



# Toyota Autoparts Philippines Optimizes Supply Chain with Motorola Enterprise Mobility Solutions



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## Company Overview: Toyota Autoparts Philippines

Toyota Autoparts Philippines is the global production and supply base for manual transmissions for the Innovative International Multi-purpose Vehicle (IMV) project. Toyota initiated the IMV project to create an optimized global manufacturing and supply system for pickup trucks and multipurpose vehicles to satisfy market demand in more than 140 countries worldwide. Toyota Autoparts Philippines is located in Laguna, City of Santa Rosa with 1,063 team members. Their main customers are from other Toyota affiliates located in other Asian countries, Argentina and South Africa.

## The Challenge : Keeping Track of Hundreds of Components

Toyota Autoparts Philippines assembles two manual transmissions models (with each comprising more than hundreds of parts) and Constant-Velocity (CV) Joint. Each end-product needs to undergo about 12 processes from raw material to the complete product. These processes include machining, grinding, heat treatment and casting. An average of 600 units of transmission and 780 set of CVJ are produced per day.

Keeping track of the hundreds of parts that go into each of the models has been a challenge, as these parts come from hundreds of suppliers, located both locally and overseas. Previously, Toyota Autoparts Philippines employed a manual method to track the parts used, which meant that each assembly line worker required a significant amount of time to capture and input this data into a centralized database.

For Toyota Autoparts Philippines, a key goal is complete customer satisfaction, as well as to make it easy to trace the defective parts. In addition, Toyota Autoparts Philippines is continually improving the efficiency and productivity in the supply chain, based on the guiding principle of Kaizen, or "improvement" in Japanese.



## Customer Profile



**Company**  
Toyota Autoparts Philippines

**Location**  
Philippines

**Industry**  
Automobile Manufacturing

**Products**

- MC9090G Mobile Computers
- AP5131 Access Points

**Partner**  
Imax Solutions

### Application(s)

A Traceability system was developed with automated bar codes. It composed of a web application that was used for viewing and updating unit, pallet and container status, and producing reports. The barcodes are read by Motorola MC9090G Mobile Computers and transmitted by Motorola AP5131 access points.

### Benefits

- Reduce work loads per person per day
- Experience fewer errors and has improved productivity
- Greater real time visibility and availability of information on the components and raw materials



As a result, the Quality Control (QC) department had promoted the idea of a system that would allow them to easily track and trace each component. Toyota Autoparts Philippines also wanted to increase worker productivity for everyday tasks like shelf price audit, direct store delivery and order entry. The results would enable error-proofing of defective parts and quality quarantine, line sequencing, real time SPC with track and traceability.

### The Solution : Barcodes and Mobile Application to Track Components Easily and Quickly

Consequently, the Traceability System was developed with automated bar codes. It composed of a web application (intranet), the proprietary "Crosslink Server application" of iMAX and mobile application running on Windows CE.

The web application was used for viewing and updating unit, pallet and container status as well as producing reports. The "Crosslink Server application" provides real time access of data to mobile computer. Mobile application is the front end GUI based application which is used by team members for capturing units passed on Testing, Packing and Checking and Loading stages.

To enable the reading of the bar codes on the manufacturing floor, Toyota Autoparts Philippines chose the Motorola 20 units of MC9090G Mobile Computers and 8 units of AP5131 access points.

"We have compared products from several vendors and Motorola was the closest one that matches our requirements. We were impressed by the ease of handling, the durability and the aesthetics of the Motorola Mobile Computers," said Reine D. Baltazar, Supervisor, Systems Engineering Section, Toyota Autoparts.

"The production utilizes oils and coolant. Durability is a key criteria - some products we looked at would not last in the production area."

The Motorola MC9090G Mobile Computer combines proven durable design, wireless networking and an easy-to-use interface in a single device. Its rugged construction is able to withstand rigorous use in the extreme environment of the Toyota Autoparts Philippines manufacturing floor. It automatically updates the database and helps to prevent manual errors, and the assembly line workers have gained the freedom to be mobile throughout the factory floor.

The MC9090G mobile computers with its bar code scanning capabilities are integrated with the Motorola open-architecture wireless network to offer high-performance data communications. Motorola AP5131 access point supports the IEEE 802.11 wireless LAN standard, operating in the 2.4 Ghz band using spread-spectrum modulation. The system's range and capacity are expandable with the addition of more access points, offering Toyota Autoparts Philippines scalability while maintaining their initial investment in technology. The bar code data captured by the MC9090G mobile computers are automatically communicated to the host system through Motorola's wireless LAN.

"The MC9090G is used from the assembly line up to the point of delivery and packing, tracking the products every step of the way. Any future problems that may arise on any of the units produced can be traced to any point in the assembly process. Thus, giving us the other information that could prepare us for countermeasures," said Baltazar.

Toyota Autoparts Philippines took a year to implement the Traceability System, including system development, starting from 2006.

### **The Benefits : Real-Time Tracking and Improved Productivity**

The combination of wireless local area network (WLAN) enabled hand-held computers, and bar code technologies have helped to streamline Toyota Autoparts Philippines's manufacturing processes.

"The Traceability System combined with the automating of the bar code system has helped Toyota Autoparts Philippines to shave off 30 to 50 percent of the monitoring and data entry of production output by team members," said Baltazar.

By creating a more seamless flow of continuous, accurate documentation on machine conditions and materials, Toyota Autoparts Philippines now experiences fewer errors and has improved productivity.

"Mobility is highly improved, as users carry the Motorola MC9090G mobile computers as they work. They do not need to be in one place, but can go back and forth and still send data back to the database. Hard copy documents are minimized, since information is directly stored in the system," said Baltazar.

Toyota Autoparts Philippines has also experienced greater transparency and availability of information regarding the components and raw materials that make up the final product. This has allowed Toyota Autoparts Philippines to quickly trace and immediately address any concerns regarding the quality of the product. And in the event of a defective product, to quickly trace the component responsible and from there trace the product batches that are affected.

"This system has enabled any defective parts to be easily traced to its "root" and avoid any possible customer claims due to defects. From the point of the initial process to the finished product, our system can trace the batches or group which may possibly contain defects," said Baltazar.

"This has helped to ease our tracking of defects, as each component has its own barcode. Previously, when a product is defective, the whole batch is under question."

Going forward, Toyota Autoparts Philippines is looking at its warehousing procedures, and plans to integrate that with the company's ERP system, and to make use of the bar coding system for their issuance and receiving of items.

### **About Motorola**

Motorola is known around the world for innovation in communications and is focused on advancing the way the world connects. From broadband communications infrastructure, enterprise mobility and public safety solutions to high-definition video and mobile devices, Motorola is leading the next wave of innovations that enable people, enterprises and governments to be more connected and more mobile. Motorola (NYSE: MOT) had sales of US \$30.1 billion in 2008. For more information, please visit [www.motorola.com](http://www.motorola.com).



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