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Wedding CIM to JDF; How workers plan and view job flow will set the stage for networking production digitally.

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Lean concepts are all about focusing your enterprise on providing value for the customer and eliminating all forms of waste in doing so. Stated differently, lean drives waste out of your operation through the implementation of specific tools: set-up reduction, Total Productive Maintenance, Kaizen, 5S, Kanbans, Process Mapping and through the building of an empowered employee culture focused on customer needs.

Lean concepts are simple to understand but require involvement from the entire organization. They frequently involve changing traditional paradigms on how to flow jobs through the plant. Both of these requirements can make lean initiatives difficult for traditional printers to adopt. New methodologies in manufacturing must emerge, and established cultural norms and values must change within the organization.

Computer Integrated Manufacturing, or CIM, fits nicely under an umbrella of lean thinking. The crux of CIM is to automate processes using computer controls and tie processes together with digital information. Using technology can eliminate human-introduced variation to manufacturing processes, while also reducing redundancies in the workflow.

These are clear examples of waste elimination making CIM consistent with lean improvements. Whether or not your plant has a clearly articulated CIM development plan, you almost certainly have elements of CIM in place. Examples at an elemental level: automated roll changes, blanket washers, registration systems and counting systems.

On a more basic level, any digital controllers you have in your plant that automate a process step are examples of a CIM initiative. Clearly, CIM can exist at many levels within a facility without any knowledge or reference to JDF capability.

Engaging CIM to JDF

JDF is a form of CIM that links multiple manufacturing devices using standardized print communication language. It

allows two-way communication between devices and a plant's management information system, giving decision makers access to real-time data on job performance. And it allows for the elimination of manual and redundant input of information and facilitates the integration of the entire manufacturing process.

The beauty of JDF lies in its device independence. Conceptually, any JDF-enabled device can communicate with any other JDF-enabled device, regardless of which vendor manufactured each piece of equipment. Device independence gives printers greater flexibility in how to equip facilities and means they are not manufacturer-dependant going forward once choices are made.

Adhering to a JDF standard should mean you do not need to develop unique, proprietary software solutions to link multiple pieces of equipment in your plant. The ultimate concept of JDF is for enabled equipment to operate in a "plug-and-play" format-much like buying a computer peripheral for a given operating system will be recognized and work seamlessly with your computer once it is plugged in and recognized by the system. So, clearly JDF can be seen as a subset of CIM.

Nothing today keeps you from ignoring JDF and fully automating your entire print facility across a diverse equipment mix. All that is required is for you to be willing and able to undertake the software creation needed to facilitate each piece of machinery, effectively passing along job and performance information while interfacing with your MIS system.

Along with this will be the ongoing need to revise the interfaces each time you upgrade equipment or change the complement of equipment in your shop. Should you choose to change MIS systems, you should probably plan on rewriting all the interfaces with your equipment base to keep the connectivity you have grown used to. If this sounds like a major cost initiative and, quite possibly, outside the scope of your firm's competencies, it probably is. While printers have created proprietary system solutions for years, the scope of a comprehensive CIM implementation far exceeds most firm's capabilities and does not position the printer for anything except ongoing system maintenance and connectivity issues as the business requirements evolve.

In a similar vein, nothing today keeps a printer from ignoring CIM altogether and continuing business as usual without information connectivity and integration throughout the facilities workflow. Ultimately, every printing company has to answer the question of upon what its competitive advantage is going to be based.

From a strategic standpoint, companies have two clear directions to pursue. You can attempt to build customer loyalty by differentiating your firm, typically through strategic building blocks of quality, customer responsiveness or innovation. Or, you can go the route of cost leadership and form a strategy around driving costs out of your business, enabling you to better compete on price.

Firms that choose a differentiation strategy must be able to charge higher prices than those that go the route of cost leadership, as differentiation clearly costs the firm money to build. Arguably, every company competes with some balance between cost leadership and differentiation. The best-run firms know clearly where to strike this balance, and they work to develop the internal competencies to support them.

It is difficult to conceive in today's business environment how a firm can compete effectively over time without having a strategy for driving costs out of their business model. Once you accept this reality of competing-or even in surviving-then your key question surrounds what means you pursue to effectively reduce your cost structure.

Building an effective strategy means making choices for your business. Every printer's goal is to find ways to provide value to the marketplace at profitable levels, and most every printer struggles to consistently do this. In an increasingly competitive world, firms struggle choosing in what-and when-to invest. Finding the right investment mix between people, process and technology is crucial. Mistakes in direction today may seriously undermine your business strategy and overall competitiveness. The potential of JDF/CIM integration to drive cost out of your business is significant as part of a solution. Automation and efficient information exchange do not resolve all business issues; business processes must add value, and investments in your workforce must continue to be part of an overall plan.

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JDF allows for entering job information only once, eliminating possible errors in the process as the job travels through the plant. Consider the paradox of how, as value is added to the printed job in a facility, the wage rate of the employees working on it tends to decrease in later production stages. If your plant pays press operators top dollar, that means subsequent operations are staffed by lower-paid employees-while the value of the job continues to increase. For example, a mistake by a lesser-paid cutter operator who miss-keys job information, or by a hoist driver who keys in the wrong ship date on the dock, can eliminate the value added accumulated in a job through all previous stages of production by higher-paid employees.

Conceptually, a fully compliant, JDF-enabled facility prevents information errors as data moves between production machines that use the information to preset themselves for job production.

JDF sounds like a terrific solution for many of the production issues facing printers today. After all, who wouldn't want automated information flow between machines, real-time data on job performance, pre-setting of job critical measurements and managers managing the business instead of chasing data? The biggest issues facing printers today in implementing JDF solutions are determining how to migrate from legacy equipment to JDF-enabled machinery and ensuring that different equipment is truly interoperable with expected information flows. These issues require both faith in the concept and a commitment to make it work in your shop for it to succeed.

A certification program for JDF products was announced this summer by the CIP4 organization and PIA/GATF. Products that pass certification will be labeled "JDF Certified," meaning they have met the criteria for interoperability. It will take time for all the products that tout JDF capability to be properly certified. And it will take resources in your facility to ensure that different manufacturing platforms actually are interoperable with JDF data, as plug-and-play is still more concept than reality.

This means you will need to develop competencies in information technology beyond what you have probably needed to compete in the past. Traveling the path of CIM means you no longer define yourself as a printer but see yourself in the manufacturing business, using technology to automate and simplify manufacturing processes.

The good news is that you control the timetable of how you do this. Only your business needs dictate migrating from legacy manufacturing platforms to JDF-enabled equipment. A transition can take place incrementally as your needs evolve and as your resources support it. Companies who have begun the migration already are testing the issues of equipment interoperability and are working through the issues that arise while gaining the benefits of improved information flow and increased equipment automation.

Choose to wait and see how it works for the other guy? If you have no current needs to replace equipment, this may work for a while, but remember that your competition is growing competencies in an area you are going to have to develop at some time to effectively compete on cost. Some critics of JDF focus on the evolving nature of the standard as a stumbling block in supporting the initiative. My belief is technology standards are not stationary and will always evolve. Microsoft Windows is arguably an operating system standard allowing non-technical users to operate computers yet continues to evolve on an ongoing basis. We should want standardization in the industry to simplify complexity and allow costs to be driven lower. Accepting that standards will evolve as needs evolve is realistic and healthy and should not dissuade printers wanting to improve through technology from starting down the path of JDF.

So how can JDF and CIM work in your plant? Think of the two as a marriage. Weddings typically come in people's lives as they mature and look to grow beyond what they can achieve as individuals. Marriage can bring wonderful benefits, but rarely without each partner's active involvement and much work to continue making the relationship strong. The wedding between CIM and JDF is no different; the relationship is not without issues that require work.

However, the payoff of successfully working through the issues that present themselves is better information to run your business, better utilization of your human resources to focus on value-adding activities, automating and simplifying redundant process steps, and driving costs lower in your business model. If those are of value to you and your business,

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then it may be time to consider walking down the aisle with JDF.

ONLINE:

www.cip4.org , gain.net and ipa.org/e-LEAN

Lean Gaining Ground

Lean production philosophies, embracing a range of approaches aimed at establishing best practices and squeezing extra steps from production, have been slow to catch on in print circles, where every job seems to differ in scale, scope and complexity. Aired at Smart Factory conferences held by Research & Engineering Council of NAPL, and PIA/GATF's annual Computer Integrated Manufacturing conference, lean principles were also covered in the annual Sheetfed Conference in June, where Gary Lessing presented Lean Manufacturing 101. Lessing is director of the Chicago Manufacturing Center www.cmcusa.org , a consultancy spearheaded by the National Industry Standards & Technology to bring best practices to mid-sized Chicago-area firms, including printers. There are 60 such centers nationwide www.mep.nist.gov . Another good source for lean manufacturing information is Cal Poly's Graphic Communications Institute, where professors Malcolm Keif and Kevin Cooper are creating a print industry "lean team." (The two recently spent a week in Manama, Bahrain, to educate printing company executives on strategic management and lean management concepts.)

TrendWatch Graphic Arts www.twga.com reports a modest but growing interest among printers in lean manufacturing principles. This summer, IPA found a groundswell of interest in its e-Lean Webinar series www.ipa.org , which provides a basic background and takes printers through the steps of implementation.

IPA's Dave Haradon says over the next several years, lean manufacturing principles will become central to the graphic communications industry's ability to achieve positive results for their customers, especially as graphic solutions providers address more than just printing; their services encompass creative, prepress, premedia and all forms of content delivery. As a result, process improvement of digital workflows requires more than just the traditional machinery-based principles of lean manufacturing.

In October, Graphic Arts Monthly will join with IPA and Kodak Graphic Communications Group to publish a synopsis of the steps and necessary tools to begin the e-LEAN journey and how to apply these tools to creative, prepress, premedia and printing operations. Follow-up webinars are planned to address the subject in an interactive forum. Visit www.ipa.org/eLEAN or call 800.255.8141. -*Bill Esler*

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