

More Than a Vision: SAP's Perfect Plant in the Chemical Industry

ARC has recently had the opportunity to investigate SAP's "Perfect Plant" initiative for the chemical industry. Here's what we found: The Perfect Plant vision – and that's what it is, a vision of how manufacturers can gain huge benefits through better collaboration enabled by technology – is becoming more than just an abstract concept. SAP and its Chemical Ecosystem partners have built scenarios that demonstrate the capability to

With the introduction of SAP and partner products and initiatives, significant portions of SAP's Perfect Plant vision are becoming achievable. Leading manufacturers are already using them to outdistance their competitors.

automate and enhance business processes that flow through different organizations and systems, deep into the plant floor., thereby enabling improved performance.

Today's manufacturer operates in a dynamic, highly competitive, and increasingly performance-driven environment. Chemical companies face increasing customer expectations, rising energy and resource costs, a geographical mismatch between supply and demand, complex business processes for introducing new products, sustainability concerns, and a more active regulatory environment.

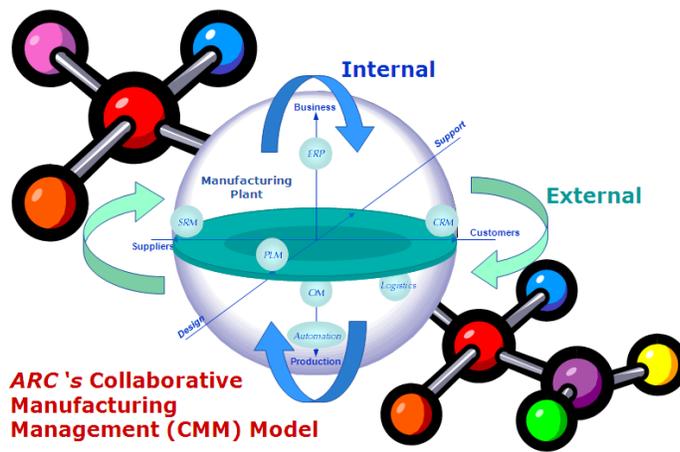
Leading chemical industry manufacturers seek to compete by improving connectivity between their business and operations groups and by linking production, order management, sales and operations planning, and inventory systems. This allows them to schedule production more smoothly, reduce operational costs and lead times, and better comply with changing financial and operational regulations. These manufacturers also tend to collaborate with customers and suppliers in order to continually produce innovative products that satisfy customer demands, meet margin targets, and outperform competitors.

SAP's Perfect Plant concept aligns well with ARC's vision for manufacturing. ARC introduced the "Collaborative Manufacturing Management (CMM)" vision based on research showing that becoming an



integrated, collaborative, synchronized, real-time manufacturing enterprise would best position manufacturers to respond to these market pressures. CMM identifies performance improvement opportunities arising from improved connectivity and visibility both within and external to the plant. These opportunities can be envisioned as belonging to the supply chain, the product lifecycle, or the business-to-plant floor domains, all of which interact with manufacturing operations. CMM emphasizes that business processes, not just data, should be the focus of integration and collaboration activities, and that empowering people is key to improving many cross-

domain business processes. Movement toward a collaborative approach can be seen in industry trends as well. For example, there has been a significant increase in investment in Operations Management systems at the plant level for each of the last several years. Manufacturers are reworking these areas because existing systems are often built on older technology platforms and are not designed for integration and collaboration.



SAP's Perfect Plant Concept Aligns with ARC's Collaborative Manufacturing Management Vision

SAP's Perfect Plant concept is a vision similar to ARC's Collaborative Manufacturing Management vision, but SAP and its partners take it to the next level by offering solutions that can help manufacturers begin to realize the vision.

What is Your Perfect Plant?

Think of Perfect Plant as your vision of a fully integrated, synchronized manufacturing plant in its purest state. Every key process has been identified and optimized, while the systems supporting it have been simplified, streamlined, and stabilized. It operates in real-time according to dynamic business requirements. It's an ideal meant to serve as a blueprint for your own transformation, helping you prioritize when and where you should devote resources to produce steady, incremental improvement. In the Perfect Plant, you have visibility into all aspects of your manufacturing operations to drive the transformation.

The Perfect Plant optimizes utilization of your manufacturing assets and drives increased production performance in concert with the enterprise plan and objectives. It provides the ability to respond in real time so you can drive increased yields, better asset utilization, and improved order fulfillment levels. A Perfect Plant also leverages the investment in enterprise applications, delivers simplified business processes to the front-line operator, and leverages the existing manufacturing infrastructure and data sources.

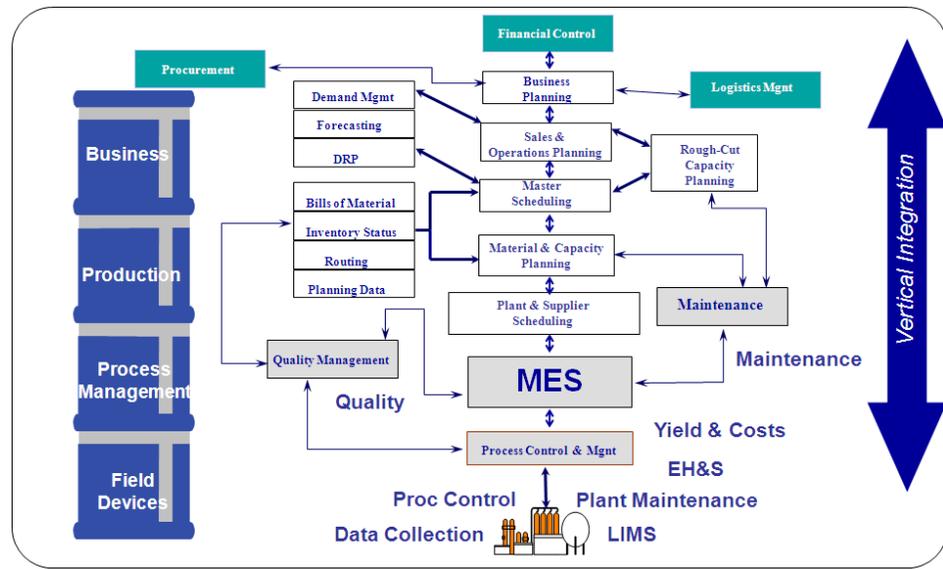
The Perfect Plant provides both a common vision and a shared language for helping people in your company align their efforts, while improving communication and heading off misunderstandings. The Perfect Plant provides a rallying cry as well as the ability to meet a set of performance metrics.

There are many possible routes to achieving the Perfect Plant and no two manufacturers are likely to follow exactly the same roadmap. Factors such as prior technology investments, manufacturing strategy, specific pain points or opportunities, and industry segment can affect the optimum path to the Perfect Plant. The trick is to develop the right end state vision, then ensure that each technology solution component deployed along the way builds on and reinforces progress toward the vision without introducing unnecessary conflicts or creating isolated applications, processes, or organizations.

Perfect Plant Principles for the Chemical Industry: Integration, Collaboration and Sustainability

Members of the Manufacturing Working Group of the Chemical Industry SAP Users Group (CISUG) have been working together to articulate their own Perfect Plant vision of the chemical plant of the future. They want to find ways to make top management in their respective companies aware of the value of what they call, "Integrated Collaborative Manufacturing." This CISUG activity is just one example of how the extended SAP community is supporting the Perfect Plant.

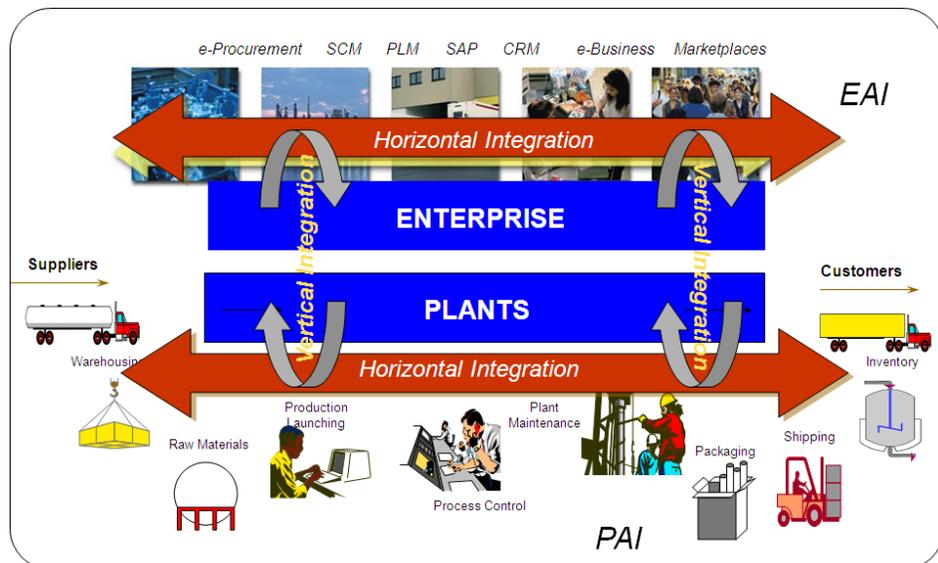
In this context, Integrated Collaborative Manufacturing calls for integration of all necessary information sources vertically, horizontally, and geographically. Vertical integration refers to integrating plant systems with business systems such as ERP, SCM, PLM, and CRM. Horizontal



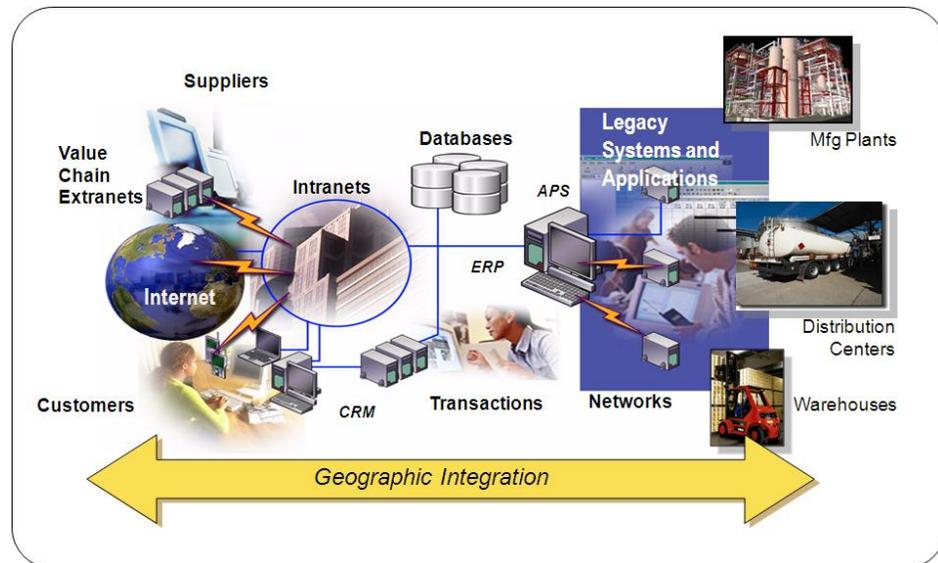
Vertical Integration: Connect Business and Plant Systems to Improve Enterprise Performance. (Source: CISUG)

integration refers to integration among applications throughout manufacturing operations. And geographic integration refers to integration across a distributed portfolio of sites, as well as with customers, suppliers, and others. In addition, Integrated Collaborative Manufacturing calls for role-based access and visualization, the ability to share information in real-time, and tools to enable people and organizations throughout the manufacturing enterprise to collaborate in decision making and actions.

Recognizing that climate and resources issues are poised to transform



Horizontal Integration: Connect Applications at the Business Level and at the Plant Level to Improve Business Processes. (Source: CISUG)



Geographic Integration: Connect Distributed Sites, as well as Customers, Suppliers, and Partners. (Source: CISUG)

manufacturing, and that integration and collaboration will be among the key technologies needed to address the changes, the working group has begun discussions about expanding their Perfect Plant vision from “Integrated Collaborative Manufacturing” to “Integrated Collaborative Manufacturing and Sustainability.”

Perfect Plant Solution Components: SAP and Partners

A vision of the Perfect Plant isn't of much value without a means to implement it. Many key components are now available from SAP and its partners and other solutions are being jointly developed. Examples from SAP include *SAP Manufacturing Integration and Intelligence* (SAP MII), which provides for integration and information visibility; *SAP Lean Planning and Operations* (SAP LPO), which provides lean planning and scheduling capability; and *SAP Manufacturing Execution*, which provides plant floor planning, tracking, quality, and execution for complex discrete manufacturing.

Many manufacturers will feel more comfortable if they have a strategic partner to guide them on a path as comprehensive as the Perfect Plant journey. The fact that SAP has embraced a community of technology suppliers and system implementers in pursuing solutions for the Perfect Plant should assure manufacturers that achieving the needed integration

and business process optimization will be feasible based on SAP and partner capabilities.

Several partners are working closely with SAP to realize the Perfect Plant. For the chemical industry, Performix and Tata Consultancy Services (TCS) can show a combination of solutions, including *SAP Business Suite* applications, *SAP MII*, and Performix's *xMES*, *xRecipe*, and *xBatch* applications, all working together in an integrated, collaborative manner that improves performance by improving processes across the manufacturing enterprise. They are able to demonstrate scenarios – today – that parallel the CISUG manufacturing working group's "Chemical Plant of the Future" scenarios.

Conclusion

Perfection is not achievable, but the Perfect Plant provides an idealistic vision that can help an organization align its manufacturing strategy with its corporate objectives. The *pursuit* of the Perfect Plant encourages plant personnel, operations, and IT to collectively design, prioritize, and implement plant strategies that impact core elements of production planning, intelligence, integration, and execution.

The Perfect Plant is not about futuristic plants with next-generation technologies. In ARC's view, a significant, beneficial transformation of the manufacturing enterprise is already achievable, and SAP, together with its partner ecosystem, is steadily moving the Perfect Plant ideal ever closer to reality in the chemical industry.

ABOUT THE AUTHOR:

As ARC's Vice President for Collaborative Manufacturing and Architecture, **Greg Gorbach** is a thought leader in Collaborative Manufacturing and provides clients in a number of manufacturing vertical markets with strategic advice in dealing with boundary-crossing business processes. Greg's primary areas of focus are Collaborative Manufacturing, Sustainable Manufacturing, Production Management, Business Process Management, Manufacturing Intelligence, and the synchronization of plant systems with CRM, ERP, PLM, Supply Chain and other business systems. He brings over twenty years of hands-on experience to ARC, with direct experience within manufacturing organizations, as well as extensive experience with suppliers to manufacturers.



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