

SMART MANUFACTURING MATURITY CHECKLIST



Smart Manufacturing (Industry 4.0/Manufacturing 4.0) is the use of real-time data and technology when, where and in the forms that are needed by people and machines. Smart Manufacturing uses the Industrial Internet of Things (IIoT) and the Converged Plantwide Ethernet -CPwE) – the underlying architecture for control and information disciplines, devices and equipment to deliver “fully-integrated, collaborative manufacturing systems that respond in real time to meet changing demands and conditions in the factory, in the supply network, and in customer needs.” It is an environment Connecting Process, People, and Performance.

Starting the Journey requires that manufacturers assess every aspect of the plant floor. This assessment includes the Industrial Network, equipment, processes and people. By prioritizing the findings of the exploration of the plant assets, a successful plan can be developed and transformation can begin. Polytron’s complimentary Smart Manufacturing Checklist provides some key areas to consider.



SMART MANUFACTURING CHECKLIST

Company Name:	
Company Address:	
Completed By:	
Title:	
Date:	

GETTING STARTED

The Smart Manufacturing Checklist provides Considerations for any type of manufacturing facility where there is potential for the use of real-time data and technology to create a Smart Manufacturing environment. This listing of questions and information to review, discuss and answer YES/NO is designed to help you determine the current state of your facility.

Who should complete this checklist?

Anyone who has knowledge of the plant's operation, technology, workforce and its functions.

Recommendation: Involve a combination of operators and/or maintenance personnel to gain the greatest benefit.

SMART MANUFACTURING CONSIDERATIONS			
YES	NO	Don't Know	
			1. THE BIG PICTURE
			a. Have you assessed and benchmarked your Smart Manufacturing maturity index compared to other manufacturers?
			b. Have you developed a strategy for your Smart Manufacturing Digital Journey?
			c. Does your strategy include a road map, with short- and long-term goals, to ensure all projects support your long-term vision?
			d. Have you identified pilots with high ROI that allow you to start small and deliver big wins?
			e. Have you begun the Cultural Transformation that will be required during your Digital Journey?
			2. THE DETAILS
			a. Are there manual data handling tasks being performed that can be automated and digitized? Examples:
			i. Manual data collection, entry and analysis for tasks such as operator logs, downtime, quality, production, Work in Process (WIP), etc.
			ii. Extracting data from disparate systems (i.e. Production Order from ERP) and having to enter that same data into other systems (i.e. MES or HMI to run production).
			b. Do you have real time visibility into your operations in order to make data-driven decisions?
			c. Are your systems integrated for contextualizing information (Connected Factory)?
			d. Are there manual repetitive manufacturing tasks being performed by personnel that can be automated by use of cobots or mobile robotics?
			e. Are you leveraging IIoT technologies such as RFID for more efficient product tracking, recording of production parameters, better inventory control, etc.
SMART MANUFACTURING EXAMPLES INCLUDE: Integrated MES (Electronic forms, Planning & Scheduling, Job/WIP Management, Labor Management, Workflow Management, Task Management, Material Management, Traceability, Quality & SPC, Regulatory Compliance, Messaging & Notification, Mobility, Historian, Maintenance Management, Energy Management, Performance Management, Enterprise Visibility) IIoT devices – RFID, etc. / Wearable technology / Augmented reality / Cobots / Mobile robotics / Artificial Intelligence (Machine Learning, Predictive Analytics, Deep Learning) / Big Data / Cloud computing / Greater automation levels			

SMART MANUFACTURING CONSIDERATIONS			
YES	NO	Don't Know	
			3. SMART MANUFACTURING - INDUSTRIAL NETWORK
			a. Is there an active Ethernet/IP Network?
			b. What is the age of your Industrial Network?
			c. Is your Industrial Network shared between Enterprise systems and automation systems?
			d. Is the network documented, i.e. physical and logical drawing sets?
			e. Has your Industrial Network utilization been an issue?
			f. Has newer technologies been an issue integrating with existing systems? i.e. outdated automation & controls hardware/software
			g. Has communications between systems been an issue due to network limitations and/or reliability?
			h. Has a Network Assessment been completed?
			i. Is your Industrial Network digital ready?
			j. Is the business embracing mobile, cloud, video and IIoT technologies?
			k. Is there any plan for the above technologies?
			l. Do you have an Industrial Network management strategy?
			m. Is there onsite staff that understands and can support the Industrial Network?

Roadmap to Smart Manufacturing



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SMART MANUFACTURING CONSIDERATIONS			
YES	NO	Don't Know	
			4. SMART MANUFACTURING - WORKFORCE DEVELOPMENT
			a. Are your job descriptions up to date?
			b. Have you incorporated Smart Manufacturing competencies in you Skill Set and Performance Matrices?
			c. Have you developed a Mentor program?
			d. Do you have an "Instructor Certification" or "train-the-trainer" program
			e. Do you offer computer based training?
			f. Are your Standard Operating Procedures (SOPs), Job Aids and 1-PT Lessons documented and up to date?
			g. Do you have a yearly review process in place for updating existing documentation for accuracy against upgrades and process changes?
			h. Do you offer virtual, simulation, or augmented reality based training?
			i. Do you allow machine knowledge training to be available on smart devices?
			j. Do you maintain a knowledge map?
			k. Do you administer skill assessments?
			l. Have you developed training plans for the workforce and individuals?
			m. Do you have consistent standards and templates?
			n. Is there a process to assure that employees are certified after receiving training at your facility?

How to Assess the Outcome of the Checklist

1. Items checked in the "NO" column - Following the Roadmap for Smart Manufacturing, a formal assessment is recommended to determine the impact on overall plant efficiency and cost.
2. Items checked in "Don't Know" column - Additional information is needed. Involve others who might know how to answer the question appropriately or involve a third party to assist in the evaluation.

Next Steps

Polytron's Roadmap offers complete Smart Manufacturing solutions from assessment, definition, design, implementation, validation and training. Call today to discuss your next steps.

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