



 [Print this document](#)

Wanted: Plant Floor Data Visibility

By David O'Brien

Demand-driven manufacturing is straining the current IT capabilities of many manufacturing organizations. Success in providing the visibility and responsiveness to meet demand requirements will yield improved profitability for manufacturers. While many leading-edge manufacturers are making the transition from "production operations" to "supply network operations," small- and medium-size businesses (SMB) have struggled.

What is now required is dramatically improved visibility into manufacturing operations and the ability to collect, analyze and leverage manufacturing intelligence to respond to changing market requirements. The lack of a modern manufacturing IT infrastructure will limit smaller organizations in making this transition and spur new interest in traditional applications.

In the last *Managing Automation/AMR* Research effort devoted to understanding the SMB space, published in June, we reviewed the renewed interest in ERP applications. The June study (click [here](#) for the methodology) revealed a widespread adoption of ERP software taking place among SMB manufacturers as they position the technology as the data management and collaboration hub for distributed manufacturing operations.

The latest round of survey data indicates strong, even robust, activity surrounding core, traditional plant management applications such as MES software. But the theme is the same -- manufacturers need to work within the context of their existing IT architecture while planning a strategy to respond and anticipate changes in market conditions. Although one can make the case for a new generation of applications specifically designed to support demand-driven manufacturing, AMR Research expects a more evolutionary approach, extending and evolving from existing applications.

The spending data collected in this study also reveals a seeming contradiction. Despite the fact that demand-driven principles change the manufacturing environment, we see an increased demand for traditional technology such as MES, particularly within the SMB segment, which is generally a late adopter of technology. Many organizations are just beginning to walk, while the market is demanding they run. Even so, SMBs have decided to start with the basics and intend to invest in traditional plant management applications.

MANAGING DATA, OPERATIONS

According to this most recent survey data, and consistent with other studies conducted by AMR Research, most manufacturing organizations are heavily dependent upon aging systems.

- Fewer than half of all SMB manufacturers surveyed are using any of the plant management applications queried in this study. Less than one-third are using MES, PE&C or analytics/simulation. Also, data collection tools such as SCADA, MDA and data historians are more widely used, but still found in only about 40% of manufacturing organizations.
- The SMB segment (under 1,000 employees) has far less experience with plant management applications than its larger counterpart, and deployment of plant management tools such as MES is less than 50%, often far lower.

BEYOND MANUAL INTEGRATION

The challenge is not just collecting the appropriate plant-level data, but having the right tools, systems and processes for analyzing, interpreting and supporting business decision making with that data. Time, data inaccuracies and manual entry are the culprits, as most organizations lack direct integration from the plant floor to an enterprise backbone or legacy system used to manage manufacturing operations.

- Even with the dramatic surge of SMB ERP evaluation and deployment activity, many SMB organizations still lack an ERP backbone. Integration and dissemination of information, therefore, becomes a more complex challenge.
- Even when an ERP system is present, integration from the plant floor to the enterprise system is limited and is usually manual. Less than 1% of respondents indicated that manufacturing data is automatically integrated with ERP with no manual intervention.

IMPROVING VISIBILITY AND ANALYTICS

Manufacturers clearly see the value in better visibility of production and operations data. When asked about the

data management capabilities that are most important to managing an effective manufacturing operation, respondents indicate that acquiring time series data from the plant floor, providing visibility into key performance indicators (KPIs), aggregating data from multiple plant production sources, and addressing growing regulatory compliance issues are top priorities.

What is equally clear is that there are some fairly significant gaps in performance. To identify and assess these gaps, we can compare the relative importance of these capabilities against current performance. Areas where capability performance exceeds its current importance are areas where current technology is meeting market requirements, whereas gaps in these two metrics indicate areas where technology is falling short of expectations.

- Overall, respondents indicate that current technology is providing adequate performance in collecting time series data, supporting regulatory requirements and aggregating multi-site data.
- There are performance gaps in providing adequate visibility into this production-specific data -- visibility into manufacturing KPIs, financial performance and multi-site performance analysis.
- Respondents also feel that they have little insight into line scheduling and capacity planning information. Small companies tend to struggle with product data, whereas larger organizations clearly struggle with managing the extended supply network. Inventory management across the supply chain and logistics operations were noted as significant areas where visibility is lacking.

The manufacturing plant floor is experiencing a resurgence in investment. A recent AMR Research report indicates that in 2004 the MES market topped \$1billion for the first time and will enjoy healthy growth over the next 24 months. Similar results were seen within this most recent study, with fully one-third of respondents indicating that their spending on plant management applications will increase over the next 12 months. MES, process execution & control and manufacturing data acquisition software were the most frequently cited areas of spending. The drivers behind these investments are improving visibility into production operations and KPIs, and improving the ability to gain a holistic view of operations across multiple sites and geographies.

- Both large and small organizations indicate that MES is a top priority. While large organizations look to the MES investment to facilitate multi-site analysis, small organizations view the MES investment as a means of accessing time series data and to improve visibility into financial performance.
- Smaller organizations are two to three times more likely to be investing in manufacturing data acquisition as compared to their larger counterparts, driven by the need to access time series data and allow analysis from multiple sites.

The bottom line is that most manufacturers are finding that to be demand driven requires some fundamental shifts in thinking about the role of production. This new role requires flexibility that most organizations are ill equipped to support. In the last article, we spoke about ERP as the new data hub for manufacturing and collaboration. Investment in plant management applications, to improve the ability of companies to collect, aggregate and analyze decision-driving data on operations, is a crucial next step.

[Figure 1](#)

[Figure 2](#)

[Figure 3](#)

[Figure 4](#)

[Figure 5](#)

[Figure 6](#)

[Figure 7](#)

[Figure 8](#)

David O'Brien is vice president, quantitative research, at AMR Research Inc.

 [Print this document](#)

This article can be found at <http://www.managingautomation.com/maonline/magazine/read/4718607>