



DIGITAL TWIN MANUFACTURING

Fast. Flexible. Accurate.

steptools.com • mtconnect.org •
qifstandards.org • iso.org • omac.org



Digital Twin Manufacturing bridges the past, present and future to drive business and manufacturing outcomes through actionable intelligence throughout the production lifecycle.

WHAT IS DIGITAL TWIN MANUFACTURING?

The Digital Twin is a virtual, real-time representation of manufacturing systems or components, such as personnel, machines, parts, assets or process definitions. It continuously accumulates data, updates and changes in unison with its physical counterpart to represent past and present performance, operations, environment, product geometry or resource states.

The Digital Twin combines the benefits of visualization with live and historical data. Along with applied analytics and machine learning, the Digital Twin provides valuable actionable intelligence, including predictions or early warnings about future performance or anomalies.

ADVANTAGES

The Digital Twin delivers advantages across multiple

aspects of manufacturing including production and design, remote diagnostics and service, future development, and collaboration.

Production and Design: The Digital Twin allows on machine measurement for fast, accurate component production. Data sharing and interoperability improve efficiency and resources for evaluating production decisions. Early warning of failures or changes in performance allows proactive resolution and improved efficiency. Visual comparisons of actual components being used by people in their production environment provides important feedback on design.

Remote Diagnostics: The Digital Twin provides real-time data for quicker resolution of issues and troubleshooting.

Remote commissioning and diagnostics lower service costs and improve efficiency.

Future Development: New components can be developed with insights based on behaviors of existing products in the real world. Performance and usage are reflected in the twin, providing a feedback loop into the product development and manufacturing process to improve performance and margins.

Collaboration: The Digital Twin can connect separate systems for improved tracking and monitoring. Visual representation of the twin and data sharing permits increased control over complex systems that require management by multiple groups.

Collaboration among multiple disciplines leads to a much better understanding of the individual components and the overall process. This results in better designs and improved use of resources.

APPLICATIONS

- Digital models of production items, such as machines, cutters, fixtures, robots.
- Digital models of production processes.
- On-machine measurement.
- Self-driving tools
- Optimizing feeds after tool changes
- Error free manufacturing
- Preventing collisions on restarts
- Faster life cycles
- Communicate issues and opportunities across the enterprise.

Digital Twins provide a powerful business and engineering tool. Digital Twins, along with technologies such as machine learning, object recognition, and signal processing, will drive the future of the Industrial Internet.

Learn more about how you can apply Digital Twins in your production environments. Get involved with organizations such as Step Tools, MTConnect, QIF Standards, ISO, and OMAC.

