# CASE STUDY: BRADY CORPORATION'S JOURNEY TO AUTOMATION EXCELLENCE

The industrial automation journey of Brady's Florist Avenue manufacturing site began four years ago with a goal to improve product consistency.

The Florist manufacturing site houses three primary value-added process flows and the project team chose the furthest upstream process, called 'compounding', to begin the automation work. The purpose of the compounding process is to blend proprietary adhesives and coatings for Brady's high-performance label materials. Component quantities, temperatures and blend times are critical process factors and the legacy process was entirely 'offline'. Critical process factors and quality test results were recorded manually on paper job travelers. Local process operators manually transcribed all of this process data into Brady's ERP system via multiple transactions that had to be learned separately. At the completion of an order this manual record was collected by supporting teams, chiefly Quality and E,H&S, so that the data could be transcribed a second time into their supporting systems.

## THE **CHALLENGE**

Site leadership had long recognized the inefficiencies of this process, a key inefficiency being little or no process or procedural data reflecting the initial steps of production. For the information that existed, the data integrity was in question. So, leadership chartered a process improvement team to resolve many of these inefficiencies. Coincident with this early work were societal changes that led to more labor turnover than the legacy workflows would support. To address this, a secondary goal to standardize, simplify and automate the work processes was adopted.

# THE **STORY**

Simply stated, the site needed work processes that were tolerant of labor turnover and provided reliable data for making engineering decisions. The plan,

1. Established fixed critical process recipes to limit freelancing.

2. Applied mistake-proofing lessons by digitizing data inputs.

3. Enabled data sharing across stakeholder teams.

A concrete example of this future state includes eliminating the need to write down part, lot or storage numbers on paper, then transcribe them into the ERP system. This meant that digital transactions had to be done at the point of work and that mobility was a key requirement.

# THE **SOLUTION**

The early project years focused on investing in digital infrastructure and connecting isolated manufacturing processes. Fiber optics, industrial protocol gateways, PLCs, etc., built a digital backbone and enabled moving process data from the field equipment to a business system layer.

Once that data backbone was in place, the Brady Florist team needed a SCADA software layer to connect the machines to the ERP and automate the User Interface.

The team's first integrator partner introduced Inductive Automation's Ignition SCADA system as an alternative to the Florist incumbent system. The Florist team wanted to roll out automation across the plant to numerous machines and workflows. This goal made Inductive's unlimited tags and unlimited site licensing a superior value proposition to the incumbent and Ignition was selected as the SCADA platform.

Early progress was slow: there were many different ideas and directions, the new team was learning about structuring an automation project based on the ISA-95 standards, and the Brady team grew apart from their original Ignition integrator. To complete the reset, the Florist team returned to basics. It reassessed the scope of the project by defining a two-year plan in five steps. This initiative was expected to drive a high-level of standardization and simplification. The intended deliverables were:

1. Effective process and procedural data capture

2. Data integrity

3. Information compilation and access

4. Workflow presented to the shop floor

5. Procedural adherence

A key step was seeking out a new Ignition integration partner. With a clarified project scope, the seeming setback has worked out well. It provided an opportunity to work with a new Ignition integrator partner that has proven to be more creative, nimble and responsive than the original integration team.

It's critical to acknowledge that the automation project was not justified as a financial benefit. Rather, its purpose was to directly address issues with product consistency and labor turnover through standardizing and simplifying work processes. A site leader for the project explains, "Any person with a basic [knowledge] of engineering and production can understand how a data-driven approach is a necessary prerequisite. Reliable process data provides the basis for making informed engineering decisions affecting quality, productivity, labor requirements,

lead time, OTD, inventory, root cause analysis, indirect support (engineering, scheduling, purchasing, planning, EHS, management, quality, etc.). I describe these impacts as 'hidden factory costs,' meaning it's difficult to point to a [dollar value] on a P&L." The primary goals of the automation project have been to make the system smarter – adding electronic specifications, closed loop control, and limiting human process inputs that could lead to errors. The new automated workflows guide operator activity in step-by-step sequences. For example, Step 1 must be acknowledged before Step 2 is displayed to the operator. This organization of the workflow also applies to safety steps that must be acknowledged before the system will proceed to the next step. By concentrating new hire training on what and why and automating the how, productivity will indirectly benefit. Manufacturers can no longer depend on the encyclopedic 20-year employee who feels ownership for the process.

As the team reflected on their automation journey to this point, they credited failing fast and learning from their mistakes for their success. One of the most useful tools the Florist Operations team developed with their Ignition System Integrator was a low-code workflow builder. The team built a long list of standard data inputs, functions and outputs used in everyday site workflows.
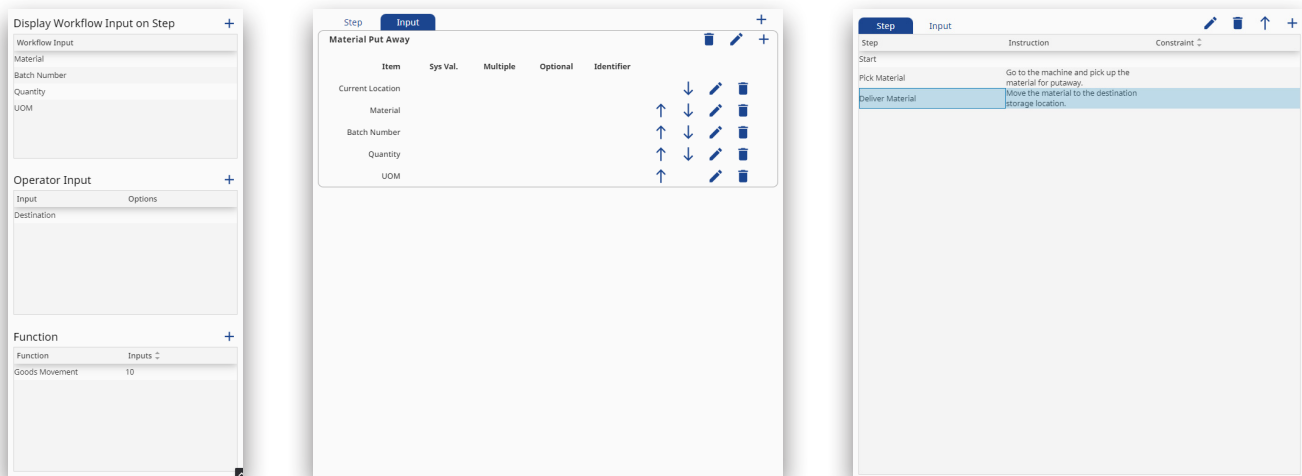


# THE **RESULTS**

Having these standard fields available as independent functions has allowed the local operations team to easily digitize legacy manual workflows by connecting individual functions in particular sequences – all without requiring the Systems Integrator to write the specific workflow into code. A sampling of local workflows they digitized includes new material requests, material handling requests, service orders, packaging and processs quality testing.

Another transformative tool used by the FLO automation team has been a Brady mobile computer, the HH83 Barcode Reader. Because the FLO production paperwork and material identification systems are barcode based, the integration team needed a mobile tool that would both barcode scan and send the data directly to Ignition. After failed experiments with an industrial barcode scanner and an industrialized tablet, the team found success with the Android-based Brady HH83 Barcode mobile computer. It could run the Ignition app and scan barcodes directly into the transactions.

The new automated workflows have been live for four months – too early to demonstrate quantitative improvement, but long enough to see qualitative gains and the value of the original standardize and simplify charter. Already, the Operations teams with the most digital workflow experience prefer the new processes to the old and have seen significant reductions in time to train new employees.

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