Epicor Connected Process Control

System Overview

MANUFACTURING

Introduction

Epicor Connected Process Control

Epicor Connected Process Control is a no-code/low-code process control system with embedded digital visual aids that has the ability to connect to almost any device with communication capability.

With Epicor Connected Process Control, you'll benefit from a simple path to digital transformation that can help improve efficiency, increase quality, and empower employees on your shop floor. Our powerful, web-based solution enables process control, operator guidance, traceability, and data collection down to the task level.

Our Epicor Connected Process Control solution helps you maximize quality and throughput on the plant floor while reducing costs, giving you a competitive advantage in a crowded marketplace. At Epicor, we strive to empower manufacturers to join the Industry 4.0 movement with cost-effective, easy-to-use solutions, helping you become agile, data-driven, and best-in-class.

By delivering a combination of process control and guided digital operating instructions, Epicor Connected Process Control helps users produce a consistent quality product and improve operational efficiency by tracking each individual task along the way. Use Epicor Connected Process Control to help eliminate paper from your work cells, onboard new employees efficiently, and optimize growth potential with a flexible, scalable solution.

Designed For Your Industry

Epicor Connected Process Control was designed with your industry in mind, serving customers in many industries, including:

- Aerospace and Defense
- Amusement Devices
- Automotive
- Electronics and High-Tech
- Fabricated Metals
- Furniture and Fixtures
- HVAC
- Industrial Machinery
- Measuring and Controlling
- Medical Device
- Consumer Goods

Our mission is to provide our customers with the flexibility and efficiency to realize sustainable, world-class manufacturing. With over 20 years of industry experience, our Epicor Connected Process Control solution can help accelerate your digital transformation journey.

Digital Work Instructions

Epicor Connected Process Control has an easy-to-use software solution to configure digital work instructions, enforce process control, and error-proof operations. Easily connect IoT devices while collecting 100% time studies, process data, and images down to the task level for review and Andon reporting needs. With Epicor Connected Process Control, you'll gain real-time visibility of operations and quality, enabling you to see the big picture while driving results.

Whether you are a model-based or component-based manufacturer with thousands of parts or product variations, Epicor Connected Process Control can meet your unique needs. Link work instructions to Bill of Materials (BOMs), ensuring products are built correctly, every time, even when changes are made in process. Work instructions that are part of an advanced system will automatically react to your model and component variations, only displaying the correct work instructions for what is currently being built in-station.

Extend the Epicor Connected Process Control digital work instructions beyond the manufacturing floor into areas like maintenance, QMS, safety, training, audits, and more.

With our built-in work instruction editor, users can quickly and easily create digital work instructions from imported files or by leveraging existing documents such as JPG, GIF, MP4, or PDF. Import photos, link to videos and PDF documents. Easily markup photos with additional text, icons, and images, to highlight key information and provide maximum clarity. No need to utilize outside resources like Word, Excel, or PowerPoint for work instruction creation. The functionality is embedded in the application.

Epicor Connected Process Control—Value for Your Business

- Increase quality and productivity to save costs
- Consistent process control means a consistent quality product
- Eliminate manual data collection
- Eliminate paper from the shop floor
- Improve quality and reduce waste through continuous monitoring and optimization
- Enable fast and accurate lean assembly line balancing and process task revision, without recoding or stopping operations
- Provide full assembly error-proofing for production operations
- Gain clear visibility into your operations with real-time production insights
- Decrease onboarding time for new employees and temp labor
- Flexible solution that grows with you—start small and scale out as needed
- Empower your citizen developers with no-/low-code configurations and automation
- Attract top talent with intuitive technology and browser-based capabilities for a future-focused business
- Connect your workers to devices for even greater productivity, quality and employee satisfaction

Connected Factory

A connected factory is a manufacturing facility that uses digital technology to allow seamless sharing of information between people, machines, and sensors. Connecting your tools and equipment to Epicor Connected Process Control enables you to automatically capture important information that helps improve efficiency and quality. Our solution has the ability to easily connect to most devices on the shop floor, including:

Barcode Scanners

Barcode scanners are great for kicking off a build—whether scanning a barcode on the traveler or the product itself. They can error-proof your process with verification of correct parts, verification of expected kit values, and component marriage.

Collected serial numbers, lots, and batches are stored to maintain genealogy records. Integrated barcode readers can also be used to scan badges for operator login and verification of supervisor approval. Epicor Connected Process Control can connect to many different types of barcode scanners through a USB or Ethernet connection, including devices like Handheld Scanners, Fixed Position Scanners, and Webcams.

Torque Tools

Easy plug-and-play connectivity. Collect torque and angle data on every rundown, while verifying specs are always met. Communicate through open protocol to any DC torque controller—no programming needed. Simply name your hardware and input the IP address. Once the device is connected, easily input and manage Pset settings.

- Enable the torque tool at the point of use, ensuring steps are alway done in sequence
- Dynamic work instructions visually guide the operator through the proper torque task sequence
- Torque data is permanently stored for each serial number for traceability purposes
- Collect and easily retrieve torque information in the form of reports and dashboards

I/O Devices

Easily integrate I/O blocks and communicate to I/O devices: pick-to-light, light arrays, beams, sensors, switches, sirens, stack lights, and more. I/O device integration with Epicor Connected Process Control is as easy as naming your I/O block and I/O points. No programming is needed. Once the device is connected, I/O points are available for wherever you need them in your process. Indicator lights provide feedback to the operator on the status of equipment or process variables. I/O connects to commonly used sensors and devices to provide numerous error-proofing checks.

Webcams

Epicor Connected Process Control provides an integrated environment for managing and retrieving process images. Sort and search through thousands of serialized product images with ease. Our customers use webcams to capture images—these images provide traceability data for enhanced product genealogy and reporting.

Use of these images also helps pinpoint any issues in quality that may arise. Use the captured data to assist in warranty claims and to pinpoint faulty batches, preventing large-scale recalls. Negate false claims when your products leave the building in good condition, with the correct build, and with all the required parts.

Vision Systems

Epicor Connected Process Control provides plug-and-play connectivity for ethernet-based cameras. Once your team has finished programming cameras for error checking, you can easily integrate and configure them into your process. Simply name the cameras via IP assignment. We control and trigger the camera based on the component or model variables, and receive pass/fail feedback along with images. Camera data and images provide enhanced reporting, product stack-up, and compliance records. Collected data can be utilized for text and email alerts regarding image and barcode quality. Epicor Connected Process Control provides an integrated environment for managing and retrieving process images. You're able to select the size and duration of images to be saved, sort and search through thousands of serialized product images with ease, and respond quickly to contain and manage quality spills and warranty issues.

Measurement Devices

Simple plug-and-play connectivity. Get quick autopopulated measurements. Easily connect any USB gauge, scale, or other measurement devices to automatically populate data through a keyboard wedge. Eliminate the need for paper records and create a digital genealogy with this recorded data.

- Ensure target values are always met before proceeding to the next step in the build process
- Turn stored collections of data into useful reports and dashboards to gain visibility into quality issues

Label Printers

Epicor Connected Process Control communicates to network label printers that use ZPL templates—it's a simple plug-and-play setup.

- Print labels with serial numbers and associated product data
- Transfer work order numbers to generated ERP or Epicor Connected Process Control serial numbers and print anytime during the process
- Easily edit ZPL code within the Epicor Connected Process Control Print Task

Badge Readers and Biometrics

Easily configure various levels of operator access:

- Use badge readers for operator logins at the stations
- Help ensure that operators have the proper training and approval to work at a specific station or with specific equipment
- Verify supervisor approval for quality checks, rejects, and more
- Modify work instructions based on operator capability and credentials
- Get genealogy for every part and product including who worked on it, when it was worked on, and where it was worked on

PLCs

Easily connect and communicate to many PLCs through common ethernet protocols.

- Epicor Connected Process Control-provided PLC template code allows for streamlined PLC communication
- PLC integration with Epicor Connected Process Control provides process sequence control, model management, pre-requisite checking and data gathering
- Connect to PLCs for Overall Equipment Effectiveness (OEE) states, part counts, part status, cycle times, machine faults, and more

Node-RED Flow

Simply connect any hardware device, API, or online service to Epicor Connected Process Control using Node-RED Flow.

- Run the Node-RED Flow on a server or Edge device with a convenient eFlex API
- Epicor Connected Process Control installs Node-RED on the server with every installation; this allows for unique device interfacing, utilizing Node-RED's browser-based, low code platform
- Trigger Node-RED Flow through events
- Use our Node-RED Task to share variables based on Model/BOM parameter and receive pass/fail and process data

Track and Trace

Epicor Connected Process Control has built-in traceability features that enable users to store, retrieve, and report part status in a manufacturing environment. These features include embedded traceability, real-time part storage, status, marriage, tracking, RFID recovery, quality gates, and reporting.

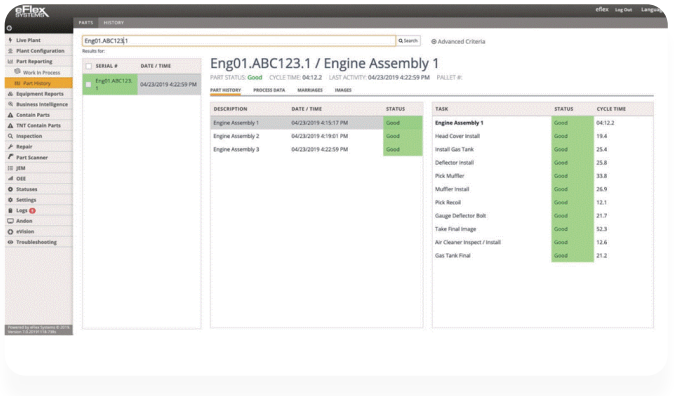
The Epicor Connected Process Control Track and Trace solution has accomplished a sub-second response time by using a state-of-the-art technical stack. Our servers are loaded with a targeted Linux OS and a server-side JavaScripting framework. Additionally, we use a NO-SQL database designed for speed and flexibility.

A real-time system is only as good as its uptime capability, which is why Epicor Connected Process Control utilizes a three-server architecture with "full" failover capability. This means that if two servers fail, the system would continue to run without intervention.

Epicor Connected Process Control delivers several key benefits to users, such as the ability to do part marriage. Any number of parts can be married at any station, as each marriage is performed asynchronously. The innovative user-friendly interface provides a visual view of the plant floor, parts, statuses, serial number, and quantities.

Improve Quality

Epicor Connected Process Controls embedded quality management feature empowers users with greater levels of efficiency, visibility, and cost savings. It allows manufacturers to reduce human error, easily identify non-conformance throughout the entire assembly process, enable reject and repair strategies, and ensure only good parts are produced.



Easily Identify non-conformance and defects with inline quality inspection, preventing bad parts from moving downstream. Implement manual or automated inspection processes and minimize the cost of poor quality.

Minimize scrap and reduce costs with rework/repair strategies. When parts are rejected, select a customizable drop-down menu to choose the repair code necessary and enter any additional notes. Collect detailed process data for all rejected parts to more easily identity inefficiencies and continuous process improvement needs.

Configure prerequisites and never build out of order. Help ensure parts have passed all requirements in subassembly and main assembly lines before being shipped out. Robust traceability and part genealogy allow correct builds and quality standards.

To further eliminate errors, easily connect machines and IoT devices into your assembly process. This allows operators to follow the right procedures, use the right tools with the right tolerance levels, at the right time, and enforce quality standards.

With Epicor Connected Process Control Business Intelligence, you can monitor quality trends and root cause analysis for stations, lines, plants, or enterprise-wide needs; view powerful data collection down to the task level with intuitive dashboards and reports; and get real-time visibility and insight of quality trends, allowing for continuous process improvement rather than just keeping defects out.

Interactive digital work instructions allow for accelerated training, while validating that correct procedures were done at the task level. Based on operator skill level, the quantity of tasks or process steps dynamically change, avoiding over-processing while helping to ensure quality.

If quality errors occur due to inaccurate work instructions or processes, users with verified credentials can quickly and easily modify them within the web-based platform and alert operators at the station level.

Ensure compliance standards are always met by automating quality management processes. Get digital build history reports and robust analytics to support various groups and cross-functional teams.

Error-Proof Material Handling and Kitting

Simplify standardized work of the operator by leveraging key features of Epicor Connected Process Control for a kitting solution. Reduce material handling and processing times at the point-of-use. Free up line-side space and deliver 100% quality product to the operator, 100% of the time. Epicor Connected Process Control is compatible with a variety of hardware solutions, and features unmatched flexibility and an easy part-picking system. Global Original Equipment Manufacturers (OEMs) currently use Epicor Connected Process Control to increase accuracy and boost efficiency.

Control Your Preventative Maintenance Procedures

Reactive maintenance can be extremely costly, from production errors, downtime, and labor costs, to reduced life expectancy of assets. With Epicor Connected Process Control, manufacturers can easily develop digital standardized maintenance procedures, enforce best practices, and collect granular process data, while building a permanent digital record for asset management and regulatory compliance.

Never miss or skip steps. Digital process control helps ensure that every step is completed properly when performing maintenance. Get a better understanding of the time it takes to complete maintenance on equipment and assets in your operation. Time studies assist with scheduling staff and expectations.

Retain maintenance metrics for big data analysis, using built-in and customizable process data collection fields. Enter operator notes, inspections/verifications, who completed them, quality checklists, tooling measurements, camera images, and more—there are no limits to what you can collect and view.

Get detailed digital maintenance reports and records, including when maintenance was completed, who completed it, notes and process data metrics, images, and more.

Epicor Connected Process Control can be used as a scalable maintenance tool, growing along with the needs of your business. Start digital preventative maintenance at a small scale and expand enterprise-wide for full transparency of asset management. Quickly and easily modify any maintenance procedures as needed, ensuring the long-term upkeep and preservation of valuable equipment and assets.

Our no-code/low-code platform allows you to easily digitize standard maintenance procedures utilizing Epicor Connected Process Control's robust, built-in work instruction editor. Integrating smart tooling and devices in your maintenance process lets you have precise measurement control while limiting verification.

Andon

Ensuring that every employee, from the shop floor to the front office, is on the same page requires timely, nonstop communication. With Epicor Connected Process Control, employees can quickly view production information and company announcements. This allows everyone to receive clear and consistent information, stay informed, and be prepared to act in response to changing conditions.

Andon can display assembly, traceability, OEE, process images, and maintenance-specific data. With a web-based system, users can quickly configure pages with targeted information such as Production Counts, WIP, Histograms, OEE, and much more. Users can also easily visualize historical and real-time plant information.

With Epicor Connected Process Control plant-based or cloud-based data collection, users can configure pages for a specific station or plant, or configure hundreds of pages for the enterprise. Visual content can be presented on any web-capable device such as large overhead displays, any PC connected to the network, and tablets. This enables information to quickly circulate through to the entire organization with streamlined improvement plans. Information can be targeted to specific areas or users within the organization such as operators, maintenance, or management. This allows the right information to be displayed to the right people.

With responsive design, Andon can be viewed on a variety of web-capable mobile devices such as Android tablets, iPads, and Google Chromebooks.

Machine State and Overall Equipment Effectiveness (OEE)

Increase productivity, improve quality, and cut costs to compete in today's market successfully. With Epicor Connected Process Control's OEE, you're able to capture data directly from machines/equipment and organize it to drive peak performance. You can visualize content on any web-capable device, such as a large overhead display, any PC connected to the network, or a tablet.

This solution enables you to streamline the collection of key performance indicators from shop floor equipment and operators, as well as interlock to machine controls to ensure events are properly classified. Station operators have the ability to enter notes and reason codes for faulted, starved, or blocked stations. Notification features pinpoint the most concerning problems, allowing plant personnel to take action immediately.

To optimize improvement plans and processes, you can set production targets and benchmarks per asset and resource, while configuring dashboards to display current needs and historical trends.

Boost productivity by obtaining summary aggregation and drill-down visibility of your assets. This transparency of your assets and resources allows for improved production, faster performance times, and better overall quality of work.

Because employees receive this data in real-time, they have immediate access to critical information that allows them to make quick decisions and reduce downtime.

Unleash the Power of Data

Access is the first step in harnessing the power of data. Epicor Connected Process Control's embedded configuration and control of manufacturing processes provides access to data down to the task level. You'll benefit from granular, real-time visibility and insight into daily operations, driving continuous improvement initiatives and helping your business gain a competitive advantage.

Every business has different processes, data capture requirements, and needs. With Epicor Connected Process Control's Business Intelligence, turn data silos into useful information viewed in powerful reports and dashboards. Get access to the information that's most critical to your operations, with virtually unlimited configurations. Monitor trends, easily identify outliers, and receive alerts when critical parameters are out of control. Seamlessly collect, display, analyze and act on information including but not limited to:

- Station cycle times
- Quality summary
- Torque tool data
- Repair, rework, reject codes
- Process data report
- Shift summary
- OEE/downtime
- Genealogy and part history
- Andon report
- Production report
- More...

Industry Leading Support and Flexibility Service

Epicor has 50 years of experience delivering industry-focused, world-class solutions and ongoing customer care and service worldwide, with over 24,000 customer installations. A true global solutions partner with support offices all over the world, the key to our success is our Signature Implementation Methodology. From consultation to go-live and beyond, Epicor delivers one of the most cost-effective and efficient techniques to plan, design, validate, and deploy your Epicor solution.

Staffed with direct employees around the globe who are properly trained and equipped with world-class implementation tools, Epicor follows our proven five-stage Signature Methodology designed specifically around Epicor software and our customers. The end result is an on-time, on-budget implementation of your Epicor solution that allows your company to quickly begin using Epicor to improve daily operations in the electronics and high-tech sectors. We help you save time and money by providing broad functionality at a lower total cost of ownership.

Deployment, Industry-Leading Support, and Flexibility

Leadership in the global cloud is in the DNA of Epicor. Every day, we strive to meet the changing needs of your business with flexible cloud solutions that deliver on business growth today and help your business scale and thrive well into the future. Epicor Connected Process Control can be deployed via onsite servers or in the cloud, depending on device activity and requirements. As the solution uses the same technology, whether in the cloud or on-premises, businesses can also choose to self-host the solution or work with a third party. Multinational organizations benefit from this additional flexibility, allowing distributed business units across the enterprise to choose the deployment mode that works best for locations with remote geographic challenges.

Learn more at **http://www.epicor.com/cpc**

EPICOR

We're here for the hard-working businesses that keep the world turning. You're the companies that make, move, and sell the things we all need. Trust Epicor to help you do business better. Your industry is our industry, and we understand you better than anyone. By working hand-in-hand, we get to know your business almost as well as you do. Our innovative industry solution sets are carefully built to fit your needs and respond flexibly to your fast-changing reality. We accelerate ambitions, whether you want to grow and transform, or simply become more productive and effective.

That's what makes us the essential partner to the world's most essential businesses.

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