



QuadTech®

Our passion is *your success*.™

QuadTech is a pre-eminent designer and manufacturer of automated control systems for printing. We leverage the knowledge gained from our printing heritage and our unmatched talent and resources to create inventive solutions to the challenges faced by commercial printers, newspaper publishers, packagers, and publication gravure printers.

As the research and development subsidiary of Quad/Graphics, QuadTech was founded in 1979 by Thomas A. Quadracci and has played a major role in helping our parent company reach and retain its position as one of the world's largest and most renowned printers. We also apply our deep understanding of printing and our problem-solving expertise to serve as strategic partners to printing businesses worldwide. The ideas born as solutions to printing issues are transformed by our team into robust products that greatly enhance print quality, decrease waste, and streamline processes.

Our mission is to provide the innovations that position Quad/Graphics as the technology leader and the low-cost

producer and to take the appropriate technologies to the marketplace to keep our industry competitive with other forms of media and help fund our ongoing research efforts.

Starting the Journey

We began isolated efforts in lean on our own in 2001 and 2002, focusing on 5S activities in manufacturing and some minor process mapping. However, our lean journey didn't officially begin until summer 2003 when we decided to take a holistic approach and partnered with TBM. Our first two events were held in July of that year.

QuadTech operates in a custom-engineering, low-volume, long-takt-time environment. We are mainly an assembly and machining factory, and that creates a unique set of lean challenges that are different from those found with short-takt-time manufacturers. Because of this, we chose to begin with the two areas of highest impact for QuadTech: order management and new product development. This presented a huge challenge for the entire organization as everyone tried to understand

and accept the big changes that touched almost every department. While we struggled to get these new lean processes implemented, we have made tremendous progress in both of these areas.

From these initial events, we have built a dedicated kaizen promotion office (KPO) team. We have an executive-level director of continual improvement who reports directly to the president, one manager, and two additional full-time KPO team members. Additionally, we have started rotating other team leads through the KPO as a way to help increase their knowledge base, further build buy-in for our lean efforts, and develop the future leaders of the company. Over the past five years, we have held 85 kaizen events, with 61 percent of our employees participating (additionally, 97 percent of our corporate-wide management team has participated in at least one event).

QuadTech's manufacturing kaizen events have included more than 20 shop floor events covering six different product areas, with productivity gains of 10 to 30 percent in these areas. We have instituted Hejunka boards in all of our production areas, a supermarket in the Stacker cell, and kitting bins for the rest of the assembly cells. We now use the S&OP process to bring together sales, operations, and engineering every week, with review by the executive team on a monthly basis.

Leveraging Lean for Growth

While we have had many successes on the shop floor, the majority of our events have been either business process events or Design for LeanSigma (DLS) events. To date, we have held 32 business process events and 23 DLS events, including 11 voice of the customer (VOC) events, two concept feasibility events, eight design for manufacture and assembly (DFMA) events, and two production preparation (2P) events.

We are continuing to refine our new product development process by using all of the DLS tools. We have used the VOC tool at multiple points during the process, holding both "process study" VOC events, where we take a higher level view of a market, and also "product specific" VOC events, which we use to create market specifications and determine specific features needed based on the customer input.

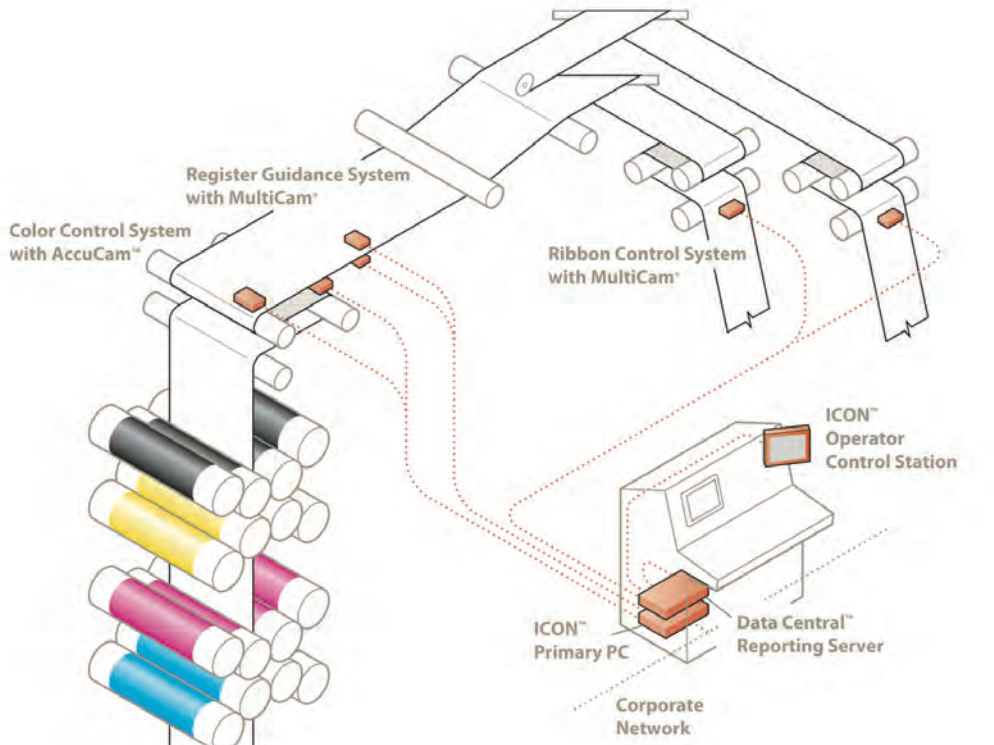
In the past six months alone, we have held three extremely successful VOC events for three very different markets. These events have been a turning point for QuadTech. The level of buy-in for the results throughout Marketing, Engineering, Field Service, and Sales was incredible. We now have cross-functional teams that visit multiple client sites to gather data as standard pre-work for all VOC events. Moreover, we have taken these VOC results to concept feasibility events and recently announced to our international sales team that we are working on a new product offering to be introduced in the newspaper market.

Although we realize we might be later to market than some of our competitors in this situation, we are listening to customers and creating the right solution instead of trying to fill the gap with an existing product from a different market.

Another focus area for QuadTech has been managing for daily improvement (MDI). After just three formal weeks of MDI training, including one "MDI in the office" session, we now use this process not only throughout all manufacturing areas, including the stockroom, but also in both the Field Service and Customer Service areas of our business. These departments have daily or weekly meetings with all of their support teams, create yellow slips for issues, assign due dates, and troubleshoot root causes to prevent repeat issues from occurring. By using this process, our order



Schematic showing where QuadTech control products integrate with a customer's printing process.



entry process now takes three days to complete, down from 19 days when we started our lean journey—an 84 percent improvement. We are now working with our regional offices (a critical piece of QuadTech's value chain) to reduce the time it takes them to gather order data from our OEMs and clients to continue to reduce the overall lead time for our products.

Creating Alignment with Policy Deployment

In 2004, we bridged the gap between our lean efforts and our corporate goals by seeking assistance with our senior management leadership (SML) planning sessions. We began using a policy deployment matrix to align our corporate goals with our full kaizen calendar. While we achieved some successes, we soon realized that we were trying to institute too many changes in one 12-month period. Believing that policy deployment was still the right process for

QuadTech, we stayed the course and have made significant improvements each year. Today we have four corporate goals, and we have adjusted our kaizen schedule to assist these teams in achieving their goals, which ultimately support the corporate goals and contribute to the company's financial performance.

The key change that we have worked to achieve throughout the company is to have visual management in every department. Through the evolution of our corporate goals, policy deployment, and MDI efforts, we now hold a monthly metrics review (MMR) session with the entire management team, including our remote offices. We get together for two hours each month and review all of the company's key metrics as a cross-functional group and discuss trends and issues and determine appropriate countermeasures where needed. We look at the company financials, corporate goals,

sales targets, service costs and profitability, warranty, kaizen event status, new product development project metrics and tollgate status, supplier quality, and more. This has helped us raise the level of involvement and accountability throughout not only the management team but also the company as a whole. People are now aware of more than just their little corners of the world; they also understand how what they do affects other teams and the entire company. While we still have more work to do, we have made great strides.

Putting the Customer First

As we have progressed on our journey, we have moved our lean efforts into our value chain. We have held international events with our remote offices where we have focused on customer service, field service installations, and profitability. Through multiple business process kaizens,



we looked at how we manage customer orders and installations. One event focused on project management of an installation, while a separate event focused on the cycle of an actual on-site installation.

After we completed this process in North America, we took the KPO team on the road and held an event in our Weesp, The Netherlands, office to take the changes abroad. We again went out to the field and observed a European installation and made drastic improvements in their process.

Our newest lean efforts—using value innovation curves (VIC)—began in summer 2007. We spent three intense weeks learning the VIC process and exploring three different market segments. As a result of those strategic efforts, one 2008 corporate goal team is implementing some of the ideas we generated and a second team is working to further refine our VIC efforts and incorporate this process into our everyday

business practices. We just completed another series of VIC efforts resulting in new strategies for three markets. Although we received great results from two of the markets that we have no previous experience in, we are truly surprised by the results we received from the research in our core market. We now realize the value of focusing externally on what our customers value the most.

The most important change that QuadTech has made during our journey is to have embraced lean as a way of life. We have incorporated it into our business processes to bring cross-functional groups together to solve problems throughout the company. Because only a small portion of the work we have done is on the shop floor, lean is not “just a manufacturing” thing at QuadTech. Instead it is used in every department and at every level of our organization. With the entire print industry

in a recession, providing our clients with complete solutions at competitive prices has become more important than ever. With the improvements that have been implemented through our lean journey over the past five years and the continued focus on improving all of our processes, we are now strategically positioned to run that different race and reinforce our position as a market leader. ■