NEXT GENERATION MOBILITY IN MANUFACTURING
KEEPING PACE WITH DEMANDS

The manufacturing sector is a demanding business. Globalisation has increased competition exponentially. Currency movements and shifting commodity prices continuously impact business. And customers expect faster turnarounds and constantly seek lower prices. Such demands engage manufacturers in an ongoing quest to innovate, drive efficiencies and enhance agility to adjust to market trends.

Advances to mobile communications technology help you achieve these goals by creating a ‘connected environment’ that enables Next Generation Mobility in Manufacturing: an environment that addresses three key requirements we see from customers.

The first is empowering the mobile worker. Increasingly your people are mobile across production facilities and beyond. With wireless handheld computers and scanners they can instantly communicate, capture data and access critical information, from order details to stock inventories, wherever they are. Second, we are seeing great interest in how new technologies such as RFID, telematics and barcoding can create the ‘perpetual inventory’. The perpetual inventory provides you with a complete view over your end-to-end operations including stock levels, machinery status, product quality, order progress and more. Third, the data collected by the business – for example, order progress – can be used to engage smarter customers who are looking to new technologies to provide status updates of when their goods will arrive or components will be delivered to their production lines.

We look in more detail overleaf at the applications enabled by Next Generation Mobility in Manufacturing, the technologies behind it, and the value it delivers to your business.
EMPOWERING THE MOBILE WORKER

A key trend impacting all businesses is the greater mobility of the workforce. So it’s increasingly important to optimise the value of corporate information by making it accessible wherever teams need it. It’s also vital to ensure that your people can easily capture and update records so that operating data truly reflects the dynamic nature of the business. Rugged wireless handheld computers, scanners and PDA devices deliver against these requirements.

Mobile computers can provide managers with access to back-office inventory and planning systems for complete visibility of operations. Whether they are in the factory or away at a meeting, any exceptions can be flagged enabling them to respond accordingly. Likewise, production applications can adjust the manufacturing schedule in real time to accommodate order fluctuations and present the revised schedule on managers’ devices.

Handheld computers replace paper-based processes with electronic workflows. For instance, handheld scanners, used to read barcodes attached to raw materials arriving on-site, ensure stock information is accurately and seamlessly updated in back-office systems. The warehouse team can use scanners to efficiently manage stocktaking and pick stock faster with the real-time data used by warehouse management systems to automatically order replacement goods.

Handheld computers are also used to manage maintenance teams and engineers. The technology allows jobs to be sent to remote personnel who use their computer to access maintenance histories and manuals and request parts if needed. When a job is complete, they can remotely update back-office systems to close off service requests — saving valuable time as they do not need to return to the office. In an environment where any downtime to machinery can cost significant money, mobile computing minimises such disruption.

With computers and scanners designed to be worn or carried and used with ease, employees quickly embrace the technology. And, rather than pausing to manually record or check information using paper, the ability to easily capture and access information whenever needed delivers incremental productivity benefits across the business. It also plays a key role in enabling the perpetual inventory.

TOTAL ENTERPRISE ACCESS MOBILITY (TEAM)

Your teams are moving constantly. Supervisors work throughout facilities, equipment technicians are on the production floor checking equipment, operators are running plant, and quality engineers are moving throughout the building to ensure incoming goods to finished products meet standards. These personnel need access to continuous communications to do their jobs and Motorola’s TEAM technology delivers.

Compact handsets can be provided to personnel that can be used both within buildings/offices and throughout the facility to provide an ‘office in the pocket’ with access to a range of services. These include voice calls (with full services such as voicemail and call forwarding), email, ‘walkie-talkie style’ Push-to-Talk functionality, text messaging, and intranet and internet access. Users can also manage their schedule, calendar and address book.

Once installed, TEAM requires no monthly fees (as it uses the wireless network to connect users to services) and is easy and affordable to maintain. With integrated encryption, communications are highly secure. And by providing access to instant communications and a wealth of support services in the palm of the hand, the technology improves team collaboration, enhances productivity and helps your people make more informed decisions (e.g. making dynamic changes to schedules based on updated customer orders).
THE PERPETUAL INVENTORY

The perpetual inventory is defined as the end-to-end tracking of assets (e.g. people and machinery) that are important to the enterprise. It's achieved through a range of applications enabled by the continuous connectivity provided by the wireless broadband network:

Automated track and tracing with Radio-frequency identification (RFID)

By fitting RFID readers in facilities to read signals from small RFID tags, virtually anything can be tracked and traced across premises automatically. Tags can be attached to goods so, as they move through each phase of the production, back-office systems are updated to gain a real-time view of work in progress. RFID can be applied to track stock and provide a continuous update on inventory levels. So you can deliver exactly what your customers want without holding more inventory or materials than you need. With RFID attached to equipment, your teams can find and deliver parts more quickly to where they are needed. In addition, RFID tags can be attached to employees to track movements and quickly locate them should there be an incident.

Barcode track and trace

We have many customers who use barcode technology throughout manufacturing operations. Materials can be barcoded and recorded using handheld scanners when they arrive on site, when they are stored, or delivered to the factory. The data is relayed to inventory systems to coordinate replenishment. Key equipment can also be barcoded. Engineers can scan the code against their job sheet to ensure maintenance is being conducted on the right machinery.

Quality systems

Motorola’s partners have developed systems based on RFID and barcode technology that enable manufacturers to enforce quality procedures at each stage of the manufacturing process. Using the wireless network, RFID tags can communicate with robots or employees’ computers to confirm what work needs to happen at each station. The technology flags up anomalies in production and massively reduces error rates.

Order progress

By dividing the manufacturing process into key stages, barcodes can be scanned at each point of the workflow using wireless handheld computers and scanners. This collates a real-time insight into the progress of each order so that managers can see instantly how the schedule is progressing.

DPM

Many manufacturers use Direct Part Marking (DPM) to permanently mark products. DPM is used to trace production batches while manufacturers of premium products (e.g. furniture) use the technology to validate the authenticity of their goods. DPMs are very robust and can withstand manufacturing processes. The marks are scanned at the point of production using handheld computers with the details wirelessly recorded in back-office systems.

THE LATEST AND MOST SECURE WIRELESS TECHNOLOGIES

Motorola’s wireless broadband provides secure and fast connectivity across your facilities to support the transport of converged voice, video and data services on a single network. As it requires less infrastructure than comparable wireless networks, the technology is cost-efficient to deploy and maintain. And it provides the surety of continuous connectivity to support the smooth running of your facilities and capture, in real time, a complete picture of operating performance.
ENGAGING THE SMARTER CUSTOMER

Your customers are advocates of technology too. And, when searching for partners, they are increasingly looking beyond core manufacturing skills. Their evaluations take into account how you ensure quality and manage supply chain and logistics operations because the way you handle these areas can significantly reduce their operating costs. A classic example is Walmart. It asked its suppliers to RFID tag delivery containers so that goods are logged into its warehouse management systems automatically when they arrive on site. This capability significantly reduced processing costs at the recipient warehouse.

Many companies are now following Walmart’s lead. Similarly customers of component manufacturers often require specific processes to be followed during production that can be enforced — and audited — using RFID systems on the production line.

In addition, the information collated in real time using the wireless network and data capture systems can be shared with customers on secure web portals. For instance, the data can provide continuous updates on production progress and when components or goods will be delivered.

ENSURING UYT DELIVERS JUST-IN-TIME (JIT) TO HONDA

UYT receives vehicle door requirements from Honda weekly and, against this, devises its manufacturing schedules. To ensure the efficient operation of its plant, UYT has worked with Motorola partner Codeway to deploy a Kanban system to plan production and control robots along with barcoding and intelligent labelling technology to provide complete control and visibility over production.

At each key process from goods in to parts manufactured on robot presses, to welding and finishing, to stillage (storing parts in containers) and on to parts dispatch, the barcode data is captured using Motorola wireless handheld scanners. Chris Foster, UYT’s IT Manager, says: ‘The system is only as good as its data. But this is one of the beauties of the technology; it’s second nature for a line operator or welder to finish a piece of work, pick up the handheld mobile computer, scan the barcode and move on to their next job.’

The technology paints a complete real-time view over production with screens across the plant providing analysis of performance. Chris Foster says: ‘Previously we used to make “more than enough” to hit Honda’s line requirements; we now produce precisely what’s needed for Honda’s sequence schedule. The systems we’ve deployed automatically create production schedules that ensure cells work as efficiently as possible. We can also see exactly where we are, address any performance issues, adjust stock in real time, and have complete control over raw materials and validate their transformation into finished parts.’
ADVANCED DEVICES
We provide handheld computers, two-way radios and Voice over Wireless LAN (VoWLAN) devices to support communications across teams from production managers to line operators and quality inspectors.

ENHANCED INFORMATION CAPTURE
Our barcode scanning and RFID solutions connected by wireless networks can track inventory, people and processes in real time.

ADAPTIVE NETWORKING
We plan, build and can maintain your wireless broadband network for you. And our highly scalable, rugged and cost-efficient systems ensure that high-speed data services are available with exceptional reliability.

INTEGRATED COMMUNICATIONS
The network can support voice and data and, by using Voice Over IP (VOIP), call costs across facilities are free of charge.

ADVANCED APPLICATION SERVICES
Our expert teams and partners can help you drive the utmost value from your wireless network by running smart applications on it. These include order progress tracking, inventory management systems, RFID quality processes and part marking.

CONNECTED CUSTOMER
Our RFID systems can help you interface more efficiently with your customers’ operations and continually update customers on order progress in real time.

MANAGEMENT
The data collected across the business can be constantly monitored against Key Performance Indicators to keep an eye on progress and automatically flag problems.

SECURITY
Rigorous security systems protect against intrusions across the mobile computing platform. We also provide systems to remotely oversee and update networks and devices.

SERVICES
Our expert teams are available to help you build and integrate the components for the Next Generation Manufacturing environment. We can also manage and maintain the systems, enabling you to focus on running your business.
We have developed a clear platform to enable Next Generation Mobility in Manufacturing that encompasses a range of technologies. The start point is the data collected by your people using handheld computers (from logistics, supply chain and shop floor applications) as well as the stream of information generated by assets including RFID and barcode labelling systems. The data is analysed, catalogued and stored using automated back-office applications so that it can be put to use by the business. Remote teams access the data through our extensive portfolio of wireless handheld devices that are connected to the back office using a combination of broadband and mobile networks. This real-time connectivity to corporate information, complemented by applications available on their computers, enables your people to make better decisions on the move and improve productivity.

Next Generation Mobility in Manufacturing helps organisations rise to the challenge of operating in dynamic and highly competitive environments. With continuous access to critical business data, your people can help the business respond faster to market trends. Furthermore, you can drive efficiencies and cost savings across operations while optimising production quality and improving customer service. In short, you become more competitive.

For more information on how we can help prepare your enterprise operation for Next Generation Mobility in Manufacturing, please contact your Motorola representative or visit:

www.motorolasolutions.com