



## PCI Strives to Achieve Manufacturing Excellence Through Digital Transformation: Smart Factory



Digital transformation is at the heart of Industry 4.0, where manufacturing operations and assets are transformed into digitally-driven, interconnected systems that enable new business models and greater productivity. This trend has accelerated since the beginning of the COVID-19 pandemic, with many companies in the electronics manufacturing space being forced to embrace many of the central ideas in digital transformation and Industry 4.0 to survive. The most successful EMS companies accelerated their transition to digital-first operations to ensure productivity and ability to serve customers amid lockdowns, supply chain complications, and many other challenges.

The electronics manufacturing space traditionally requires hands-on, on-premises efforts from workers and production engineers, yet it has always needed to remain agile and innovative. Advancing technologies, supply chain volatility, decreasing time to market, and greater competition on a global scale are the major drivers of innovation at successful EMS companies. PCI is no stranger to the need to innovate its manufacturing operations and has already implemented many of the central ideas in Industry 4.0, with the end goal of transforming its manufacturing and management operations. For EMS companies like PCI, digital transformation enables a new level of data sharing and productivity, it also enables manual management tasks to be transformed into digitally-driven processes. PCI has managed to expand its implementation of Industry 4.0 beyond connecting management systems and has realized high penetration levels across functional groups within the company. Ultimately, these efforts have improved the customer experience and helped customers stay competitive in the fast-moving electronics industry.

PCI's vision is to stay ahead of Industry 4.0 developments and use these smart factory platforms to gain a digitally-enabled competitive advantage over other EMS players.

By implementing greater automation in manufacturing operations and management, PCI can streamline the customer experience and eliminate many manual processes that compromise quality. These efforts have laid the foundation for a permanent cultural shift within the company to embrace continued innovation in the company's processes.

### Front-end Order Management

Enhancing the customer experience requires moving quickly in response to customer demand but without sacrificing quality. PCI's integrated sales and order processing system enables a faster, more flexible response to customer demand changes, even with last-minute drop-in orders, something that is typical in high-mix, low-volume EMS businesses.

**Automated sales and order management:** Improving the customer experience and ensuring accuracy begins with an automated sales and order management process. Manhours saved in this front-end process are redirected to other activities that create more value for customers in terms of cost, quality, and accuracy. PCI's automated order capture and entry system allows sales orders to be received and routed quickly and accurately, thereby eliminating manual work and increasing overall labor productivity. Risks surrounding manual data entry errors are eliminated with this system, and to date the average order entry and processing time has decreased by over 90% per sales order. Any problems or inconsistencies in sales orders can be caught early in the process and corrected before production begins. This system also integrates with PCI's ERP for real-time management of sales orders.

**Integrated order planning:** An integrated order planning system gives PCI the real-time visibility it needs to quickly respond to customer orders and capture additional sales

opportunities as they arise. Real-time visibility also extends into the supply chain, allowing PCI to quickly execute orders and react to unforeseen supply changes. PCI can deliver faster responses to customers with improved forecasting accuracy, ultimately providing faster time-to-market by eliminating communication delays with customers. Reduced manual administrative tasks and real-time material kit visibility helps PCI's customers track and manage lead times for new orders as part of their go-to-market strategy, including last-minute or ad hoc orders.

## Agile Supply Chain

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PCI's supply chain management system is designed to help the company stay agile and control costs. Agility filters down to a streamlined customer experience that accommodates last-minute supply chain problems and customer order changes without derailing production schedules. Integration with supplier networks and real-time visibility into warehousing operations are two key points in implementing an agile supply chain.

**Supplier Network Integration:** In order to help expedite procurement and successfully manage its supply chain, PCI opted to digitize and streamline its interactions with suppliers to reduce manual workload and facilitate scaling. Supplier integration through a cloud-based platform enables error-free process automation in supplier interactions, as well as visibility on desktop and mobile devices.

**Warehouse Digitization:** A digitized inventory and warehouse management approach helps ensure accurate order execution and on-time delivery while also eliminating manual data entry tasks. PCI's real-time warehousing system can keep track of inventories, improving speed, agility, efficiency, and productivity. This initiative decreases time-to-market for customers by anticipating and preventing assembly and shipping delays.

## Factory Operation

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**Plant maintenance:** PCI's digitally automated maintenance tracking system helps ensure high uptime by providing full visibility into maintenance history and lifecycle of production assets. Moving to a digital platform also helps PCI ensure productivity by eliminating a massive amount of paperwork. Centralized control over the plant maintenance cycle also allows targeted maintenance activities to be expedited so that production delays and cost overruns are prevented. By tracking maintenance data in a centralized database and analyzing maintenance history, downtime and total maintenance costs can be reduced by implementing a preventive maintenance program and optimizing maintenance cycles. These investments help PCI ensure high throughput for customer orders, ultimately preventing production delays and reducing time-to-market.

**Automation:** Automation is often the focus of digital transformation initiatives within the electronics manufacturing space. PCI has continued its shift away

from many manual production and assembly processes with new investments in automation as part of its Smart Factory initiative. Implementation of progressively greater automation throughout its operations has helped drive higher productivity, reduce defects, ensure uptime, and streamline production for customers by continuing to eliminate manual activities and processes. The result of these automation initiatives is greater value creation for customers by reducing lead times, ensuring resilient supply chains, and higher quality end products.

## Business Process Automation

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Automation in manufacturing should extend beyond the production line and into all areas of the business that drive the customer experience. PCI's business process automation initiative focuses on this area of automation so that management can implement an agile production model and ensure high throughput, yield, and quality in all areas of production.

**Mobile dashboard:** Management at PCI have access to a mobile dashboard that provides visibility into KPIs that reflect value creation and a streamlined experience for customers. Important data surrounding incoming sales orders, current order fulfillment status, production metrics, and supply chain information can be accessed in real-time directly from a mobile device. Management can make timely data-driven decisions and change course as needed to ensure financial performance is optimized.

## Continued Digital Transformation in 2022

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Due to the great success of these pilot projects, PCI plans to expand its digital transformation initiatives into new areas in 2022. As PCI continues its transformation into a digital-first, cloud-enabled organization, additional systems are targeted for continued development and automation under PCI's Smart Factory 2.0 initiative.

PCI aims to continue scaling these production management and automation initiative to produce the highest quality products and help customers stay competitive. Further implementation of a digital transformation vision involves ongoing expansion of existing projects into other areas of the business. These continued development initiatives will increase productivity, improve quality, and transform the overall customer experience.

Overall, these initiatives help PCI remain competitive and responsive to shifting customer needs, supply chain demands, and demand for faster time-to-market. PCI is now able to be more agile thanks to comprehensive data visibility and a faster management feedback loop. The benefits to customers include faster turnaround, reduced defect and error rates, and better management of supply chain risk. Companies who are looking for a manufacturing and engineering partner should consider working with a competitive EMS like PCI.



Is your next product prepared to be the market leader?

TALK TO US.

Your product is unique. Your EMS partner should be too. PCI brings the full suite of capabilities to successfully take your product from design to volume production and delivery.

#### You Need a Solution to Your Product's Complete Lifecycle

As a one stop source of end-to-end services, we design, manufacture and deliver electronic products to end customers all over the world. Our comprehensive services include:

- Full turnkey product management
- Product design and introduction
- Advanced manufacturing capabilities
- Global supply chain management
- Testing, regulatory certification and quality assurance
- Logistics

Our dedicated teams of experts listen to your requirements and work hand-in-hand with you to formulate strategies and solutions best suited to your specific needs. Think of us as your companion in the journey to bring your products to market.

#### Supplement Your Engineering Know-How with Our Advanced Technology Design Expertise

Every day, we are advancing our customer's products by incorporating RF/wireless connectivity, telematics, HMI, single board computer, system on modules, vehicle 2 everything (V2x), IoT and more. Let us help do the same for yours.

#### Rest Easy, Your IP is Safe with Us

Your products' intellectual property is the key to your competitive advantage. As your partner at every stage of your products' lifecycle, we safeguard your IP to prevent any possible leak of data. Information flow between our global locations is rigorously regulated by our Singapore headquarters and controls are implemented in our integrated systems to ensure your information stays protected and secure.

#### Innovation Is Not an Option But a Necessity

We never strive to be good enough; we exceed expectations and industry standards. Our dedicated teams specializing in Product Design, Manufacturing, Supply Chain Management and Quality constantly develop innovative solutions to maximize your product's competitive advantage at every point of its lifecycle. Our designers collaborate with you to create new breakthrough technology platforms for your exclusive use.

Your product is unique and our programs are tailored to bring your product to market in the way that works best for you and your customers. We incorporate Lean Six Sigma approaches for flexibility, efficiency and scalability as we bring your products to market.

#### Your Product as It is Meant to Be through Testing, Regulatory Certification & Quality Assurance

Quality is non-negotiable. We are committed to the highest service standards. These certifications include:

- ISO 9001:2015 - Quality management system
- IATF 16949:2016 - Quality management system for the manufacturing of automotive-related products
- EN ISO 13485:2012/AC2012 - Quality management system for the manufacturing of medical devices
- Singapore Quality Class (2012) - Business excellence
- ISO 14001:2015 - Environmental management system
- ISO 45001:2018 (bizSAFE Star) - Occupational health and safety management system
- Green Mark Gold Award (2013) - Environmentally friendly building - PCI headquarters

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