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# Results Vary Widely Among Leading Printers

BY C. CLINT BOLTE

**M**ore than 250 attendees came to Chicago from June 11-13 for the 14th annual gathering of sheetfed printers, where some of the leaders in the industry presented case studies and described their printing technologies and innovations.

Jointly organized by the National Association for Printing Leadership, the Printing Industries of America/Graphic Arts Technical Foundation and an advisory board of sheetfed printers, this conclave continues to benefit from new formats and techniques that engage attendees while providing stimulating ideas to help improve their profitability. During the candid and pointed attendee roundtable discussions and the four different tracks of production, operations, supervisory excellence and leadership, each participant had the opportunity to ask questions about specific issues and come away with valuable new ideas.

## Staggering Variation

PIA/GATF's 2006 sheetfed benchmarking study, conducted with nearly 40 volunteer print producers (mostly general commercial printers with \$10-50 million in sales and more than 50 employees), showed a marked improvement over a similar comparison in 1998, but the variation across the spectrum of plant participants was still staggering. Each of the participants had the option of receiving a CD of the same image either as a PDF or in Adobe InDesign, and a press sheet to match. Eight out of 10 chose PDFs, with the remaining 20% requesting the native files that take the most prepress time to file prep, RIP, trap, image and check plates. The plants could use any paper they liked and their house inks.

You would think that printers who use the same basic equipment and technology

run by experienced operators would take about the same length of time to produce an identical printed piece. Would 25% variation seem outlandish? How about three times as long from the most efficient to the least and even a five times difference in spoilage?

On average, the group took 110 minutes in prepress time to process the four-over-four poster imposed to 19 by 25 inches. The top guns took about 70 minutes and the laggards three hours. The 2006 prep throughput was a noticeable improvement over the 138-minute average of 1998, when most participants were handling film rather than CtP output.

The printers used four different press manufacturer models, though most were 40-inch and ranged in age from new to a decade old. Hence, automation varied considerably on the presses that the plant participants chose. Make-ready averaged 60 minutes, which was 50% better than in 1998. The best performer took 35 minutes, while two plants clocked in at 90 minutes.

Press spoilage averaged 850 sheets for the 1,000-poster press run, which was a 30% improvement over 1998 spoilage average of 1,250. The best performers had low times as well as low waste. Total manufacturing time ranged from 120-300 minutes, with an average of 180 minutes. This was more than a 25% improvement over 1998. Printers using perfecter presses performed the best, as would be expected.

Mark Bohan, who coordinated the PIA/GATF study, concluded that a third of the printers had waste issues while another third had prepress issues. Each participant received a report comparing their results with the average and the overall range of performance.

Digital press manufacturers should be most giddy over this study, since their

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Table 1

Comparing Assumptions

Traditional	Lean
<ul style="list-style-type: none"> <li>• Profit come from full resource utilization</li> <li>• Direct labor is the most important conversion cost</li> <li>• Control the business through detailed tracking</li> <li>• All excess capacity is bad</li> </ul>	<ul style="list-style-type: none"> <li>• Profit comes from maximizing flow on pull from customers</li> <li>• Waste = resources impeding the flow</li> <li>• Control through continuous attention to flow &amp; waste</li> <li>• Excess capacity provides flexibility</li> </ul>

There is an all together different perspective on the *thinking* about what is *important* in the two manufacturing processes as outlined in Table 2.

Table 2

Comparing What’s Important

Traditional	Lean
<ul style="list-style-type: none"> <li>• Full utilization of resources</li> <li>• Cost per part</li> <li>• Overhead absorption</li> <li>• Batch &amp; queues</li> <li>• Department structure &amp; individual efficiency</li> <li>• Product quality</li> <li>• Inventory valuation</li> <li>• Pursuit of budget</li> </ul>	<ul style="list-style-type: none"> <li>• Increased sales revenue</li> <li>• Value to the customer</li> <li>• Value streams</li> <li>• Flow &amp; pull from the customer</li> <li>• Team structure &amp; individual empowerment, accountability</li> <li>• System quality</li> <li>• Pursuit of perfection</li> </ul>

As with traditional manufacturing, performance measurement is absolutely critical in lean manufacturing. However, *what is measured*

entire portfolio of equipment could handle this same job in a fraction of the time it took the best litho performer, much less the average offset plant, and with a modicum of waste. However, PIA/GATF selected a run length of 1,000 (two-sided) copies as a relative benchmark for prepress, press make-ready and startup spoilage, and to minimize the out-of-pocket cost for the participants.

George Ryan, PIA/GATF’s chief operating officer, suggested that printers might take the test on an ongoing basis to gauge their overall efficiency. Such additional information would expand the database and make the overall study more statistically significant.

While this sheetfed conference has always attracted larger than average printers whose technology and operations are presumably more sophisticated than most, the variety of their operations and the range of their effectiveness can be striking. Assembling the right mix of skilled employees, good equipment and efficient procedures, all synchronized and focused

on serving the dynamic needs of a competitive market, appears to be increasingly difficult even for relatively well-heeled printers. This conference takes a shot at helping printers solve a puzzle that has the complexity of three- or four-dimensional tick-tack-toe.

The conference also addressed topics common in the manufacturing industries, such as lean manufacturing and 5S.

Larry Gess, the director of the Chicago Manufacturing Center, described “lean manufacturing” as “a systematic approach to identifying and eliminating waste or non-value-added activities through continuous improvement by flowing the product at the pull of the customer in pursuit of perfection. According to Gess, 95% of all lead-time is non-value-added.

Terry Remaly, plant manager at Hopkins Printing, a 105-employee company in Columbus, Ohio, described how his company took a creative approach to implementing lean manufacturing in the bindery. Estimating that outside consultants would be too expensive and having had no

further highlights the critical cultural shift. For example, in traditional manufacturing the focus is on “lowest product cost,” while in lean manufacturing the focus is on maximizing the *value stream profitability*. Table 3 shows some of these measurement differences.

Table 3

Comparing Measurements

Traditional	Lean
<ul style="list-style-type: none"> <li>• Labor efficiency &amp; machine utilization</li> <li>• Cost variances versus standard</li> <li>• Budget adherence</li> <li>• Direct labor as a % of sales</li> </ul>	<ul style="list-style-type: none"> <li>• Cycle time</li> <li>• Throughput</li> <li>• First time quality</li> <li>• Inventory turns</li> <li>• Delivery to customer</li> <li>• Value stream focus</li> </ul>

Needless to say employee behavior from the plant floor to the various support roles must be different, with much more flexible attitudes and personal initiative for lean to succeed as illustrated in Table 4.

Table 4

Comparing Behaviors

Traditional	Lean
<ul style="list-style-type: none"> <li>• Make more product</li> <li>• Utilize resources to the max</li> <li>• Optimize department efficiencies</li> <li>• Track direct labor in detail</li> <li>• Allocate other costs</li> </ul>	<ul style="list-style-type: none"> <li>• Eliminate barriers to flow</li> <li>• Focus on value streams rather than departments</li> <li>• Continuous improvement and teamwork</li> <li>• Eliminate waste, inventory and over production</li> </ul>

experience in the printing industry, his firm of 105 total employees approached the Mechanical Engineering Department at nearby Ohio State University for help. Hopkins Printing ([hopkinsprinting.com](http://hopkinsprinting.com)) ended up hiring a recent graduate who implemented lean manufacturing in about six months.

Tina Berg-Boldt, Associate Director of the Graphic Arts Training & Consulting Group ([eicc.edu](http://eicc.edu)) of Davenport Iowa, offered a primer on how to 5S your plant. 5S is a proven system of behaviors and activities that prepare and maintain the entire physical plant for lean operations by “simplifying the workplace, making it easier to distinguish wasteful from value-adding elements.”

The “Ses” are the first letter of a series of Japanese words, where the practice has been perfected. In essence it is comprised of separate/sort and scrap; straighten out/set in order; scrub/shine/sweep; spread and maintain (standardize) throughout the plant; and systematize and sustain. Berg-Boldt showed before and after photos of

**Performance Indicators**

Measurement	Profit Leader Range
<b>Sales:</b>	
• Value-add as % of sales	67-68%
• Estimate conversion %	20-25% (for general commercial)
<b>Manufacturing:</b>	
• Utilization/Operating Efficiency	83-87%
• Paper waste %	5-8%
• Plate remake %	2-5%
• Overtime % (premium\$/total\$)	8-10%
<b>Finance:</b>	
• VA Sales\$ per employee	\$90M-105M (annualized)
• Gross profit % of VA sales	40-45%
• Billing lag (# days)	1-2 days
• Days of paper inventory	10-16 days

plants that followed this structured approach to simplifying and cleaning up each employee’s workspace. The result is a visual, safe, uncluttered workplace that allows products to flow on the most direct route through the plant and allows each employee to do his/her job in the most effective way each day.

Every year, the conference names the Sheetfed Executive of the Year. Based upon the key criteria of giving back to the printing industry, no one is more deserving of this honor than John Berthelsen, CEO of Suttle-Straus Printing in Waunakee, Wisc.

**TSR**

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