

## Demand for CPM/MES Reported Strong in All Key Regional Markets

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### Keywords

CPM, Collaborative Production Management, MES, Manufacturing Execution Systems, Interoperability

### Summary

Differences in economics, philosophy, culture, and business practices are reflected in regional manufacturing strategies and in local adoption of CPM/MES Technology. This Insight summarizes some of the major trends that are occurring in different regions of the world and the impact that this is having with regards to CPM/MES applications.

ARC analysts in China, Japan, Europe, and North America recently looked at CPM/MES in each of their regional markets. Although the market dynamics and drivers differ markedly by region, all see strong market activity and growth going forward.

### Analysis

Regardless of the geographical region, today's manufacturers are under increasing pressure to improve their operations. Dynamic market requirements, increased compliance needs, more distributed, outsourced, and global manufacturing operations, rapid product innovation, Lean manufacturing, and the approaching transition to new technology are issues affecting manufacturers the world over.

While the importance of individual challenges varies by region, one thing that appears to be universal among manufacturers is their recognition that CPM/MES is a vital tool in accomplishing needed improvement. CPM/MES systems are being used to extend ERP and align manufacturing efforts with business imperatives, to provide enhanced visibility, and to enable more agile, adaptive strategies that can enhance profitability.



## In China, Three Market Segments Influence CPM/MES Growth

By Solomon Wang, ARC Advisory Group Inc. – China Operations

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FIE manufacturers often have good foundations in IT infrastructures, years of enterprise application experience, and most importantly, management processes in place. They generally have a good understanding of where they are today, where they

want to go, and what CPM/MES suppliers can realistically provide. Likewise, they can clearly define the scope of an implementation and develop a reasonably accurate, quantitative ROI. They frequently adopt solutions from multinational CPM/MES suppliers, including automation companies and packaged CPM/MES software vendors.

Some of the biggest opportunities for manufacturers to exploit the power of CPM/MES are in the tier I SOE companies. But there are several factors inhibiting success in this arena. Despite their use of very high end plant automation systems, most SOE companies still do not have well-executed management processes and supporting data in place. Many have deployed ERP, but this hasn't helped. Few have actually implemented production planning functionality.

To satisfy the SOE market, CPM/MES suppliers must have knowledge far beyond their own product features. They must understand local industry best practices and general operations management. Unfortunately, many multinational automation suppliers sold CPM/MES solutions to their existing automation customer base before they fully understood these requirements. They expected only minor changes in approach and many projects ended with lose-lose results.

However, not all CPM/MES projects have had such disappointing results. Best of Breed CPM/MES software vendors demonstrated a shorter learning curve, and their project success has been relatively better. Some local CPM/MES providers, with specific vertical expertise, have also been quite

successful. In general, the process industry can point to a higher success rate than discrete.

Some multinational CPM/MES suppliers have learned from their experiences in China and are now partnering with ERP service providers to leverage local expertise. Demand will continue to increase rapidly next year, especially in the automotive and tobacco verticals, because the benefits are already being recognized.

### **Japan Is Replacing Homegrown Software**

By Shingo Tokiwa, ARC Advisory Group Inc. – Japan Operations

Traditionally, the CPM/MES market in Japan has been dominated by custom-built applications, developed in-house by manufacturing users with comprehensive engineering support from automation suppliers. Adoption

Traditionally, the CPM/MES market in Japan has been dominated by custom-built, in-house applications. Adoption of packaged solutions has been limited to overseas manufacturing sites.

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Global players in packaged solutions are expanding their sales opportunities by working with dependable partners. Offerings by domestic players have often been “semi-packaged” solutions and mostly limited to Pharmaceuticals and Heavy

Process industries. But today, we see an increasing number of players, products, and sales in the discrete space as well.

A unique approach to driving operational excellence in manufacturing remains the core competitive advantage for many Japanese manufacturers. To be effective, CPM/MES systems must support these practices. For example, manufacturing operations of Japanese companies are becoming increasingly global, but certain manufacturing management processes remain: a strong emphasis on quality and customer satisfaction; a culture of "presumed-collaboration" and "bottom-up" Kaizen efforts; practices like TQC/TPM, etc.; Sei-ban requirement (assigning product item number as early as when a manufacturing order is dispatched); Keiretsu-like business relations (inter-company collaboration).

In line with the global trends, the key applications that will drive success in the Japanese CPM/MES market are:

- Traceability from tagging / data capture to enterprise-wide tracking and tracing
- Collaboration across globally deployed manufacturing sites
- Business Speed Accelerators, e.g., for improved time-to-market

### **Interoperability Key for European Manufacturers**

By Eckhardt W. Wodtke, ARC Advisory Group Inc. – European Operations

European manufacturers see a lot of good news in the CPM/MES applications that are being offered in both the process and discrete industries. The offerings have been dramatically improved and, more importantly have become broader in terms of functionality and support of standard software applications. Many CPM/MES suppliers and system integrators have ex-

panded their product portfolios with functionality such as Overall Equipment Effectiveness (OEE) and Downtime Management (DTM). Low-cost, advanced planning & scheduling (APS) at the CPM/MES Level has also become part of some offerings.

Interoperability (IOP) is no longer a buzz word in Europe - it is becoming a requirement. One important driver, especially for the European process industries, has been the SAP initiative for IOP (supported by ARC) and the growth of NetWeaver.

Considering SAP's large share of the European ERP market, nearly all CPM/MES suppliers serving this region already support these developments or have plans to in the near future. Interest is also growing for interoperability from the device level up to ERP.

Market demand in Europe for CPM/MES solutions is generally increasing as end users reap solid benefits. But adoption remains fragmented. For example, the pharmaceutical and food & beverage industries are initiating projects, but similar initiatives in the automotive industry remain delayed. The market is also extremely competitive. Not every CPM/MES supplier

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or SI has a full order book and prices are falling, due to the very competitive landscape. The big challenge for suppliers of CPM/MES in Europe is how to profitably service this demanding market.

## **Compliance Drives A&D and Medical Device Manufacturers in North America**

By Ralph Rio, ARC Advisory Group Inc. - US Operations

Many of the drivers articulated above are also in play in the Discrete manufacturing segment in North America. Regulatory compliance, for example, has been one of the key growth drivers for Collaborative Production Management for the discrete industries (CPM-D) in North America.

Compliance with Government regulations drives CPM/MES growth in Aerospace, Defense and medical device industries. Data management can not be done manually; systems are required.

Medical device manufacturers have a unique set of needs driven by the US FDA's regulatory compliance and the associated record keeping. Aerospace and Defense suppliers also need to support compliance for their associated branches of the government.

In the past, manufacturers were able to satisfy compliance reporting requirements using manual systems with hardcopy documents. But homeland security, additional regulatory requirements and liability control demand use of advanced data management. A simple example is the need to support "Where Used", or the ability to identify all finished goods containing parts made by a particular supplier during a defined time-period. Using hardcopy record keeping and manual sorting to answer this question takes more time than allowed by regulation and has an unacceptable error rate. Today, a systems approach to traceability and genealogy is required and this has become a significant contributor to growth in the use of CPM-D systems in North America.

Some automotive suppliers are also using genealogy and traceability functions to control warranty and recall costs. Many components have multiple suppliers and problems often occur with parts from just one of the suppliers. Rather than recalling all cars using that part number, the manufacturer can recall only those cars known to have the part from the problem supplier.

## North American Process Manufacturers Focus on Performance

By Tom Fiske, ARC Advisory Group Inc. - US Operations

Unlike the developing regions of Asia, Latin America, Eastern Europe and the Middle East, which continue to bring new capacity online, very few new plants are being built in North America. Instead, the prevailing trend is to improve operational performance and achieve greater profitability from the existing asset base. Manufacturers in this region are also dealing with global challenges like increased competition, reduction in technical resources, stricter governmental regulations and compliance reporting, higher raw material cost and soaring energy prices.

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Companies in North America are shifting their focus from production-driven manufacturing and price-based competition to an order-driven or business-centric approach, placing more emphasis on customer needs like quality, variety, customization, convenience, and timeliness. This requires better visibility into order

status and more agile plant operations. Companies are therefore concentrating much of their efforts towards achieving a higher level of integration between CPM/MES and ERP systems.

To reduce costs and improve efficiencies, many process manufacturers are also adopting operational excellence initiatives in their production operations. To support these initiatives, they need CPM/MES applications that bring a multitude of data sources together, provide meaningful visualizations, and monitor KPIs that are representative of real-time performance. In addition, companies are driving decision-making down, onto the plant floor, where it can have the greatest impact on performance. CPM/MES solutions that have the ability to trigger events and activities in response to plant disturbances can help to support these efforts.

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