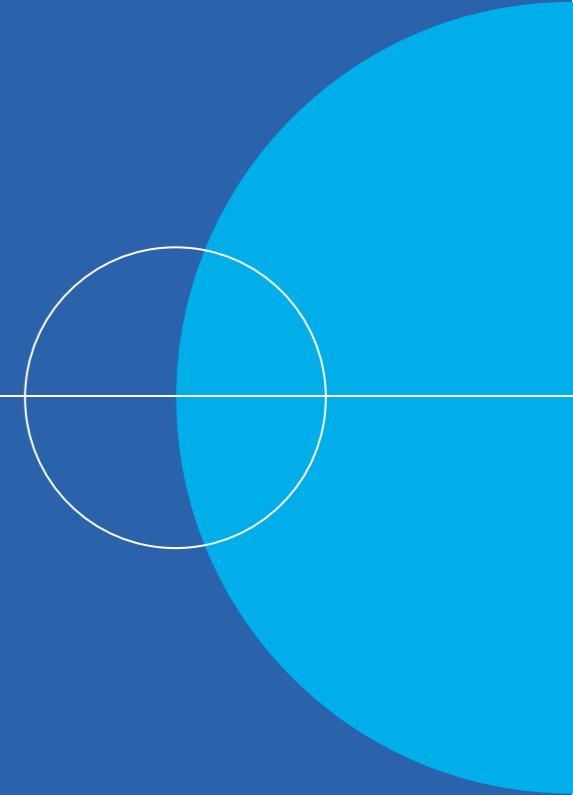


Panasonic CONNECT



THE INDUSTRY 4.0 TECHNOLOGY SOLUTIONS
SHAPING MANUFACTURING'S FUTURE



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Introduction

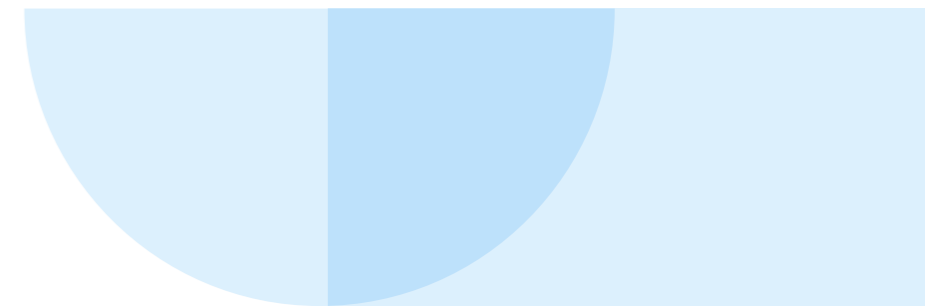
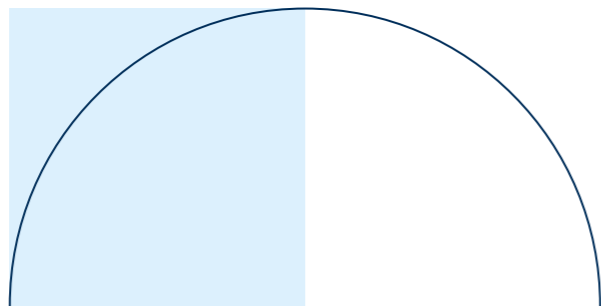
Konosuke Matsushita, founder of Panasonic Corporation, understood that continuous evolution and progression was at the heart of a successful manufacturing when he said:

"The ladder to a goal is built of a collection of single steps. Take each step using no gimmicks or artifice, and you will eventually reach the pinnacle."

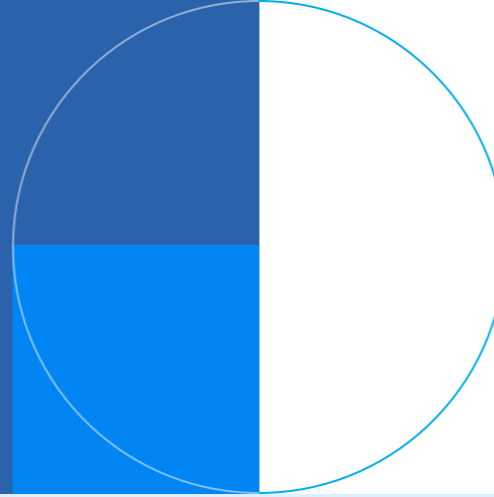
Manufacturing leaders have never forgotten that ethos and today are climbing a ladder towards digital transformation of the industry to address current challenges and ready themselves for the future.

Business as usual is not an option. Global competition demands manufacturers deliver their products faster and more efficiently than ever before – in an ever more challenging supply chain environment. Changing buyer behaviour requires increased flexibility and agility in the manufacturer processes to match. Labour grows increasingly scarce; sustainability is front of mind and technological innovation threatens to disrupt traditional business models.

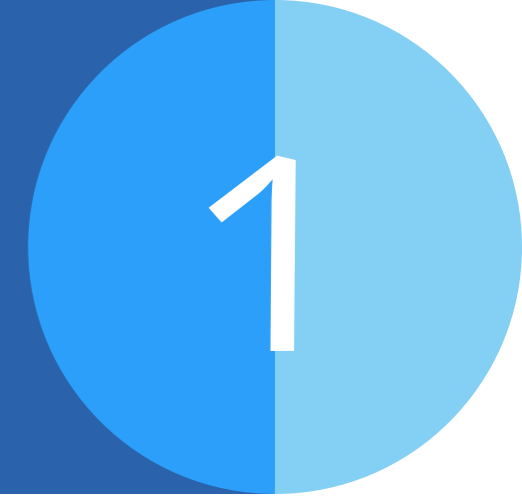
However, the move towards Industry 4.0 promises to alleviate many of the pressures on manufacturing. The technological building blocks, such as robotics, sensors, AI and its deep learning applications, look to be in place. The challenge now is to use these technologies to connect and automate each individual element of the production process, from the intake of components, through manufacturing to the product's ultimate destination. This whitepaper looks at the technologies at the heart of the transformation underway in manufacturing and the solutions being deployed to create efficiencies, improve quality and enable competitive advantage.



The Industry 4.0 Technology Solutions Shaping Manufacturing's Future



Transforming Manufacturing Processes with Gemba Process Innovation



Recent research by specialist analysts Aberdeen, commissioned by Panasonic, identified the five most prevalent pressures on improving Manufacturing Operations.



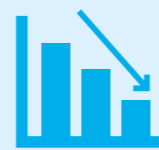
34%

INCREASING PACE OF
INNOVATION / CHANGING
BUSINESS MODELS



34%

CUSTOMERS DEMAND
COMPETITIVE DIFFERENTIATION
WITH HIGHER QUALITY



31%

NEED TO
REDUCE COSTS



30%

IMPROVE
ABILITY / FLEXIBILITY
TO RESPOND TO BUSINESS
DEMANDS



30%

NEED TO SHIFT
MANUFACTURING AND
SOURCING DUE TO
SUPPLY CHANGES

As a result, the transformation of the manufacturing sector is taking place on many levels. Lift the lid and it's the application of the latest thinking and technologies along each step of the production process. Here we look at the five fundamental solutions areas that are changing the way the industry works.

In the quest for efficiencies, manufacturers are looking to optimise the flow of information from systems and people at their operational fronts with new processes. In Japan, they call this the "Gemba" – the physical site where things happen. Panasonic Gemba Process Innovation combines an in-depth understanding of the organisation and of the latest available technologies to deliver new methods of working.

Gemba Process Innovation is Panasonic's major initiative around B2B solutions that leverages its manufacturing know-how and core technologies to innovate customers' processes in manufacturing. Panasonic helps clients to connect the "physical Gemba" layer with the "digital" layer – integrating to connect individual Gembas to the central system to continuously improve processes and outputs.

Gemba Process Innovation in action:

Teseo Spa uses video projection for greater precision and speed when cutting raw materials

Teseo Spa, a leader in Italian leather and fabric processing, has incorporated Panasonic visual solutions into its automated cutting systems to improve efficiencies. With more than 50 different leather shapes required to make an artisan Italian leather shoe, cutting time and efficient use of materials is an important commercial factor.

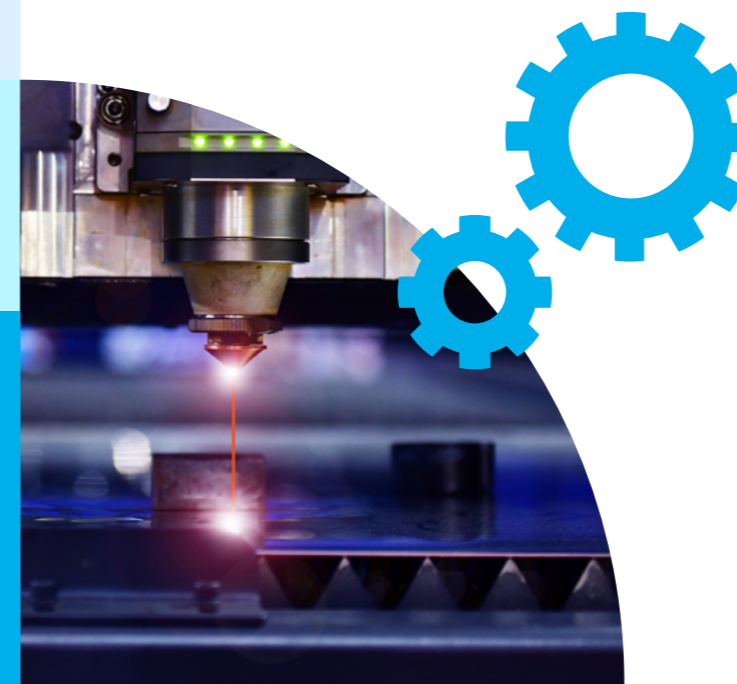
The automated operation and its added **efficiencies save the company up to 7% in raw material waste** and reduce cutting time from **up to 8 minutes per job to just 30 seconds**.

Continental Automotive transforms supply chain process for receiving components

Visual Sort Assist can process 300 parcels every 20 minutes and eliminates search time by up to 90%.

Continental Automotive is rolling out a Panasonic supply chain solution to its manufacturing facilities around the world, following successful deployment at its German facility in Regensburg, one of two pioneering plants for Industry 4.0. **Visual Sort Assist (VSA)** can revolutionise the inbound and outbound sorting of goods used in the manufacturing process. It reads the bar code on each package, using high performance cameras, as it travels on a conveyor. A projector, linked to 3D sensors, then beams a coloured symbol onto the packages for easy sorting. In addition, other information such as "urgent" can also be projected onto the individual packages, for efficient handling.

This Panasonic solution has transformed the receipt of goods at the Continental facility with the system processing 300 parcels in 20 minutes – almost regardless of placement, font size, font, or possible previous damage. Search times have now been eliminated by 40% – and will be reduced to 90% following the next update of the Warehouse Management Software.

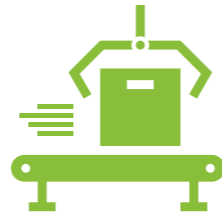


Manufacturing Automation and Digitalisation

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"Speeding time to market, driving efficiencies, improving quality and eliminating costs are the holy grail driving automation and digitalisation in manufacturing. Panasonic Factory Solutions Europe is one of the leading companies in the development of these solutions."

Peter Barber, Department Head Solution Engineering, at Panasonic Factory Solutions Europe



Through the use of transformational technologies such as IoT, Big Data, AI and Robotics, the organisation is helping manufacturers to become ever more competitive. Its solutions are being deployed to achieve a number of goals.

There are three main areas:

- Optimising manufacturing processes through the use of sensors and virtual twin visualisation
- Implementing predictive maintenance to ensure uptime and reduce costs.
- Automating to improve productivity and reduce labour reliance and defect costs.

Solutions include:

- Integrated line management systems that provide collective control of the entire production line from just a single PC. ILNB provides collective control of the entire production line, including non-Panasonic machines. It improves productivity, ensures quality control and supports the production process.
- Manufacturing Operational Optimising software (MFO) to simulate an optimised production line, including production line layouts and on-site operations. The Production Planning Optimiser (Asprova APS) is an advanced and highly flexible planning and scheduling engine for the entire production workflow.

- Integrated management of the smart manufacturing technology throughout the organisation – from one machine to more than 1000 – including modules for material control and verification, production control, traceability, analysis, monitoring and maintenance. PanaCIM® Enterprise Edition – Manufacturing Execution System (MES) software provides new levels of integration across a company's entire enterprise. This powerful software solution is a comprehensive set of collaborative applications designed to help streamline the overall manufacturing process and drive cost efficiencies.
- Automatic program generation for High Mix, Low Volume (HMLV) manufacturing – saving valuable time and effort. Importing CAD / BOM, creating PCB data, choosing a line and setup, optimising, creating a program, and downloading can be done automatically and seamlessly.
- Parallel Link Robots to automate manual process such as applications like PTH component insertion, assembling, adhesive application, soldering and wiring.

Transparency through the Manufacturing Supply Chain – Zetes

3

"The move to the autonomous factory will be evolutionary, not revolutionary. It will be modular and can already be tailored to meet individual needs. The good news is that we have made massive strides towards this future in recent years. The foundation technologies delivering Industry 4.0, such as robotics, AI and its deep learning applications, are the building blocks of this future world."

Iván Rodrigo Flor Cantos, Head of Panasonic Smart Factory Solutions at Panasonic Connect Europe



A major priority for European manufacturers is to achieve real-time supply chain visibility. Research highlights that poor availability and harmonisation of accurate data are still serious barriers. 89% of manufacturing management said that a single view of the supply chain was a priority, yet 70% reported no end-to-end visibility in research undertaken by Sapio Research on behalf of Zetes, a Panasonic subsidiary.

Specialising in collaborative automation technologies and workflow software for supply chain process execution, Zetes helps manufacturers to overcome visibility, traceability and efficiency issues in order to:

- Increase operational performance and control through automated, optimised and integrated processes.
- Eliminate supply chain blind spots, knowing at all times where your goods and assets are.
- Reduce inventory while ensuring on time in full deliveries.
- Gain visibility on inventory and the condition of goods whilst in-transit, identifying temperature fluctuations or significant shocks that might affect product quality.

The Autonomous Supply Chain – Blue Yonder

The need for more intelligent, autonomous and edge-aware supply chains has been dramatically heightened by the COVID-19 pandemic, the rise of e-commerce and the proliferation of data.

Panasonic's acquisition of supply chain industry leader Blue Yonder accelerates the companies' shared Autonomous Supply Chain mission, empowering customers to optimise their supply chains using the combined power of AI/ML and IoT and edge devices. By unifying supply, demand and commerce solutions with IoT and edge technologies, companies can better utilise predictive business insights to react in real-time.



4 Boosting productivity through the use of Mobile Computing in Manufacturing

4

"With Toughbook solutions we keep customer's data and devices strong, safe and reliable, while supporting their digital transformation processes"

Britta Wessels, Key Account Manager Manufacturing & Logistics DACH/CEE

As manufacturers look to streamline their workflow process and enhance performance, equipping the workforce with the right mobile computing devices is an important decision. Panasonic TOUGHBOOK rugged mobile computing solutions are being used in a wide variety of manufacturing areas such as production lines, maintenance and repair operations and warehousing management to:

Reduce downtime and boost efficiency

Increasing production uptime is one of the key challenges in manufacturing environments. Equip staff with TOUGHBOOK mobile devices to automate processes for the leanest possible operations. Replace the need for pen and paper to reduce handwritten data errors, and give workers access to planning, scheduling, job and routing information instantly.

Predictive maintenance of production machinery

Predictive maintenance software, running on TOUGHBOOK devices, enables early detection of machine faults, increasing uptime, whilst decreasing the amount of materials and parts necessary for repairs.

Smooth-running warehouse operations

Run inventory software on a rugged handheld allows mobile workers to access critical stock and location information in real-time. From receiving and moving, to ordering and dispatching items, TOUGHBOOK devices enable greater picking and packing precision, faster pickup and delivery times, and seamless stocktaking and replenishment.

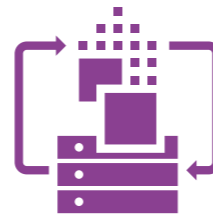
Forklift truck operation is another vital part of warehousing. The computers chosen to mount on the vehicles are a crucial investment in the smooth and efficient running of the operation.

Technical services and diagnostics

Service technicians can use our devices as diagnostic tools by simply plugging in any machine that needs to be serviced. The tablet can be used to update firmware, significantly improving first-time fix rates and quality.

Panasonic Toughbook devices in action

Italian beverage company San Benedetto adopted rugged Panasonic TOUGHBOOK tablets for efficient production line management, as part of the company's digitalisation process. It issued its production line employees with 65 Panasonic TOUGHBOOK A2 fully rugged tablets for use in its factories. The devices have helped the manufacturer take a major step towards a paperless environment by simplifying processes and operations and increasing productivity through the digitalisation of its production processes.



Summary

Throughout history the manufacturing sector has often been the industry to lead the adoption of new technologies and methods of working to improve productivity and drive down costs. In this age of automation and digitalisation that progressive spirit continues.

Whatever the manufacturing challenges, from digitalisation to automation, from supply chain visibility to security and mobile computing productivity, Panasonic and its partners can assist. Its team of experts stand ready to help consult, analyse, design, integrate and deploy solutions across the manufacturing environment to help transform and ready business for the future.



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To find out more about our manufacturing solutions, visit:

business.panasonic.co.uk/solutions/smart-factory-solutions-to-support-industry-40

Find out more about the Continental Automotive Case study here:

business.panasonic.co.uk/solutions/continental-automotive-drives-towards-supply-chain-evolution

**Find out more about how to optimise your manual sorting processes
with the Visual Sort Assist Solution here:**

business.panasonic.co.uk/solutions/visual-sort-assist

Contact us

business.panasonic.co.uk/solutions/contact-us

Address

Panasonic Connect Europe GmbH
Panasonic Connect Europe GmbH is a company registered in Germany
at Hagenauer Strasse 43, 65203 Wiesbaden, Germany.