

A smart factory is a highly automated and connected manufacturing environment that leverages digital technologies, the Internet of Things, artificial intelligence, and data analytics for optimized production processes. The concept of a *smart factory* is the embodiment of today's industrial revolution, technology like the Internet of Things (IoT), artificial intelligence (AI), robots, and automation being adopted in manufacturing processes.

Safety and Ergonomics: Smart factories can have advanced safety systems—from wearables monitoring workers' vital signs to sensors that check that machines will not operate when it is unsafe to do so.

Risk Management: Regular audits for cybersecurity threats, threat detection tools, and secure communications protect the factory against cyber-attacks or system breaks.

Data analytics provide real-time performance metrics about everything from machine performance to energy use, ensuring managers can act in real time to whatever issues crop up.

Adaptive Systems AI can enable systems to learn from experience in improving their operations continuously and adapt to changing conditions on the factory floor. The workplace will be designed for collaboration between man and machine; predictive tools, AR, and intuitive interfaces enable operators to undertake their tasks in a more structured and efficient manner. It is the next evolution in traditional manufacturing whereby physical and digital systems work seamlessly together to help enhance efficiency, reduce costs, improve quality, and permit more flexible production.

Sustainability: IoT and automation reduce waste by optimizing production schedules and improving material usages, besides reducing energy per unit produced.

Supply Chain Integration Smart Logistics: Smart factories often .integrate into the larger supply chain