

The Cost of Inexperience

How Real-Time Process Intelligence Protects Manufacturing Quality

The CenterPoint logo, featuring a stylized blue cloud with a gear and a bar chart inside, and an arrow pointing to the right.

CenterPoint
Operational Intelligence to empower your business decisions

Executive Summary

Manufacturers face increasing pressure to deliver consistent quality while managing workforce turnover, complex automation, and shrinking margins. One of the most persistent risks is the impact of inexperienced adjustments on critical process parameters. A single incorrect change can cascade into downstream failures, rework, costly sorting and containment activities, warranty exposure, and customer dissatisfaction.

This white paper examines a real manufacturing scenario in which an inexperienced technician widened a tolerance band by 40% to “fix” a weld-position issue—masking the true root cause and allowing out-of-spec fasteners to pass downstream. Although intended to resolve a production issue, the case illustrates how subtle process deviations can become major quality risks when not caught early.

CenterPoint™, a real-time process monitoring and analytics platform, provides manufacturers with the visibility, alerts, and contextual insights needed to prevent failures at the source, including early detection of unintended process changes. By continuously monitoring process parameters and flagging deviations in real time, CenterPoint reduces the cost of inexperience and strengthens quality assurance across the production lifecycle.



Industry Context

Why This Problem Is Growing

Manufacturers globally are facing a convergence of pressures:

- Workforce turnover and skill gaps — New hires and temporary staff often lack deep process intuition.
- Increasing automation complexity — Modern equipment produces more data than operators can interpret in real time.
- Tighter customer requirements — OEMs demand traceability, consistency, and rapid corrective action.
- Lean staffing models — Fewer experienced technicians are available to oversee multiple lines.
- Rising cost of quality failures — Scrap, rework, warranty claims, and brand damage are more expensive than ever.

Challenges in the Manufacturing Industry



**Turnover and
Skill Gaps**



**Automation
Complexity**



**Customer
Requirements**



**Lean
Workforce**

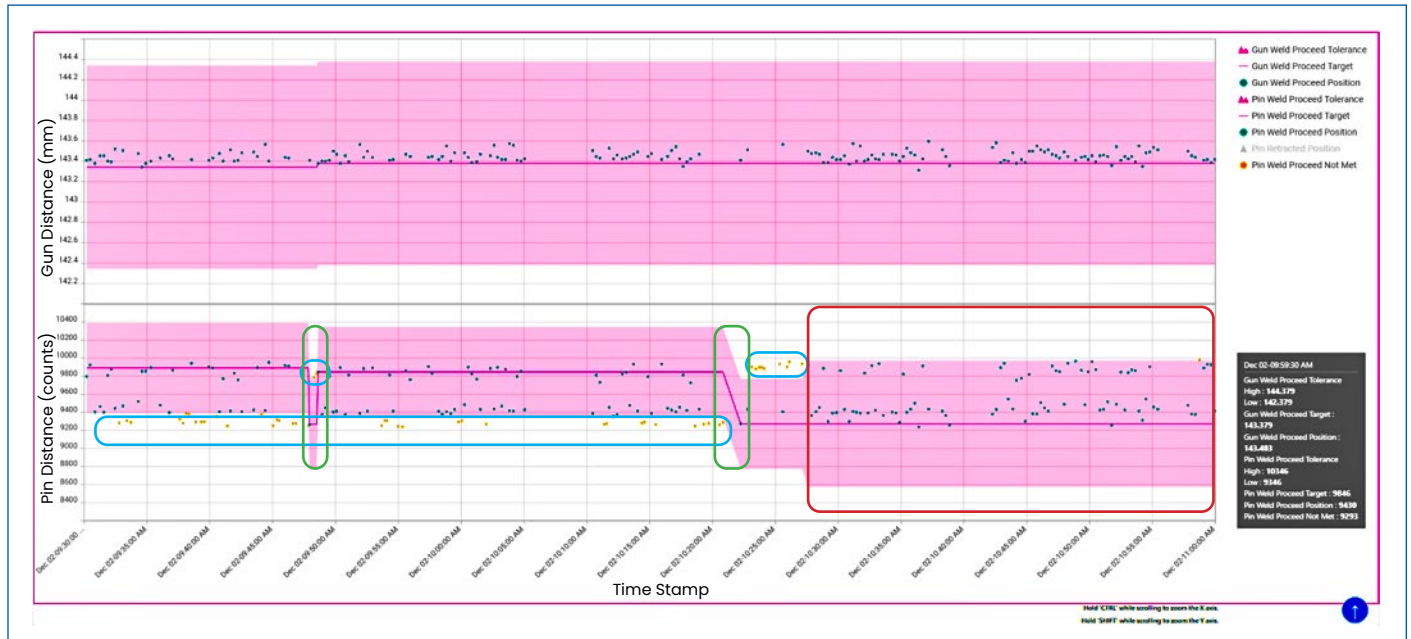


**Rising Cost
of Quality
Failures**

In this environment, even small missteps—such as adjusting a target position or widening a tolerance band—can create hidden risks that only surface after significant downstream impact. This reflects a broader shift in manufacturing risk, where process changes—rather than equipment failures—are becoming a primary driver of quality issues.

The Use Case

When a Simple Adjustment Creates a Hidden Quality Risk



- Weld Positions Out of Tolerance
- Target Adjustment Implemented
- Tolerance Band Opened by 40%

The Challenge

A production line began experiencing pre-weld check failures, preventing a machine from processing welds on a critical part. An inexperienced technician attempted to correct the issue by retargeting the weld positions, inadvertently pushing them outside the approved tolerance band.

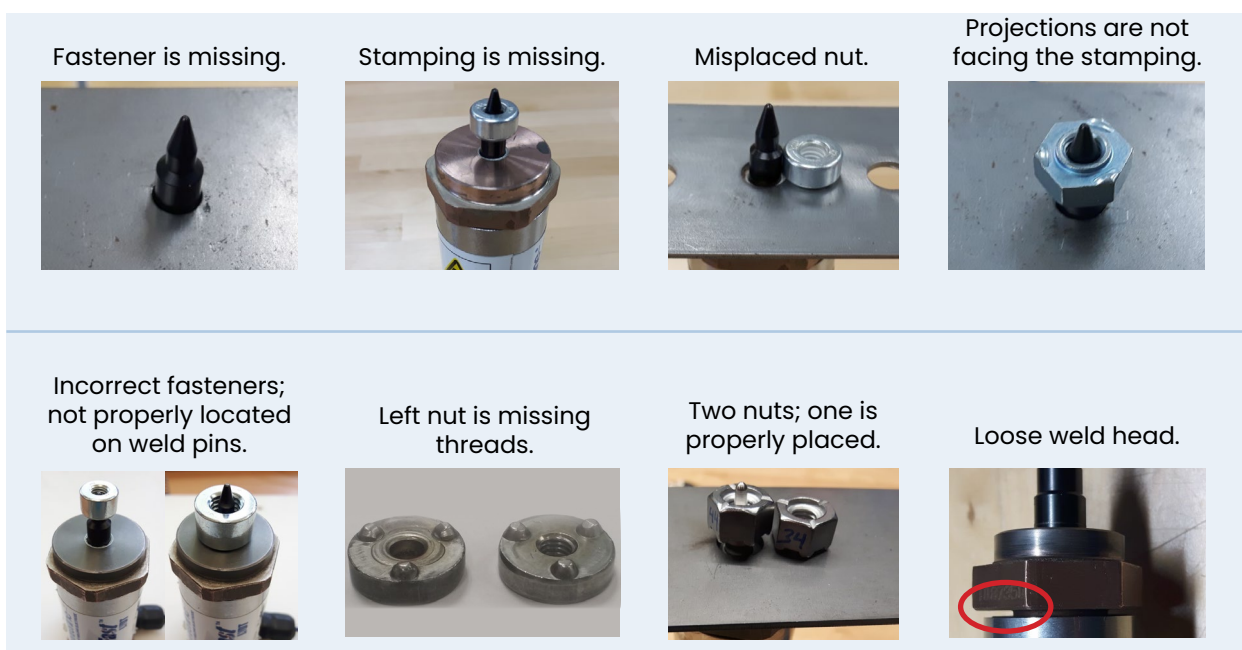
Because the underlying root cause was not identified, the technician then widened the tolerance band by 40% to “make the process pass.”

This created a dangerous scenario:

- Welds appeared acceptable to the machine.
- The process continued running.
- Out-of-tolerance fasteners were now being welded into assemblies.
- Downstream operations had no visibility into the deviation.

If weld position deviations are allowed to pass undetected, fasteners may no longer be presented to the welding process as intended. This increases the risk of missing, misplaced, damaged, or improperly oriented fasteners entering production, creating quality escapes that may not be detected until downstream assembly or customer inspection.

Potential Failure Modes Created by Mispositioned Fasteners



The Risk

This type of adjustment introduces several quality and operational risks:

- Compromised product integrity — Misaligned fasteners can cause assembly issues, leaks, structural weaknesses, or functional failures.
- Downstream rework — Later stations must correct or scrap parts, increasing cost and cycle time.
- Customer dissatisfaction — OEMs may reject shipments or issue corrective action requests.
- Reputation damage — A single quality escape can impact supplier scorecards and future business.

In the most severe cases, undetected process deviations can result in non-repairable conditions, necessitating containment actions, large-scale financial exposure, and potential liability concerns. The cost of inexperience is not just operational—it is strategic.

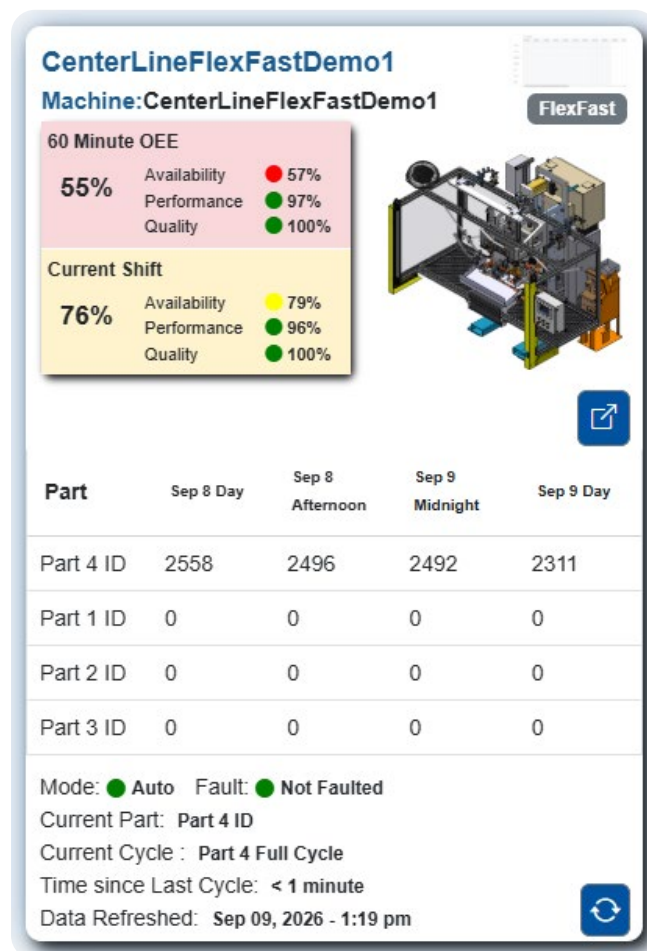


The CenterPoint Solution: Real-Time Process Intelligence

CenterPoint is designed to prevent exactly this type of scenario. It provides manufacturers with continuous visibility into process parameters, enabling early detection of deviations and preventing inexperienced adjustments from becoming systemic failures.

How CenterPoint Works

- Real-time monitoring of weld positions, weld force, weld current, and other critical parameters.
- Automated alerts when values drift outside tolerance or when patterns indicate risk.



- Contextual insights that help operators understand why a deviation is occurring.
- Historical traceability to support root-cause analysis and continuous improvement.
- Role-based dashboards for operators, supervisors, engineers, and quality teams.

Preventing Errors Driven by Inexperience

- CenterPoint flags:**
- ✓ Sudden shifts in target values
 - ✓ Tolerance changes
 - ✓ Parameter drift over time
 - ✓ Inconsistent adjustments

As the table shows, the manufacturing workforce has changed dramatically, with much less tenure and role experience than just a few years ago. CenterPoint helps mitigate the impact of these knowledge gaps by flagging unusual adjustments and process drift before they can develop into costly quality issues.

Typical Manufacturer's Workforce		
	2019	2023
Average Tenure	20 Years	3 Years
Average Time in Position	7 Years	9 Months
Average 3-month Retention Rate	90%	50%

Source: LNS Research

How CenterPoint Helps Less-Experienced Teams

Tribal Knowledge	Training and Onboarding	Proactive Decision-Making
 Actionable Data Convert implicit expertise into accessible, actionable data for the entire team.	 Simplified Learning Curve Use clear, data-driven insights and intuitive dashboards to ease the onboarding process for new employees.	 Empowerment Tools Equip less-tenured employees with the tools and information needed to confidently address issues and make informed decisions.
 Knowledge Sharing Ensure critical knowledge is retained and shared, reducing dependency on individual experts.	 Machine-Specific Data Provide detailed, machine-specific information to support training and daily operations.	 Confidence Building Foster a culture of proactive problem-solving and continuous improvement

Outcomes and Impact

Manufacturers using CenterPoint report measurable improvements:

- Reduced scrap and rework by catching deviations early.
- Fewer quality escapes due to real-time alerts and automated oversight.
- Faster root-cause analysis with complete process traceability.
- Higher workforce confidence through guided decision-making.
- Improved customer satisfaction and stronger supplier scorecards.

In the case study scenario, CenterPoint would have:

- ✓ Flagged the out-of-tolerance weld positions immediately.
- ✓ Identified the tolerance band being widened to supervision.
- ✓ Highlighted the underlying root cause instead of masking it.
- ✓ Protected downstream processes from compromised parts.



Why This Matters for Manufacturers

Manufacturing teams work under constant pressure to keep production moving, and most adjustments made on the floor come from good intentions – often without clear visibility or oversight into how those changes impact overall process performance. Technicians aren't trying to bypass standards—they're trying to clear faults quickly, avoid downtime, and meet production targets. Without clear visibility into how a process is behaving, a small adjustment meant to “get the line running again” can unintentionally push a parameter out of tolerance and introduce quality risks that only show up later in the process.

The weld-position example reflects a common reality across the sector. A well-meaning operator widens a tolerance or shifts a target to prevent stoppages, not realizing how that change affects part quality, rework rates, or customer satisfaction downstream. These are unintended consequences, not deliberate shortcuts.





CenterPoint™

Operational Intelligence to empower your business decisions



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