CASE STUDY

RIT | Golisano Institute for Sustainability

# Rochester Colonial advances shop-floor and business processes through ERP upgrade

| Company | Sector | Size | Location |
|---|---|---|---|
| Rochester Colonial Manufacturing Corp. | Window and door manufacturing, sales, distribution, and installation | Over 100 employees | Rochester, New York |

## At a glance

- Ready to jumpstart its digital transformation, Rochester Colonial Manufacturing Corp. (Rochester Colonial) joined Rochester Institute of Technology's (RIT) Industry 4.0 Transition Assistance Program. A team of RIT engineers performed an in-depth assessment of Rochester Colonial's current state of shop-floor, business, and sales processes.
- At the time, Rochester Colonial relied on both paper-based and digital tools to manage its operations—this was only partially supported by enterprise resource planning (ERP) software. Over time, the company's considerable growth as a manufacturer and a distributor and installer of national brands had exposed the limitations of this incomplete ERP setup.
- A team of engineers from RIT collaborated with Rochester Colonial to carefully document the key business processes that support the company's four divisions. Using material and information flow analysis, they created detailed process diagrams that were used to identify opportunities for process improvements that could be implemented in conjunction with an ERP upgrade.
- The project laid the groundwork for a subsequent effort led by RIT to refine Rochester Colonial's key performance indicators (KPIs) and specific requirements for an ERP upgrade. Leveraging new ERP capabilities, this effort will aim to streamline and unify redundant processes across the company's four divisions to drive enterprise-level efficiencies.

## Company

**Rochester Colonial Manufacturing Corp. (Rochester Colonial)** began in 1947 when it was established as Laquig Colonial, specializing in the production of storm windows. Rebranding as Rochester Colonial in 1960, the company eventually shifted from manufacturing and distributing aluminum windows and doors to vinyl and wood windows. Beyond the manufacture, installation, and service of its own line of products, Rochester Colonial is a prominent distributor of nationally recognized brands.

## Business challenge

When Rochester Colonial contacted RIT, the company faced a number of challenges concerning the interoperability of different software systems across its operations. These stemmed from the company's continual expansion. Over time, the functional limitations of its existing ERP software only created more roadblocks. The system's limited capabilities stymied the company's efforts to phase out burdensome manual paper-based systems. In certain cases, paper documents were needed for some business units, while digital systems were used in others—all to accomplish similar tasks. Ultimately, despite having an ERP system in place, ad-hoc workarounds for documenting processes continued to arise across Rochester Colonial's operations. Reaching this impasse with the existing system, the company's leadership selected a replacement ERP product and had entered into an agreement with the vendor. Implementation of this new system had not yet begun when Rochester Colonial engaged RIT.

The company's four business units are supported by a network of over 20 shared and individual business processes. The manufacturer aimed to streamline these processes by both identifying best practices across the four divisions and transitioning processes to a digitally optimized state. Such a transformation would be pivotal to integrating new ERP functionality in order to ensure a seamless flow of data across all divisions and departments. But getting there would mean capturing Rochester Colonial's organizational complexity—the result of over 75 years of business evolution—to map out the best opportunities for improving and expanding its existing ERP capabilities.

## The Industry 4.0 solution: Enterprise resource planning (ERP)

An ERP system is a sophisticated digital software platform for overseeing day-to-day manufacturing operations. By synchronizing data and processes across an organization, an ERP system can eliminate redundancy, uphold data integrity, and provide a level of automation of administrative processes. ERP systems have evolved into an indispensable tool for managing manufacturing operations. They are the centerpiece of digital manufacturing and a prerequisite for scaling Industry 4.0 solutions across an enterprise.

An ERP can support a variety of activities, including the following:

- customer relationship management
- work-order management and tracking
- accounting
- procurement
- inventory and supply-chain management
- risk mitigation
- compliance

A comprehensive ERP system creates an integrated data environment that facilitates KPI monitoring. This makes it a powerful tool for continuous improvement and strategic planning.

## Why replace or update an existing ERP system?

When a company outgrows the capabilities of its current ERP system, it's time to upgrade. There are unavoidable costs that come with making a switch, however these can be offset by realizing the full potential of an ERP system:

- **Truly integrated:** A comprehensive ERP system gathers an organization's information from across all departments and consolidates it into a single, unified source to ensure staff at every level are on the same page. While avoiding the rise of ad-hoc documentation, it also eases data sharing, making it more consistent, accurate, and timely regardless of business size.
- **Less errors, fewer resources:** By automating manual data entry, errors and repeated tasks become less common and employees are freed up to address higher priorities.
- **No more data "black holes":** Key operational data flows are readily available to the right people at the right time, allowing process owners and analysts to quickly see and diagnose problems.
- **Optimized process flows:** Aligning shop-floor and administrative processes to the capabilities of an advanced ERP system can provide operational efficiencies and reduce implementation costs.

## Approach

RIT's engineers began by conducting a material and information flow analysis in order to map out the best opportunities for improving and expanding Rochester Colonial's ERP system. This would serve as the basis for upgrading the system. The flow analysis set out to meticulously document how staff at Rochester Colonial use the existing ERP system, other business software, and different paper-based methods to manage information and processes. The analysis informed RIT's recommendations to Rochester Colonial for better integrating and digitizing the company's business and manufacturing processes.

> *"We partnered with RIT to take a deep dive into our shop-floor and business processes, and to map out all the complexities we live with every day. They really helped us to understand the subtle differences in how the various parts of the business work within each of our four divisions."*
>
> *Carolyn Weil, ERP Implementation Manager, Rochester Colonial Manufacturing Corp.*

The RIT team's first step in the material and information flow analysis was to investigate Rochester Colonial's shop-floor and business-support activities. The engineers interviewed key decision-makers and subject matter experts. Each process was carefully reviewed to assess what is—and is not—functioning well. The results of this onsite exploration laid a solid foundation for creating flow diagrams of all the company's key processes.

The flow-analysis methodology is akin to value-stream mapping in that it aims to create a graphical representation of process details. The flow diagrams not only define the processes but also draw attention to pain points, often manifesting as gaps, parallel processes, bottlenecks, delays, or instances of departmental isolation.

Material and information flow analysis seeks to find every source of information, be it on paper, digital, or in the heads of employees as unwritten know-how. The approach aims to pinpoint who creates, uses, and owns data at various stages in a company's process flows, and can identify important information flows that are not well documented in current processes. The process can also help to identify new KPIs as well as the data sources needed to compute them.

## Project findings and results

The material and information flow analysis performed by the RIT team identified pain points and gaps that highlighted areas where current processes were not being consistently applied. It showed where refinements could made, such as digitizing manual processes. It also uncovered opportunities for eliminating non-value-added activities.

The RIT team found that Rochester Colonial's original ERP system, as it was configured, was unable to handle the company's intricate manufacturing and business workflows. In addition, procedural documentation was sometimes inaccurate or incomplete, causing employees to rely on other methods to record or share information, whether using paper, other digital tools, or even verbal explanation. In fact, RIT found that in many cases information was passed on verbally by long-standing employees. In short, staff found the existing documentation processes unreliable. These were not always consistent between Rochester Colonial's business units, stressing the importance of synchronizing processes and ensuring that the ERP system meets the needs of each business unit. An improved ERP implementation that accurately follows well-documented business procedures, RIT concluded, would build buy-in among employees and drive broader adoption at Rochester Colonial.

The team highlighted several other focus areas for the implementation and configuration of a new ERP system. For example, over the course of their assessment, the RIT engineers uncovered opportunities for streamlining Rochester Colonial's inventory process. Currently, the locations of products in certain storage areas and warehouses are often known only by individual staff members and, if written down at all, they are kept in isolated paper or spreadsheet logs. Although these logs are typically accurate, maintaining these logs is labor-intensive and presents considerable risk for error in the long term. Adding an appropriately configured warehouse management system (WMS) module to the ERP system could provide an effective digital solution for ensuring a more efficient—and transparent—inventory process. A WMS will be explored in more depth in a follow-on project between RIT and Rochester Colonial.

## Next steps

The RIT engineers' thorough analysis culminated in a set of comprehensive current-state flow diagrams for all the company's major processes across its four divisions. RIT and Rochester Colonial will use these as the foundation for a follow-on project to refine business processes, identifying common processes that will work across the four business units, developing specific process flows to optimize the work, and tying these findings into the configuration of a new ERP system.

RIT | Golisano Institute for Sustainability

**For more information please contact us:**

585-475-4210
centerofexcellence@rit.edu
rit.edu/advancedmanufacturing
190 Lomb Memorial Drive
Rochester, NY 14623


This material was prepared by Rochester Institute of Technology using federal funds under award No. 01-79-15124 from the Department of Commerce Economic Development Administration and using funds from the NYS Department of Economic Development. The statements, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the Department of Commerce, the Economic Development Administration, or the NYS Department of Economic Development.