



64th Advanced Manufacturing Forum

Held on October 2-3, 2008 at Penn Stater Conference Center

Sponsored by

The Center for the Management of Technological and Organizational Change

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A “Worst to First” Transformation

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Blue Bird North Georgia (BBNG)

LaFayette, Georgia

Blue Bird North Georgia (BBNG) is a 2007 Industry Week Best Plants Winner and a 2008 Shingo Bronze Medallion recipient. Established in 1927 and headquartered in Fort Valley, Georgia, Blue Bird manufactures conventional school buses for use in the United States and through export. BBNG is a satellite plant of Blue Bird Body Corporation. The dramatic improvement of plant performance in safety, quality, productivity, and on-time delivery, beginning in late 2003 and sustained through the present, can be attributed to the continuous improvement and continuous learning culture that has developed. It is truly a “worst to first” story rooted in the application of selected Lean tools within the framework of an overall strategy for continuous improvement and waste reduction. Kevin Wood, General Manager, and Steve Clark, Director of Quality and Risk Management, shared the story of their Lean journey. After all, it is about the journey.

The North Georgia plant was built in 1982 with 271,000 square feet— 203,000 square feet of that space is dedicated to manufacturing. When General Manager, Kevin Wood, arrived at BBNG, he came with well over 20 years of management experience in materials, manufacturing and operations behind him. He had seen quality circles and other “programs of the month” throughout his career and knew that Blue Bird wanted to pursue “Lean Manufacturing” in the North Georgia facility. He thought he had seen it all, but was not at all prepared for what greeted him upon his arrival at the plant. At that time, the production schedule called for thirty buses per day. However, the process only supported four. There were 1,200 buses totaling just over \$60 million in work-in-process (WIP). Raw WIP totaled over \$50 million and BBNG had to rent a 150,000 square foot warehouse to store the additional material. While there were technically 77 line stations, there were really 1,200 – representing each of the buses in various stages of completion – and plenty of congestion throughout the plant. The average time in process to manufacture a bus was 30 days. Unfortunately, some of the buses had been in process so long that there were seedlings growing up through the chassis and wild dogs living in them. The total

reportable incident rate was over 13.0, absenteeism was over 18% and employee turnover was 40%. Employees were working two shifts per day plus overtime, seven days per week, and were still missing deliveries. The plant was in significant trouble.

“There is a saying... if you think education is expensive – try ignorance,” says Wood. The BBNG management agreed that training was needed, and put together a training plan, employee schedule and budget. They found that the budget for the training they would need to turn the plant around was substantial, but eventually concluded the investment to educate the workforce outweighed the present scenario. Training consisted of cross-training; job rotation; a 30-hour orientation with 6 modules covering topics in safety, productivity and quality; and “Bus University”— which entailed training in basic air tools, rivets, paint, welding (coming soon), and can take up to a week to complete each segment. In addition, BBNG has committed to 40 hours of annual training for each employee. Bus University paid immediate dividends with the first graduate producing only four defects in his first week on the job. BBNG also found that the training improved retention and absenteeism.

Productivity goals included workforce empowerment and cost reduction by using Continuous Improvement Teams (CIT) to reduce the waste of motion, over-processing, over-producing, rework, waiting, inventory, transportation, and employee ideas. BBNG instituted an Employee Suggestion Program Network (ESPN). ESPN provides employees with the opportunity to make suggestions about process-improvements, and allows the plant to draw from and mine employee ideas. Employees are rewarded with a small monetary gift and entered into a drawing to win a daily prize.

March 2004 was the first time BBNG delivered product with on-time throughput, which translates to on-time delivery for the customer. This continued for 61 weeks. Once a bus went into production, the deadline was 3-1/2 days to completion, sometimes loading the plant to keep production level in the cyclical school bus industry. Performance Measurements became Safety Always, Quality Always, Productivity Always, and On-Time Delivery Always, with metrics to support the performance measurements. Supply chain issues began to improve simply through production stabilization. Today, BBNG is in lock-step with supply-chain management, which includes preferred suppliers and long-term agreements. Out of the long-term supplier relationships, BBNG has witnessed quality and cost improvements.

The single biggest cornerstone was the improvement in the quality of the product – quality is a good place to start a Lean journey. To improve, BBNG found that it was critical to both stabilize and adhere to the process.

Quality goals included:

- Institutionalizing all facets of production;
- Compliance to a standard for ISO 9001:2000 registration;
- Utilizing a Vehicle Quality Record (VQR) which includes a stamp program, where each employee stamps their work with their unique stamp number which provides ownership of work;
- Daily escape audits of three buses each day by managers;
- Scouting reports;

- Establishing a Material Review Board that meets a twice daily to manage material needed on the line each day;
- Main line inspections;
- Tracking Defects per Unit (DPU);
- Instituting a warranty analysis and a Quality Issue Resolution Process (QIRP);
- Implementing an Andon light system which notifies management, maintenance and other Andon responders of a quality or process problem and keeps the problem from continuing down the line.

Clark said that “Andon is the single most powerful tool we’ve used to continue our education program.” The quality effort reduced defects by 70% in 2007, which is down 90% since 2003. The 2008 goal was to gain an additional reduction of 25% to a total of 5 DPU, implement Andon 401, planning teams, and the “Rosetta Stone” where plant experts assist with planning issues and problems.

BBNG also worked to improve client relationships by visiting customers to seek input regarding quality issue improvements. They also provided plant tours to build customer confidence in Blue Bird products. BBNG continued meeting delivery deadlines and strived to be responsive to customer needs. This extra level of service yielded product improvements and redesigns to the hood, dash, steering column, transmission, and an exclusive Safety View™ Vision Panel that provides increased view of critical loading and unloading zones.

BBNG built a visual representation of their mission, vision and foundation for guidance on the journey. The roof is the mission statement – “As a leader in the transportation industry, we will continue to develop, produce and refine the best and safest products while providing comprehensive support services to promote customer loyalty and long-term prosperity for all of our partners.” Below the roof is the vision statement – “BBNG’s vision is to provide a workplace that values honesty and integrity while promoting a trusting environment that enhances the focus on meeting the needs of our internal and external partners.” The four pillars are integrity, honesty, trust, and customer focus. The foundation is made up of 50 bricks and includes Lean manufacturing, Andon, ISO, company picnic, leadership training, recognition, community support, diversity, and “Go Green”, among others. The mortar that holds it all together is a Lean strategy.

As a result of BBNG management’s confidence about recent plant accomplishments, it applied for Industry Week’s Best Plants in North America. BBNG was selected as a “Top 25” in 2005 and 2006. Even though they did not make the “Top 10” list, their determination was not hindered. BBNG benchmarked the “Top 10” winners to continue the momentum and make incremental improvements. The benchmarking showed that, while all the right things had been started, there was still a very long way to go. In 2006, BBNG management attended the Georgia Tech Conference, which recommitted the team to the Lean tools. That year BBNG was selected as the Association for Manufacturing Excellence (AME) Southeast Regional Winner, National Runner-up, and an Industry Week Top 20 Best Plants finalist. In 2007, BBNG registered ISO 9001:2000, which was another very important milestone in the journey. The ISO represents an international consensus on good quality management practices. It consists of standards and guidelines relating to quality management systems and related supporting standards. One part of

the ISO standard is that it requires a cycle of ideas and activities for improvement when there are quality issues. A plant conversation is accomplished through a weekly roundtable of approximately twelve people, representing the various areas around the plant, which is a chance for staff to give a briefing on their area, have questions and concerns aired, and survey employees about current issues. Employee questions and responses are posted throughout the plant.

The next step at BBNG was to further encourage employee empowerment. One of the biggest defects they were still seeing was dirt and dust in the paint, so they changed the preparation area significantly by polishing the floor on the way into the paint booth, providing booties for employees to wear in the area, increasing the lighting, and having employees cover the buses at night to protect them from falling debris. Paint defects dropped dramatically and it sent a message to employees that part of management's transformation is to help employees enhance the process by providing leadership, guidance and tools. Wood says that "housekeeping is a reflection of attitude – you can walk into any plant and see the attitude, general nature of the plant, level of quality, morale, productivity, and profitability within 15-20 minutes by looking at housekeeping." In 2007, BBNG finally won the Top 10 Best Plants award. When BBNG accepted the award, they used only one slide – a photo of the employees in front of the plant. They chose it because it was workforce empowerment that led to winning the award – these are substantially the same people as in 2003, but they are now an empowered workforce.

In 2007, BBNG applied for the Shingo Prize. "It is a humbling experience to go through a Shingo audit. Even if you think you are at the top of your game, you will find that you still have a long way to go," says Wood. The evaluation includes positive feedback and advice for improvement, with specific recommendations in areas such as: Cultural Enablers: Leadership and Ethics, Education and Training, Empowerment and Involvement, Environment and Safety, Continuous Process Improvement, Customer Relations, Product/Service Development, Operations, Supply, Administration, Consistent Lean Enterprise Culture: Enterprise Thinking, Policy Deployment, Business Results: People Development, Quality, Delivery, Cost, Financial Impact, and Competitive Impact. While there were recommendations for BBNG in every area listed above, Blue Bird was recommended for a Shingo award.

Five years after BBNG's Lean journey started, it is first in safety, productivity, quality, and on-time delivery performance. BBNG now has 92 buses in WIP, less than \$5 million in WIP inventory, and a raw WIP inventory under \$4 million. The accident rate is down to 3.0 (the OSHA industry average is 11.0 for light to heavy manufacturing), absenteeism is under 3%, and employee turnover is less than 2.5%. There are 482 hourly employees and staff combined who work a ten-hour shift each day, four days per week. During each shift, they are able to accomplish 25 set-ups and 25 completions with a total process flow of less than four days. BBNG employees are involved in the community as a company, which you would not have seen in 2003. Wood says, "It is about the employees... if I did not show up (at the plant), 25 buses would still be completed. If the employees did not show up, nothing would get done." He further stated that "if I knew what I was walking into in 2003, I would have never done it... but I won't take ten million dollars for the experience that I've gone through. I found out a lot about myself, a lot about the people, and I would not understand Lean manufacturing to the point I do today."