



**EPICOR**

# Practical Guide to Digital Transformation

*25 Quick tips for moving from paper  
to digital work instructions*





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## Paper Problems

Utilizing paper-based work instructions on the plant floor can be an extremely inefficient and costly process. The cost of paper alone can sometimes run in the thousands of dollars for manufacturers and that's only one of the associated problems. The challenges are extensive including:

- Work instruction standards are difficult to achieve. Each person tasked with making work instructions may have their own look and feel for what they like or use various software packages like Word, Excel, PowerPoint, or other home-grown systems.
- Changes are difficult to track and deploy. Engineers spend a large amount of time creating, editing and dispensing paper-based work instructions to binders at each station on the plant floor.
- No way to ensure operators are following the most up-to-date work instruction version.
- Feedback loops often don't exist for operators to report work instruction deficiencies or new ideas to management. This limits the ability to retain valuable tribal knowledge.
- Inability to effectively monitor operator performance and facilitate continuous improvement.

## The Solution: Go Green. Go Digital.

Digital work instructions can have a transformative impact on manufacturing processes and environments. They can help improve quality and consistency, reduce errors, and even boost retention, leading to more motivated and inspired operators.

For manufacturers considering updating paper-based work instructions to digital work instructions, here are some quick tips and best practices to help you get started with your digital transformation. The following step-by-step guide provides a detailed walkthrough of how to Create, Test, Authorize, Distribute and Monitor clear, precise and effective high-quality digital work instructions. Advanced features to consider with digital solutions will also be reviewed.





# Create

Before you begin the actual work instructions, make sure you have answered the following questions and completed the tasks listed below.



CREATE

# Getting started.

1

### Understand Your Purpose

Determine if the work instructions will be used for training or production. To expedite and enhance the learning process, instructions designed for training tend to provide more granularity than those used in production.

2

### Know Your Process

Make sure you have a comprehensive and in-depth understanding of the process you will be writing digital work instructions for.

3

### Break It Down

Break down your process into individual tasks or “chunks” of tasks to ensure work instructions are manageable, organized, logical and sequential. Pay special attention to pre-requisite steps that are dependent on other tasks being completed first.

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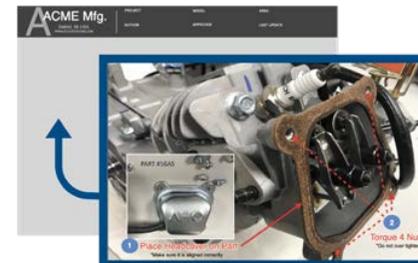
### Figure out Formatting

Determine which (if any) of your current work instructions you will be importing into the new system, and which will be created from scratch. Some new digital work instruction platforms allow you to import PDFs directly or link to other existing documentation.

5

### Determine Template Standards

If using a work instruction template, select a design that works well for your needs, is consistent with your brand identity, and accommodates any and all necessary information to display.



Customizable templates could include information such as project name, process, model, station, author, approver, logos, etc.



CREATE

# Guidelines for high-quality digital work instructions.

6

## Know Your Audience

Make sure your writing is clear and comprehensible, and uses terminology and phrasing that is aligned with the operator's level of expertise.

9

## Start With a Verb

Using the imperative form of the verb (verbs that give an order or command) to start every instruction conveys an air of authority and ensures that the instruction will give a clear directive to operators.

7

## Keep It Simple and Concise

Present all information in a simple, straightforward and concise manner. The goal is to include all necessary steps and actions while avoiding complexity, confusion, or walls of text.

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## Use the Present Tense

Use active voice in all instructions. Give direct instructions as though they are about to be carried out immediately.

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## Be Specific

Make sure all instructions are clear-cut and easy to understand with no room for interpretation. Instructions should be clear, complete and unambiguous.

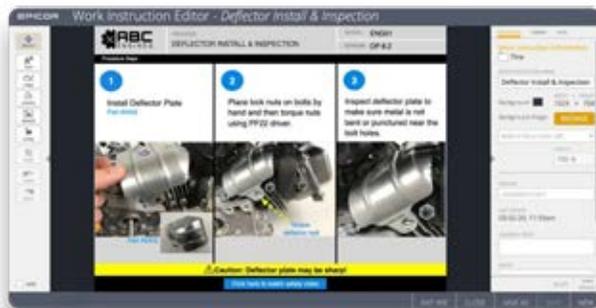


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### Use Quality Imagery

Why tell the operator how to do something if you can show them with high-quality visuals? The right image can make an instruction completely clear. Epicor Connected Process Control built-in Work Instruction Editor (WIE), for example, allow users to easily markup photos with additional text, icons and images, to highlight key information and provide maximum clarity.

When utilizing images, keep in mind the distance that the operator will be from the screen while working at the station and make sure images (and text) are large enough to be easily viewed.



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### Use Videos and Gifs

Videos can speed up the learning curve and may be a better way to demonstrate certain work instruction procedures than text alone. Videos are particularly well-suited for demonstrating movements and dynamic actions that cannot easily be conveyed in a still image.

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### Provide Links to Key Documents

If there are additional documents or important technical information that the operator should have access to—such as quality alerts, safety information, MSDS, BOMs, and technical drawings—provide links to those documents where appropriate (either with a URL link embedded in the work instructions, or with customizable tab links).



# Test





TEST

# Pre-production run-through.

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## Test

All completed work instructions should be thoroughly vetted by testing them on beginners or those who are unfamiliar with the tasks described. Only if test subjects demonstrate that they clearly understand the work instructions and are able to complete tasks correctly and efficiently should you proceed to the next step in the implementation process.



# Approve





APPROVE

# Set up collaboration pathways.

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## Set up Authorizations if Needed

If you determine that an approval process will be needed to certify work instruction changes, set up quick and efficient digital approval pathways. With digital processes there is no need to track down individuals or wait till they are back in the office for approvals. Completed work instructions will automatically send a digital notification to approvers that an updated set of instructions is waiting for their review. Approvers can then review the information digitally, and either give a quick thumbs up if the instructions are ready to go live, or a quick thumbs down if changes are needed.

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## Incorporate Feedback Loops

If an approval process is required for work instructions, digital feedback loops should be utilized for constructive feedback and collaborative efforts between team members. This allows approvers, even when working remotely, to provide detailed information about why a work instruction was approved or denied and facilitates quicker and more efficient work instruction editing.



# Distribute





DISTRIBUTE

# Going live on the plant floor.

17

## Distribute Work Instructions Live

Once work instructions are approved, push them live instantaneously. No need to go to each station to manually swap out instructions in cumbersome binders or folders.

18

## Establish Version Control

When digital work instructions are approved and pushed live, a new version is automatically saved. This ensures that operators are using the most up-to-date work instruction versions on the plant floor at every station.

Digital work instructions have been found to save up to 75% in time and efficiency compared to paper-based systems. At Epicor we have found some customers see a savings of up to 50% efficiency on initial installment and once fully implemented, yield as much as 80% savings over the life of the work instruction.



# Monitor

One of the great advantages of digital work instructions is the tracking and monitoring capabilities that they unlock for manufacturers.



## MONITOR

# Track your operations in real-time.

1  
9**Incorporate Operator Feedback Loops**

There are various ways to capture operator feedback at the station level. On the digital work instruction screen, a button or tab, when pressed could allow operators to enter real-time station notes for other operators working at the station or upper management. Alternatively, an onscreen call button could be displayed so that operators can quickly notify management as problems or improvement initiatives are identified.

Operators will likely be able to provide the best feedback on how to improve work instructions and processes for better understanding, improved training and efficiency as they are the ones interacting with the work instructions daily. Collaborative feedback and digital processes also ensures that tribal knowledge and best practices are captured and preserved in-house.

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0**Utilize Real-Time Data Metrics and Reporting**

When digital work instructions are utilized at the station level, they make it possible to capture granular data metrics for cycle times, production counts, operator efficiency, and much more. The result is real-time operational visibility and the ability to make data driven decisions for continuous improvement.



# Advanced Considerations



ADVANCED CONSIDERATIONS

# Error proof operations and maximize quality.

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### Event-Based Work Instructions

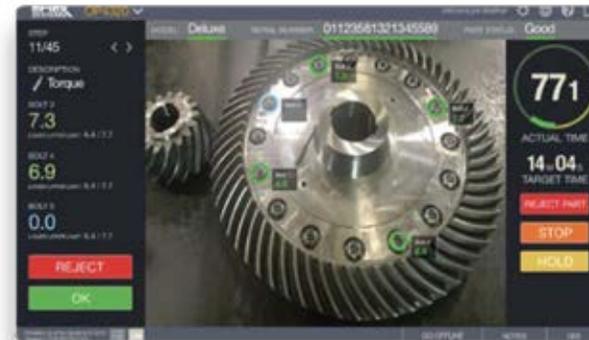
Determine if you would like to use event-based work instructions, which provide automatic feedback loops to the operator. For example, if a part is rejected at the station, a work instruction would automatically display to the operator what to do next based on the rejected event. This eliminates guesswork. And because work instructions can be formatted to show operators exactly what to do given possible events, delays and errors are virtually eliminated.



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2

### Animated Guidance

Animated guidance provides faster learning potential and visually guides operators through work instructions. For example, if an operator has five bolts to fasten, the work instructions would highlight the bolt to be fastened first, then, when that is completed, would highlight each subsequent bolt in order until the series is completed. This provides more specific visual guidance and ordering with less room for error and misunderstanding.





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### Process Data Capture

Determine if there is any process data or key metrics that you would like operators to record in the assembly process for quality measures, compliance, or continuous improvement efforts. Examples might include: quality checklist completion, visual inspection verification, or recording a measurement such as a gauge, weight, torque value, etc.

This will further eliminate paper at the station level and reduce manual data entry errors or missed entries.



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### Smart Work Instructions

Work instructions that are part of an advanced system will automatically react to your model and component variations, and only display the correct work instructions for what is currently being built in station.

Additionally, operator experience tags can be applied to tailor the level of instruction detail. New operators can receive step-by-step guidance with visuals and verifications, while experienced operators see simplified instructions or bypass redundant steps. Tags can be updated as the operator gains experience, ensuring the right level of support at every stage.

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### Connect to Upper Level Systems

The best digital work instruction platforms can easily connect to upper level systems such as ERP, MES, BOMs and schedulers. To ensure that you get the most out of your new digital work instructions, be sure that your digital work instruction solution accommodates your integration needs.



## Start Your Digital Transformation With Epicor Connected Process Control!

Going paperless on the plant floor with the implementation of digital work instructions is often the first step in the digital transformation process. Epicor Connected Process Control (CPC) allows users to quickly and easily create standardized work instructions, enforce process control and error proof operations. And once you've mastered digital work instructions, utilizing the quick tips provided in this guide, seamlessly connect IoT devices and scale out your lean initiatives.

*Our system grows with you when you need it!*

### About Epicor CPC

Epicor Connected Process Control is a modern MES and Connected Worker solution that digitizes and optimizes shop floor operations. It can run standalone or integrate with enterprise systems, including a native connection to Epicor Kinetic ERP for a fully unified experience.

[LEARN MORE](#)



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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