

# THINGWORX CONNECTED WORK CELL

## ThingWorx CWC Application:

Enable manufacturers to deliver up to date, digital, and in-context information to operators on the shop floor. Combining data from multiple production sources to provide operators a seamless bi-directional interaction with all data required to perform daily work.

### CWC delivers:

- ✓ **Authoring - Multiple step types and versioning**
- ✓ **Supports Fabrication and Assembly Manufacturing**
- ✓ **Work Order Scheduling**
- ✓ **Operator Executing and Step by Step Tracking**
- ✓ **Smart Tool Configuration**
- ✓ **Station Dashboard Display**
- ✓ **File Storage and Document Management**

CWC provides manufacturers and their operators a single source to create, store and execute version-controlled digital work instructions. The authoring process is easy to use, includes multiple step types, and is compatible with smart tools. This method of digital work instruction eliminates gaps in shop floor knowledge, increasing uptime and availability.

### The Problem

For manufacturers with complex discrete products, work instruction simplicity and consistency are critical for optimal performance, but it's often very

challenging to isolate the correct instruction from the variety of possibilities: ERP, MES, paper, PDFs, etc.

This disconnect between instruction sources increase the training burden and causes operators to waste time switching between systems seeking the right information.

### The PTC Approach

#### Building an IoT Environment

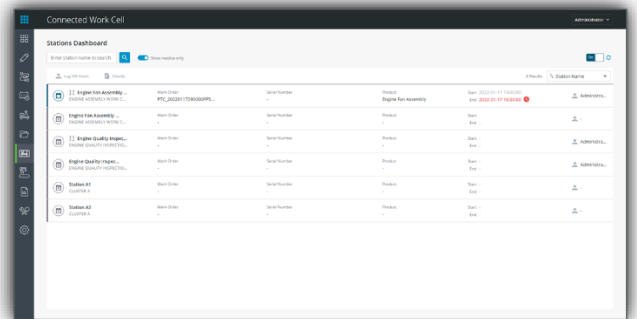
CWC is built on top of the ThingWorx platform. ThingWorx serves as the IoT hub for CWC, allowing you to pull in data from several data sources, such as Kepware, Windchill, and smart tools.



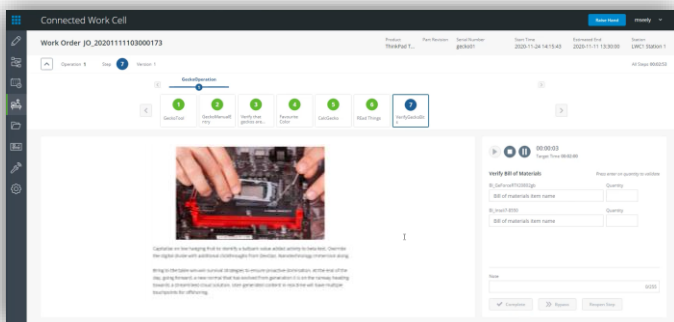
## CWC Out of the Box

- Multi-Step Assembly Authoring Step Types
  - ✓ Instructional
  - ✓ Verification
  - ✓ List
  - ✓ Manual Entry
  - ✓ Smart Tool
  - ✓ Parts Verification
  - ✓ Calculation
- Fabrication Authoring
  - ✓ Create or import reference documents
  - ✓ Dynamic document values updated based on station and product
  - ✓ Set up log sheets for operators to enter manually collected measurements
- Approvals and Versioning
  - ✓ Single Approval Level for Work Instructions
  - ✓ Up to Level 2 Approval for Documentation and Log Sheets
  - ✓ Versioning for Work Instructions, Documents, Log Sheets, and Files
- Route Management
  - ✓ Connect work instructions that straddle stations
  - ✓ Accommodate variations in steps based on products
  - ✓ Assign production points
  - ✓ Enable auto-advancing
- Work Order Scheduling
  - ✓ Capable to come from external systems
  - ✓ Filtering on status
- Operator Executing and Step by Step Tracking

- Smart Tool Configuration
  - ✓ Provide name, location, picture, and properties
  - ✓ Link through KepServer
  - ✓ Link Documentation for the tool
- Stations Dashboard Display
  - ✓ Display status of each station
  - ✓ Operator log records
  - ✓ Current work order



- File Storage and Document Management
  - ✓ Complete history of documents
  - ✓ Linked to work instruction version
  - ✓ Use document metadata for performance
- Reporting
  - ✓ Performance Reports to compare ideal vs actual operator cycle time
  - ✓ Drill down to compare individual steps
  - ✓ Export data into .CSV files for additional analysis



## Technical Requirements

Software Component	Version	Provider
ThingWorx CWC	Latest available at time of contract execution	PTC
ThingWorx	8.5.7, 9.3.1	PTC
Kepware	6.8	PTC
SQL Server	2016 or later	Microsoft

## Guardrails and Technical Limitations

Category	Limitation
Number of Work Units	Up to 50 Work Units can be connected to CWC. More than 50 can be connected, but you may notice a decrease in performance.
Number of Connected Smart Tools	Up to 200 smart tools can be connected to CWC. More than 200 can be connected, but you may notice a decrease in performance.



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