Six Sigma Projects Save in Excess of $800,000 at Trelleborg Plant

A GBMP Client Case Study

Recently, GBMP CI Manager Ron Pujalte conducted an in-house Six Sigma Green Belt Course at The Trelleborg Group's Mansfield, MA plant. Students in the class undertook projects to practice the Six Sigma DMAIC (define, measure, analyze, improve, control) problem solving process over the 8-week course. The result: **their combined efforts will save Trelleborg over $849,000 per year!**

The Trelleborg Group is a global engineering firm whose leading positions are based on advanced polymer technology and in-depth applications know-how. Headquartered in Sweden, the general focus of the organization is development of high-performance solutions that seal, damp and protect in demanding industrial environments.

The Trelleborg plant in Randolph, MA produces Eccospheres®, which are hollow thin-walled glass microspheres composed of sodium borosilicate glass. To the naked eye they resemble a fine, white, free-flowing powder. However, magnification reveals them to be near perfect spheres. Eccospheres® glass microspheres are used extensively throughout the aerospace industry and are specifically engineered to provide product solutions in key applications areas such as:

- Void fillers - For lightweight composites
- Edge sealers - Prevention of water ingress
- Ablative coatings - Heat shield of rockets, space vehicles and missiles
- Potting compounds - Encapsulation of electronic components
- Abradable seals - Used in jet engines to improve efficiency
- Radomes - Lightweight and RF transparent
- Specialty paints and coatings - Stealth technology
- Core fillers - For weight reduction of turbine blades

The process to produce Trelleborg's glass microspheres requires precise mixing and processing to produce each product's required microsphere characteristics. Although quality is very high at Trelleborg, one Green Belt Team chose to focus on ways to increase the portion of on-target block density. They proposed to use their Green Belt project to look at the underlying issues that sometimes cause density of one particular Trelleborg material to be too high, resulting in blocks that are too heavy and cost too much.

Armed with a host of new Minitab software statistical tools taught to them by Ron Pujalte, the team determined through data sampling that 55% of blocks exceeded desired weight. They then used the DMAIC model and a variety of statistical methods to discern cause and effect relationships that impact block density. For example, the team was able to analyze the impact of various raw material loadings on final block density. They also determined a more consistent block density could be achieved using a different pouring method, one that would also reduce the pour time by 1 hour per day.

After further fact-based study and then experimentation based on their analysis, the team determined changes they had tested would result in annual savings of over $500,000 per year. Producing more blocks within the density specification will also result in:

- ✓ Shorter lead times
- ✓ Higher yield
- ✓ Faster throughput
- ✓ Less scrap

Another Trelleborg Green Belt Team focused on reducing the number of product batches that required a secondary processing step to bring them into specification. Following the DMAIC process allowed team members to discover and prove some of the sources of variation that drive this step, such as speed of feeding equipment. This team's countermeasures to the secondary processing equate to annual savings of about $300,000 per year from recovered revenue.

Ray Hoben of Trelleborg stated, *"It's nice to see my team using data and a scientific approach to make decisions that have a positive impact on the business."*

Master Black Belt and course instructor, Ron Pujalte, noted "*this group of employees embraced Six Sigma and Minitab wholeheartedly and it was really exciting to see them achieve breakthroughs on their projects as the course unfolded! The DMAIC process and the types of statistical tools they were exposed to via Minitab are a perfect fit for products and processes of Trelleborg's type. In this case, their study and experiments led to fewer block density defects, and throughput will actually double on one of their series as a result of reducing variation and improving quality. The savings they calculated were validated by management, and they are really looking forward to sharing their results with the rest of the company."*

For more information about Trelleborg Group please visit www.trelleborg.com

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