

Vinyl siding maker builds profits through process improvement.

Client:

A leading, vertically integrated manufacturer and distributor of exterior residential building products, including vinyl windows, vinyl siding, aluminum and steel siding, and vinyl fencing, decking, and railing.

Challenge:

The company needed to reduce giveaway, as their scrap rate was in excess of 25%. Their gauge distribution (the overall depth of a siding panel), and their PVC and ASA usage (additives for light and dark colors) were also well above industry standards. This combination was seriously eroding the profitability of their siding division and needed to be brought under control.

Process:

Initially our team focused on one vinyl extrusion line responsible for 15% of their total output of vinyl siding. This line became the prototype that the other lines would follow. Alongside the client, the team utilized a combination Six Sigma and Lean approach that was customized to the needs of the client to address cap stock/gauge thickness, variation, and scrap.

Initial analysis indicated that production variations needed to be reduced first, in order to reduce the giveaway of these materials; otherwise, there may be a risk of generating product outside of customer specifications.

Four Continuous Improvement (CIP) teams made of the clients' staff and USC Consulting Group personnel were created with four separate project charters to tackle the various challenges. A 'closed loop' problem-solving process was applied to the chosen extrusion line to define specific project goals; perform data analysis; generate solutions; prioritize, plan, and execute solutions; and verify their effectiveness. Each CIP teams used multiple tools and methods such as, Gage R&R, 5S, Attribute Agreement Analysis, and more, to ensure that they met their objective.

Statistical Process Control (SPC) was an important tool used by the CIP teams to establish limits by product family, using historical data for cap stock and gauge thickness. Once the prototype determined that the limits were suitable for the process variation; the clients' operators, supervisors, process engineers, quality inspectors, and senior staff were trained on SPC, prior to a full-scale deployment to all production lines.

Performance Results:

- Overall giveaway was reduced 42%
- Scrap due to variation in gauge was reduced 113%
- Scrap due to variation in PVC coating was reduced 13%
- Scrap due to variation in ASA coating was reduced 18%

Conclusion:

As the CIP teams deployed the prescribed Six Sigma/Lean approach; high impact solutions to address scrap and giveaway were implemented. These directly helped operators' better control the process, and together with SPC, led to significant reductions in process variation and scrap. As a result, the improvement in variation reduced giveaway by narrowing process thickness targets without imposing any risk to product quality. In addition, the reduction of process variation, in part, helped the CIP teams lower their scrap rate and achieve their targets.

"I was very familiar with USC Consulting Group based on work they had previously performed for me at another building products company," said the CEO, "so I knew I could count on them to get the job done."