM's in-house development team and integrates with KMM's IBM i-based ERP system. Assembly and warehouse staff access the solution from iPads with native mobile apps developed with LongRange from LANSA, a mobile app toolkit for IBM i developers. Staff on the floor also use the mobile apps for cycle counting, and other warehouse and assembly related tasks.

Jay Kamradt, Information Systems Supervisor at KMM, says "The solution is saving over US\$ 3,500 per day and we expect very quick ROI. Our developers are very experienced at enhancing the functionality of our ERP system, which was the largest part of this project. Initially we didn't think we had the skills to develop the native mobile apps ourselves, as LongRange only became available towards the end of our project. The mobile apps were developed by 3 of our IBM i developers. We launched our first series of apps within 2 months of going through the LongRange tutorials."

The Challenge

KMM manufactures All-Terrain Vehicles (ATV), Personal Watercrafts (Jet Ski®), Utility Vehicles (Mule™), Recreational Utility Vehicles (RUV - Teryx™) and wheels for ATVs and utility vehicles. These products are shipped throughout North America and exported to Japan, Europe, Australia, New Zealand and to other locations around the world.

KMM operates on a 'just-in-time' basis to eliminate expensive warehousing. In this lean manufacturing environment, Kanban is used to signal the need to move parts from the warehouse to the production floor.

Traditionally Kanban is implemented using cards that are attached to a parts box. When a box at the assembly line becomes empty, it is returned to the factory store with the Kanban card still attached. The factory store then replaces the empty box at the assembly line with a full box and contacts the supplier to replenish the amount of parts mentioned on the returned Kanban card. When the supplier's order is delivered into the factory store, the Kanban card is attached to the box, completing the cycle. The process is meant to provide the exact number of parts required, with just a small buffer of spares.

Until recently, KMM used a manual Kanban card system at its 4 assembly lines. KMM uses up to 4,500 Kanban cards per day and the labor costs of staff handling those cards was estimated to be \$3,000 per day.

There were other inefficiencies to the manual card system as well, according to Kamradt. "Cards could get lost, resulting in late delivery of parts. Also, there was no way of stopping staff from turning in Kanban cards early. Workers were sometimes hoarding 3 to 4 days of inventory at the assembly line, when they only needed a buffer of 4 hours."

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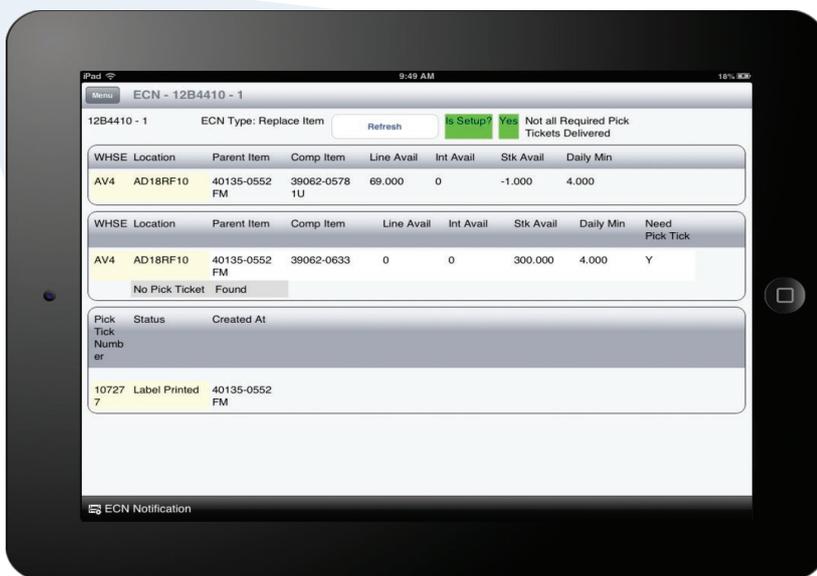
"We have the in-house experience to customize our ERP solution, but we didn't think we had the skills to develop native mobile apps ourselves. The project was well underway when LANSA made its LongRange mobile development tool available and we were keen to get on the beta program."

eKanban Efficiencies

With some guidance from a LANSA professional services consultant, KMM developed its first LongRange mobile app. The app allows the assembly inventory specialists, nick named parts-police, to scan-in or enter deliveries of parts at their assembly line and to monitor the balance of parts. When the assembly of a certain unit starts, the ERP system is notified and it allocates the parts needed. Since it is now recorded exactly how many parts are kept at each assembly line, the allocation will automatically trigger a pick transaction when the inventory of a part at a line falls below a specified minimum.

Kamradt explains, "Previously once parts left the warehouse, we didn't have any means to record where on the assembly floor they went or how many were accumulating there. Now we have an accurate real-time recording of parts, whether in the warehouse or on the assembly floor."

"Having the mobile app allows for total accuracy. We now keep only 4 hours worth of parts on the floor and for bulk items even less. In addition, we now have a better and safer work environment. In the past the assembly



The mobile apps play a key role to record and track inventory on the assembly lines.

lines could become a safety hazard cluttered with boxes and parts. The freed-up space also allows for more flexibility, opening up the possibility to produce additional models on an assembly line."

"When we started the project we did an ROI analysis. We use up to 4,500 cards each day and 8 to 10 people would get involved in each kanban cycle. Based on the card being handled on an average 10 seconds each time and average wages being \$30 per hour, we estimate to save \$3,000 per day, or \$747,000 per year, in labor costs directly related to staff not having to handle the manual kanban cards."

KMM expects to save another \$190 per day, or \$47,500 per year, because there is no need any more for someone to walk around cutting a slit into each box and inserting a card. Now barcoded labels are printed and affixed to the box. Other estimated savings include reduced labor for analyzing part shortages 5 hours per day and for running hot parts 16 hours per day, adding up to more than \$155,000 per year.

"We believe our ROI on eKanban is going to be very short, less than six months," says Kamradt.

More apps and more savings

The LongRange tutorials, together with their first working app as a best practice example, provided enough training for KMM's developers to start on their next mobile project. A team of 3 IBM i developers built 5 more apps. All the apps are native, touch-enabled with dropdown lists, check boxes, buttons to start the scanner, and so on. The apps were implemented at the first assembly line 2 months into the project and soon after at the other lines.

An app for scrap reporting allows assembly supervisors to scan in scrap items throughout the day and, where needed, enter comments. Previously they would compile a handwritten list at the end of the day of the items they found in the scrap bin. Then a clerk at the quality control department would spend most of a day rekeying the lists from all 4 lines.

"Automating the process using mobile technology saves our quality department a lot of time and makes the information that we track far more accurate," says Kamradt.

An app for cycle counting allows workers to adjust the inventory while on the floor and generate a pick ticket if needed. Another app allows workers to record the moving of inventory within the warehouse. Previously these movements were simply not recorded, because there was no workstation on the floor. Workers would lose time trying to locate misplaced inventory. Now the recording of inventory is far more accurate.

An app for online/offline reporting lets the assembly line supervisor scan when an



Jay Kamradt, Information Systems Supervisor at KMM, next to an assembly inventory specialist using her iPad with the LongRange developed apps.

"Users on the floor find the LongRange developed apps intuitive, reliable and stable."

assembled unit needs to be pulled off the line for repair and enter the reason. "In the past those units would just sit next to the assembly line and it was unclear when they got there or why. The real-time recording results in better quality control," says Kamradt.

An app for engineering change notifications (ECNs) allows for the real-time recording of when a changed bill-of-materials comes into effect. "If anything comes up from a quality standpoint, we now know exactly which VINs (Vehicle Identification Numbers) are affected," says Kamradt.

Conclusion

Paul Kramer, Assistant Manager Information Systems, explains "Using in-house skills, we initially thought our only choice was going to be mobile Web apps, but that would have made it more difficult to use an external scanner and would also be less user friendly. Mobile access is only part of the eKanban puzzle, but it is a very visible and essential part. With LongRange we were able to handle the entire project ourselves, including mobile access."

"Our developers found LongRange easy to learn and development was fast. We got our first series of apps out in just 2 months, including installing, going through the tutorials, development, testing and implementation," says Kamradt.

"As far as the users on the floor, their experience is that the LongRange developed

apps are intuitive, reliable and stable. We haven't had any issues or a need to revisit code. We developed the apps, they are in production and they have been running fine. The apps are now a crucial part of our new procedures and we cannot run the assembly plant without them."

"Over the years we dedicated a lot of IT resources to make things better for the office workers. The production area is where we make our money and we decided that it's time to start improving their processes. What we have done today is just the beginning," concludes Kamradt.

"My advice to other IBM i shops is to jump in with both feet to provide users with mobile apps. It won't take you long to realize the benefits." ■

Snapshot

Customer: Kawasaki Motors Manufacturing Corp, USA Consumer Products (KMM).
www.kawasaki.com

Challenge: As part of an eKanban system, KMM needed to develop a series of mobile apps running on iPads that could integrate with the corporate ERP system and access an external scanner.

Solution: Use own in-house development team and existing skill-set to develop native apps with LongRange.

Key Benefits: Savings of \$3,500 per day in labor, safer and uncluttered assembly lines.

Product Used: LongRange.