



Cardinal CG & CMMS – Achieves 99.2% Uptime With Teamwork and the Right Tools

Boyd Helm does glass – lots and lots of glass. As the Tempering Maintenance Manager for the Buford, Georgia Cardinal CG plant, Helm manages over 100 assets related to the fabrication of residential glass products. Despite a reduction in maintenance technicians from 12 to 8, he successfully reduced downtime from 15% in 2008 to an impressive 0.8% in 2011. Helm is no superhero – he’s a regular guy who uses teamwork and every available tool to achieve results; his story of how one man can make a big difference is both inspiring and offers useful information for every maintenance professional.

Founded in 1962 in Minneapolis, Minnesota, Cardinal designs and fabricates residential glass products for windows and doors, creating products which reduce energy usage by up to 20%. Cardinal has 28 locations with 4500 employees, all focused on providing superior-quality products, staying highly competitive in the marketplace and executing high-end customer service every day. The Buford, Georgia Cardinal CG plant specializes in coated and tempered glass products.

With over 25 years in automotive and manufacturing under his belt, Helm brought extensive maintenance management experience to Cardinal CG. His new role included maintenance management responsibility for 113 assets in the Tempered Division, including equipment such as furnaces and high-volume cutting machines specific to glass tempering.

When he arrived in 2008, downtime was running at 15%. Work orders and most maintenance management was still done by word of mouth in a “run to failure” culture centered on reactive maintenance, i.e. fix it when it breaks and don’t worry about it when it’s not broken. Downtime reports were generated by Production but were not circulated to the Maintenance department; communication and teamwork were lacking. Helm needed better tools to deliver truly effective maintenance management and jump-start improvements.

He started by implementing a CMMS program already in use at a sister division for scheduling and tracking PMs . He was able to initially reduce downtime through better scheduling and planning. But, due to system inflexibility and a lack of provider support, he had difficulty extracting information from the system in a format that was usable to him and his team. After fifteen months, downtime improvements flattened. Without reporting, Helm could not analyze cumulative historical data, spot trends or produce key reports in desired formats to share with management and production teams.

Helm outlined his CMMS requirements and determined that in addition to affordability and flexibility, he needed the tools to be able to easily track labor, generate Preventive Maintenance checklists (including daily inspections and walk-throughs), perform Predictive Maintenance and track inventory of spare parts (including min/max levels for reordering). The ability to easily generate planned activity and work status reports for first line supervisors, production personnel and operations management was essential. With these tools, along with gaining the ability to easily communicate among departments to build teamwork, Helm was confident Cardinal could achieve a turnaround toward increased profitability.



Helm selected eMaint X3 CMMS. He chose a web-based system due to lower upfront costs and the ability to deploy rapidly. He was able to import all information (assets, parts, PMs, work history) from the old system into eMaint with ease and began using the system to schedule and track all PMs, work requests and repair orders and to track inventory for spare parts. Using eMaint's reporting tools, Helm calculates the depreciation and cost to maintain assets to determine if they should be repaired or replaced. He efficiently manages labor resources with the scheduling feature and makes extensive use of the Gantt chart tool for project planning and to maximize labor productivity. Those are just some of the CMMS tools now available to Helm and his team. As with any skilled craftsman, the results of Helm's handiwork are worth a closer look – and a look at what the Cardinal team was able to accomplish with the right tools reveal some impressive results.

Not only was downtime reduced from 15% in 2008 to 0.8% in 2011 (a 95% reduction), Cardinal CG experienced significant cost savings. In 2008, Cardinal CG was experiencing significant downtime, resulting in lost productivity each week. The continuous improvement in downtime that has been achieved since implementation has allowed Cardinal CG to reduce production shifts to 4/10 (4 ten-hour shifts) representing a meaningful reduction in labor hours by 43%. Average daily production also increased over 40% from 2008 to 2011, while overtime for the Tempering Maintenance was reduced by 60%.

This resulted in Cardinal CG operating at a 45% profit after several consecutive unprofitable years. Even faced with an economic downturn, the Cardinal CG division has had no layoffs and is profitable due to their increased efficiency. These results underscore the differences that a team can make with the right tools, an understanding of how to utilize them, a willingness to make data-driven decisions, and a commitment to working together to achieve results.

These are the topline results - the details are even more intriguing. Helm knew that he could not derive the full benefit from the system and achieve results without reporting and analysis - as measurements would present countless opportunities for improvements. When he joined Cardinal CG, maintenance was considered an expense to the company instead of a necessity and as money was tight, the Maintenance department maintained a reactive mindset. Using the robust reporting feature of his CMMS, Helm could now produce reports and data to justify expenditures and show the true cost of maintaining vs. replacing. Instead of continuing to repair piecemeal in a low-cost, short term manner, Helm could fix it right the first time and accomplish savings over the long term. The reporting capability of eMaint CMMS virtually paid for itself.

Similarly, Helm has helped shape the corporate mindset to embrace Predictive Maintenance. He began by applying vibration analysis and quality tests to the daily walk-through inspections. The quality tests included testing glass breakage patterns, weighing glass, and pressure testing. This enabled Cardinal CG to detect problems before they occurred and then plan the appropriate maintenance for the least disruptive time.

Helm's migration from preventive to predictive maintenance on high-temperature ovens is a prime example of the true value of CMMS. Since the plant used to run equipment to failure, they faced long periods of downtime that were not necessary. The high-temperature ovens require 48 hours of cool down before any maintenance can be performed. Running to failure meant a minimum of three days of downtime. By implementing a preventive maintenance program, Helm reduced the oven cool downs from monthly to quarterly. He was also able to record and analyze vibration readings and look into data trends. Based on an analysis of the data, Helm has not had to perform the last two cool downs, further reducing downtime and savings. Helm also schedules and triggers a monthly element survey. With this predictive data, Cardinal can now



plan a cool down instead of waiting for a failure. They recently scheduled a cool down over a holiday weekend when data indicated that a bearing might soon fail, minimizing production disruption.

Helm was able to make a difference using the eMaint CMMS tools, but communication was critical and he knew that with the ability to disseminate information, he could make change happen. Before Helm arrived, downtime reports were being produced by production but were not being circulated to the maintenance team and there was no formal communication between departments. 30-minute meetings between maintenance and production were implemented to communicate concerns and plans. This facilitated a more uniform mindset and allowed the different departments to coordinate their schedules and plan for PMs and any scheduled maintenance. Improved planning has helped Boyd's maintenance team sustained an on-time PM completion rate in the high 90% range.

Improving safety is key and the track record at Cardinal CG when Helm joined in October 2008 was troubling. Helm dramatically reduced the number of accidents by Tempering Maintenance Department, implementing daily safety meetings lasting 5 to 15 minutes between shift changes, posting photos of potential safety hazards via email and on bulletin boards, adding safety inspections that included a 60 item checklist, implementing daily walk-throughs and posting visuals stating the number of days the plant has been accident free. The last accident was March 12, 2009 and his department has now been accident free for over 800 days. The safety improvements are the result of planning, rigorous monitoring and constant training and reinforcement.

Not one to rest on his laurels, Helm continues to use his eMaint CMMS toolbox to craft additional improvements. He consistently sets goals for improvements in KPIs and is integrating bar-coding and purchasing to track inventory costs. Helm plans to continually adjust his downtime goal, never settling but always striving for continuous improvement. Safety remains a priority and Helm is committed to keeping the plant accident free. He knows safety must be maintained and policed at all times.

He uses min/max inventory planning to trigger parts reordering to ensure the parts needed for PMs and repairs are available when the work is performed. He is in the process of launching eMaint's purchasing feature to more accurately track costs of spare parts

Helm also continues to perfect his craft and train his team utilizing eMaint's web-based training tools and encouraging his week-end and night employees to do so as well. One man, with the support of a team and the right CMMS can make a world of difference as evidenced by Boyd Helm, eMaint CMMS and Cardinal CG. Helm is an inspiration and a true maintenance management professional.

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