



Winnebago
Section

Mission Q

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American Society for Quality Section 1206



Ariens Company, where passionate people astound their customers! The ASQ Section 1206 tour and overview of the manufacturing capability of this extraordinary facility was well attended and everyone that participated enjoyed the sharing of processes, controls and product output. This facility produces the zero turn riding mowers that Ariens is quickly becoming famous for, in addition to the great line of snow throwers that they build just up the road from this plant.

Troy Pagel, Kevin Ketter & David Peterson were our great host's and tour guides for this event and 35 people signed up for the tour and dinner meeting. This team of experienced professional's shared their experience of varied manufacturing and quality engineering activity that led them to their current responsibility of continuous improvement activity. The tour and explanation of the processes was much better than I captured it on paper as we walked through the plant, however I think you will be able to form a vision in your mind as I stumble through the scribbled notes I took as we walked the facility.

This facility focuses on the zero turn deck riding lawn mower, both commercial and consumer application. The processes involved with this manufacturing activity include laser cutting of sheet metal, brake press, stamping press, manual and robotic welding, painting and assembly. This facility began on its lean journey back in 1999 when Dan Ariens returned to Brillion to join the family business. Since committing to continuous improvement the team has managed to hold Kazan events during the first and third week of every month, and it shows in the process flow and improved product output.

Their current quality system is not ISO certified; however they are beginning to head down that path and have a plan to get one of their plants certified in 2012. The quality system did move away from inspection and now relies on process control techniques. They developed an open concept into a value stream, which is a part of the overall process throughout the manufacturing facilities. They accomplished this by integrating standard work and shadow boards, process control and process monitoring via control plans. This plant has a lower volume product with the maximum output at between 10,000 and 13,000 units annually.

Ariens has several parts divisions and recently located one in Indiana and one in Michigan. This facility has 2 paint lines, a commercial 7-stage and a consumer 6-stage. The processes incorporate in-bound FIFO lanes driven by the kanban system. This program has been implemented by their lean intern program, which takes shop floor people and puts them through a 6-month program where they are required to successfully implement 2 major kaizen events. The powder paint system includes orange, black and red colors used on all the vehicles produced at this plant. Each of the plants has its own unique paint line for the products that are produced within. This paint system is separated by walls (with windows) from the rest of the manufacturing facility.

The Commercial Spindle Cell is the highlight of one of their many lean projects. It was a high warranty issue from the field. A kaizen event proved that bringing all of the equipment together into a cell concept, from four separate locations in the plant, and putting them together in a U-shape in one location solved their in-process quality problems by having a one piece flow concept and being able to detect any issues at the source. They validate all their bearing surfaces within two tenths of a degree of accuracy.

Engine manufacturers for these vehicles are Kohler, Kawasaki or Briggs & Stratton. The 2T zero turn consumer lawn mowers run at approximately 35 units per shift or 70 per day. If an issue arises causing a quality issue, the line has authority to stop production and a reaction team goes into action to resolve the problem and get production rolling again. We watched as a PT-400 Pro Turn mower was being assembled. Each unit goes through a safety check and a deck leveling process, as the deck height for various environments can be different. This model is their newest product. We reviewed the production control boards, which show control charts, employee training and also identifies issues that the operators may discover, and resolution to those problems.

Ariens is integrating control plans into the new programs and standard work is in place in all the newer cells. Key characteristics are being checked & verified along with ensuring that the previous operation was performed correctly through product audits. Additionally we reviewed the in-process and final production audit area where physical inspection and testing is performed. Solid reaction plans are in place for containment if an issue is discovered in a completed mower. Warranty claims are now down considerably.

All product flows from north to south in this plant, while receiving and shipping moves from east to west through well marked aisles. Steel is king in these products where they receive 7-8 shipments and turn their steel inventory every day, with the purchased parts turning every 2 or 3 days.

They employ a Certified Welding Inspector on staff, weld technicians are certified on the various types of welding equipment and the following are stressed. Additionally they have a "Grow Your Own Welder" training program that promotes and retains the employee base from within the organization! Safety, Quality, Productivity, 6S program. In process kanban cards identify the status of parts in process, and they even have a picture of the basic part right on the card and on the location tags.

Safety programs are getting a renewed focus, along with quality and productivity, and the 6S program is evident throughout the plant.

Ariens Company Core Values were posted throughout the plant.

**"Be Honest, Be Fair, Keep our Commitments,
Respect the Individual, Encourage Intellectual
Curiosity".**

**This is a fantastic company, and ASQ Section 1206
is proud to have them within the geographic family of
our section. THANK YOU for a great evening of
sharing best practices**

Failure Is an Option

Integrating FMEA into the product life cycle

By Wayne Stansbury and Kristine Beenken

As a reliable means of identifying potential failures before they happen, failure mode and effects analysis (FMEA) deserves a place in every product life cycle. By incorporating an FMEA, organizations can move from sequential to parallel processing of a variety of FMEAs, a summary of which you can find in Online Figure 1.

The purpose of the concept FMEA (CFMEA) is to analyze the functions of systems, subsystems or components early in the product life cycle so you can define the best design, identify risks and allocate resources accordingly. Concept risks should be addressed and the CFMEA completed during the feasibility phase.

Usually, the CFMEA is not updated in the other product life cycle phases because the design is being worked on using design FMEA in the feasibility phase, and concept revisions after the feasibility phase would be considered scope changes.

The application FMEA (AFMEA) focuses on how the application—for example, a machine that runs constantly for a short period of time and then lies dormant—makes the machine not work as intended.

The AFMEA should be started during the concept phase to identify risks when meeting customers' applications. It should be completed during the feasibility phase so the design team has time to address application risks as it moves toward design FMEA (DFMEA). The AFMEA can be conducted on an existing product later in its life cycle to enhance usefulness or safety.

The purpose of the DFMEA is to assist the creation of a product design that meets the customer's requirements. The DFMEA should start in the feasibility phase to begin addressing concept or application risks identified during the CFMEA or AFMEA. The recommended actions should be identified during the develop phase to identify design risks and to obtain input from the manufacturing team.

The recommended actions for a DFMEA must be completed prior to production. Input from manufacturing early in the DFMEA process allows time for design changes that eliminate nonvalue-added process steps, reduce defects and shorten processing time.

The purpose of the process FMEA (PFMEA) is to prioritize process risk and take action to eliminate or mitigate the risk, resulting in a process that will meet the customer's requirements. The PFMEA should be worked through the severity column while identifying recommended actions in the DFMEA. This overlap improves communication between design and manufacturing.

The CFMEA, AFMEA, DFMEA and PFMEA should be completed before the first production run. Because FMEAs are considered living documents, facets of them should be updated—including re-ranking severity, occurrence and detection—as scope, application, design and process changes occur throughout the product life cycle.

A reverse FMEA (RFMEA) and service FMEA (SFMEA) can be initiated as soon as the manufacturing team has production-intent parts in the production phase. This will help address human factors and process risks by reducing defect opportunities.

In an RFMEA, operators are asked to install components upside down or backward—or omit them completely. Then, it is noted how far down the line the assembly progresses before the defect is detected. This helps identify where improved detective controls are needed.

The SFMEA is a tool to identify potential or known service failure modes and to mitigate these failures before the first service run. The RFMEA and SFMEA should also be completed within the production phase to identify risks to the design or manufacturing process.

Keep in mind these are intended as guidelines for FMEA timing and may not apply to every product life cycle. But hopefully, these suggestions will motivate organizations to institute parallel processing of FMEAs, ultimately leading to improved product quality.

Integration of FMEA into the product life cycle / ONLINE FIGURE 1

FMEA Types	Phases							
	Concept	Feasibility	Develop	Verify	Production	Follow-Up		
Failure mode and effects analysis (FMEA)	Translate the customer's wants/needs into a project.	Determine feasibility of project, start design (does the technology exist?).	Create the design, start manufacturing strategy (for example, develop new technology).	Test design, create manufacturing strategy.	Implement manufacturing strategy.	Review risk analyses and update accordingly.		
Concept FMEA	Complete FMEA through recommended actions.	Complete recommended actions, update FMEA, communicate risks to design team.	—	—	—	—		
Application FMEA	Complete FMEA through severity.	Complete recommended actions, update FMEA, communicate risks to design team.	Update FMEA, review rankings.	Update FMEA, review rankings.	Update FMEA, review rankings.	Update FMEA, review rankings.		
Design FMEA	—	Complete FMEA through severity.	Complete recommended actions, update FMEA, communicate risks to design team.	Complete recommended actions, update FMEA, communicate risks to design team.	Update FMEA, review rankings.	Update FMEA, review rankings.		
Process FMEA	—	—	Complete FMEA through severity, communicate risks to design team.	Complete FMEA through recommended actions, communicate risks to design team.	Complete recommended actions, update FMEA, communicate risks to design team.	Update FMEA, review rankings.		
Reverse FMEA	—	—	—	—	Complete FMEA through recommended actions, communicate risks to manufacturing team.	Complete recommended actions, update FMEA, review rankings, communicate risks to design team.		
Service FMEA	—	—	—	—	Complete FMEA through recommended actions, communicate risks to applicable FMEA.	Complete recommended actions, update FMEA, review rankings, communicate risks to design team.		

Wayne Stansbury is a lean Six Sigma manager for Heard & Smith in San Antonio. He earned a bachelor's degree in math from Texas A&M University-Corpus Christi. Stansbury is an ASQ senior member.

Kristine Beenken is the DFMEA facilitator for John Deere Power Systems in Waterloo, IA. She earned bachelor's degrees in applied physics from the University of Northern Iowa in Cedar Falls and in mechanical engineering from Iowa State University in Ames.

Sponsor a Tour

If your company would like to host a tour for one of our monthly program meetings, please contact Jennifer Fleisner, ASQ Section 1206 Chair, at schmitjs@yahoo.com

Jobs

01/16/12 [CMM Operator at Allied Mechanical in Greenville](#)

01/10/12 Positions at Mayville Engineering:

[CI Project Leader](#)

[Quality Engineer](#)

[QA Tech](#)

01/09/12 [QE at Rexnord in Grafton](#)

12/30/11 [Black Belt - Mercury Marine](#)

12/7/11 [QE at GE Health Products](#)

12/7/11 [2nd shift Quality Tech - Ariens](#)

11/7/11 [Quality Engineer - Ariens](#)

Please email [Jonna Anderson](mailto:Jonna.Anderson) if you have a job opening you'd like to post on this website. This service is free to local ASQ section 1206 members and their organizations.

ASQ Receives Mastery Level Recognition From Wisconsin Forward Award

Milwaukee, Wis., Jan. 12, 2012 — ASQ, the world's largest network of quality resources and experts, was recently awarded 2011 Mastery Level recognition by Wisconsin Forward Award Inc. (WFA). This is the third recognition at this level for ASQ, which achieved the Mastery Level in 2006 and 2008. In 2011, the scope of ASQ's application was expanded to include its entire operations, including volunteer member leaders worldwide.

"This feedback suggests that ASQ is a very good organization poised to advance to excellence," said Paul Borawski, ASQ CEO. "We have the benefit of our previous feedback and improvement experience to aid us in our journey toward excellence; and we have the passion of the quality community and its expertise to support us. We have our shared commitment to excellence to fuel our efforts."

Wisconsin Forward Award recipients will be presented with their awards in a ceremony in Madison, Wis., in August 2012. The Mastery Level is an advanced level for organizations that are working to achieve the Governor's Award of Excellence – the highest level of recognition. Applications scoring at this level use effective and systematic approaches to achieve business and performance excellence.

Applicants for the Wisconsin Forward Award were rigorously evaluated by an independent board of examiners in seven areas: leadership; strategic planning; customer focus; measurement, analysis and knowledge management; workforce focus; operations focus; and results. The review is composed of three distinct processes: Independent Review, Consensus Review, and Site Visit.

Examiners review each application relative to the Forward Award Criteria and identify strengths of the organization and areas for improvement. Through the skillful practice of performance management principles, organizations that are recognized by the WFA demonstrate significant progress in expanding their capabilities through improved processes of all kinds. Achievements are demonstrated by results; are clearly linked to quality and performance management systems; and are directly attributable to a systematic, well-deployed approach.

Wisconsin Forward Award Inc. was created in 1997 by the Governor's Council on Workforce Investment to advance the competitive position and world-class status of Wisconsin organizations in the international marketplace, and to enhance learning, continuous improvement, and enterprise performance. The award promotes excellence in organizational management, recognizes the achievements and results of Wisconsin organizations implementing performance excellence systems, and publicizes successful performance of excellence management strategies.

All types and sizes of Wisconsin organizations are eligible to apply, including manufacturers, service companies, small businesses, educational institutions, health care organizations, and nonprofit organizations, including trade and professional associations, government entities, and charities. Three additional organizations will be recognized at the Mastery level in 2011. They are the Bay Area Medical Center, Marinette; Central Wisconsin Center, Madison; and SSM Health Care of Wisconsin-Madison.

WFA is a public/private partnership modeled after the Baldrige Performance Excellence Program. The not-for-profit organization receives financial support from the Wisconsin Department of Workforce Development and the Wisconsin Department of Commerce as well as other organizations across the state. Wisconsin Forward Award is administered by the Wisconsin Center for Performance Excellence.

ASQ Training Opportunities: Presented to you by our own section 1206 board member, Bruce Bader! Thank you Mr. B!

Do you need training but have a limited budget? Web-based self paced training might be right for you. This is the second in a series of articles on ASQ training opportunities including classroom base, web based, blended (both classroom and web based) and onsite/local training. Last month we covered the expensive but detailed and highly interactive classroom training opportunity. This month we will talk about an opportunity on the other end of the spectrum, the web-based, self paced training. Not only are the course fees lowest (some less than \$50) there are no travel costs. This may be a good option for you if you feel comfortable learning on line. Of course, it comes with very little personal instruction and is sometimes simply a webinar. Other times it is a complete online course with exams that you take and submit. Because of its limitations this type of training is the most generic. I used this method to just get an overview of TRIZ to decide if I wanted to attend a class on the topic. That does not mean there is no depth; some cover topics in detail. A final advantage of this training opportunity is that you can schedule it whenever you have the time. So it can be done on nights, weekends or whenever you day-off takes place.

Some of the web-based self paced courses are...

Lean six Sigma - \$3000

Design For Six Sigma-Product - \$2500

Certified Quality Engineer Certification Preparation - \$800

ISO 13485 Requirements from A to Z - \$400

Service Quality Measurement - \$250

Lean Tools -- A3 Reports - \$15

Go to <http://asq.org/learninginstitute/index.html> to find the training catalog. Go to the catalog and scroll down the left hand side of the page to choose "Self-Paced (Web-based)"



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Serigraph is the **market leader in plastic printing of decorative, functional, and brand related graphics used for a wide range of consumer and industrial products, point of purchase signage, and promotional applications.**

See it for yourself! Join the section 1206 February meeting and plant tour as we experience first hand this outstanding local company! Nick Liefeld, the Vice President of Corporate Compliance and past Quality Director will be our host on this fantastic journey. Sign up early as we have invited our friends from the Milwaukee section, and space may be limited! Go to YOUR section website: www.asqsection1206.org

Message from the Chair: ASQ Winnebago Section Chair: Jennifer Fleisner

Happy January, fellow members of Section 1206!

I hope 2012 is off to a great start for all of you. Our first program meeting of 2012 was at Ariens in Brillion, WI. We had a great turnout for the tour. Over 30 members showed up and some brought guests so they could see what ASQ is about. We toured the zero turn mower plant of Ariens. Their manufacturing and painting processes are impressive. I didn't realize that all of the metal housings and brackets are fabricated right on site at Ariens using laser cutters and welding equipment. Two of the three engine suppliers for the zero turn mowers are Wisconsin's own, Kohler Engines and Briggs and Stratton, also very cool to see. Thank you to our great tour guides at Ariens. Everyone enjoyed the tour immensely.

After the tour, the group went to Cobblestone Creek in Brillion for the dinner meeting. During the family style dinner, everyone discussed various Quality topics prepared by Michelle Kilgas. One person from each group was asked to share their discussion with everyone. It was a great way to learn what other companies are doing with quality and more importantly to expand our professional networks. There were a lot of new faces at the meeting, which was great to see. Thanks to Cobblestone Creek for opening the restaurant on Monday night just for our group. It was a fantastic setting for the meeting and the food was awesome. And thanks to Michelle for the Quality conversation starters. Great idea!

Our next board meeting is on Monday, January 23, at 5:00 pm. The location is Sergio's in Appleton. If you are interested in joining the board or interested in finding out what happens at board meetings, please join us. We recently lost a board member, Luke Prasch, due to a job change. Thanks Luke for all the work you did as our VOC chair. You did a great job and we all appreciate it. Best of luck to you in your new position. We will miss you. Our board meetings are actually a lot of fun. We have a great group but are always looking for new additions. We'd love to see you there. Please contact me if you have any questions.

The February program meeting is going to be at Serigraph in West Bend on the 13th. Please remember, our meetings are open to anyone. You don't have to be a member of ASQ to attend. If you know anyone at work that isn't a member, invite them to come along. It's a great way to get someone interested in joining ASQ. New members are always welcome.

Last but not least, I'd like to remind everyone to take a look at the Section 1206 website if you are looking for a job or are interested in a new position. A lot of companies ask us to post openings for Quality positions. Use ASQ for what it is intended, to help you develop and advance.