



Lean Six Sigma Project – BX Oven Section

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Introduction

Mono Equipment is a leading supplier of bakery equipment. Due to a global shortage of parts the BX oven range was redesigned in 2021.

The project was created in response to the concerns raised by a vital strategic customer who expressed dissatisfaction regarding both the quality and the shortfall in the number of ovens delivered.

The project focused on the implementation of a Lean Six Sigma project aimed at reducing defects and eliminating waste.

Methodology

The DMAIC methodology was chosen as it is a well-established framework for process improvement.

Multiple tools were used in this project to ensure overall success.

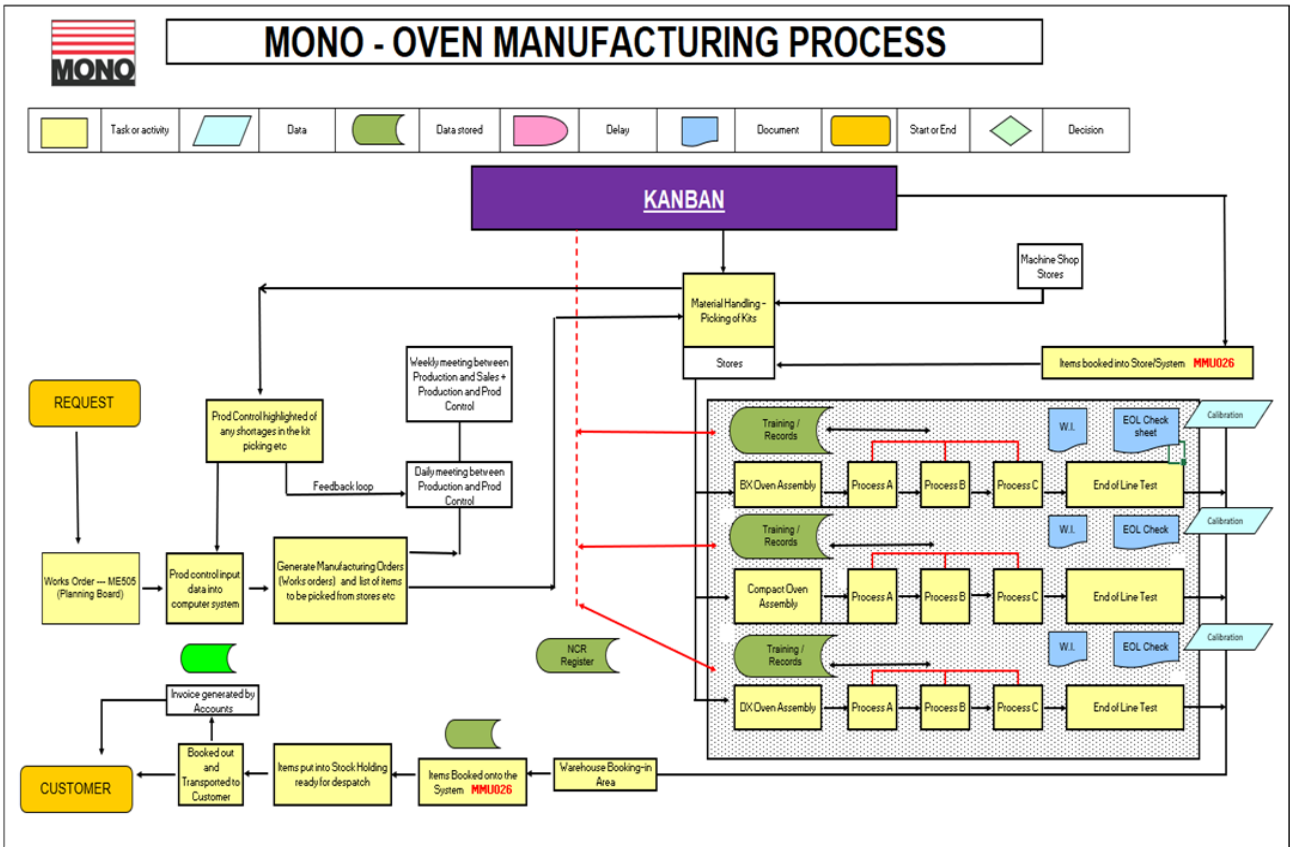


DMAIC (Summers, 2011)

A project charter was developed this:

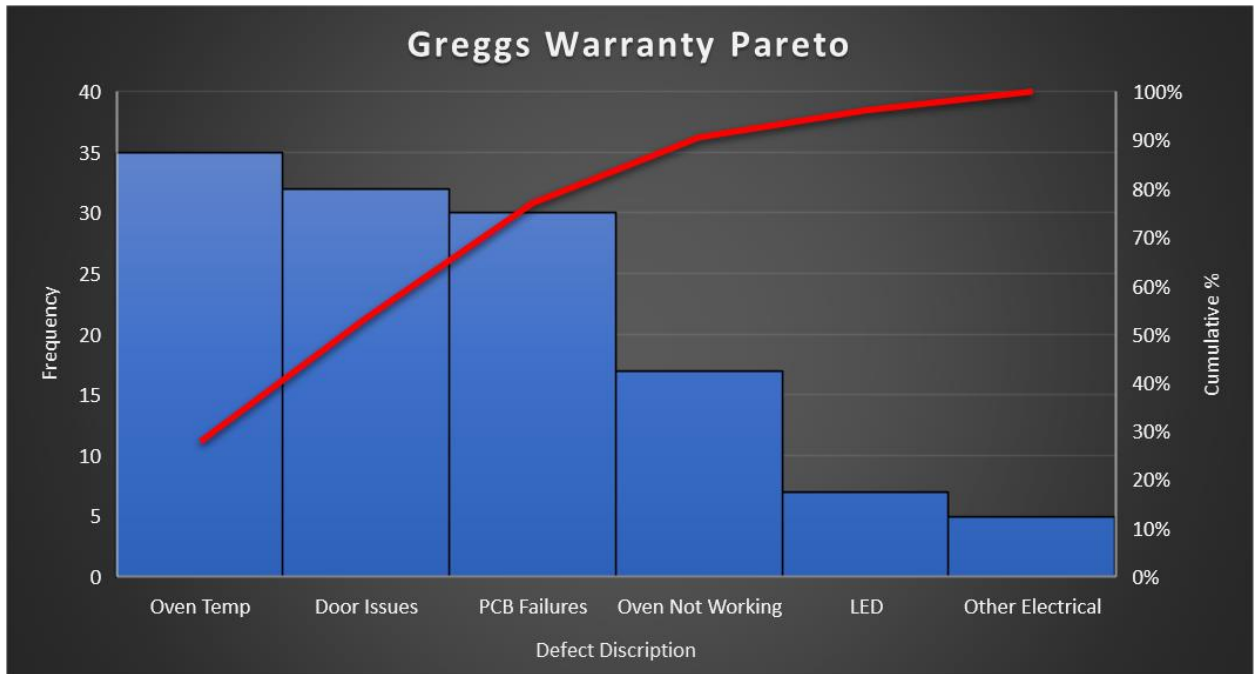
- Justified the project.
- Highlight major deliverables/ objectives.
- Forms the basis for future project decisions.

A project team was established they identified possible causes of quality issues and inefficiencies and mapped out the process.

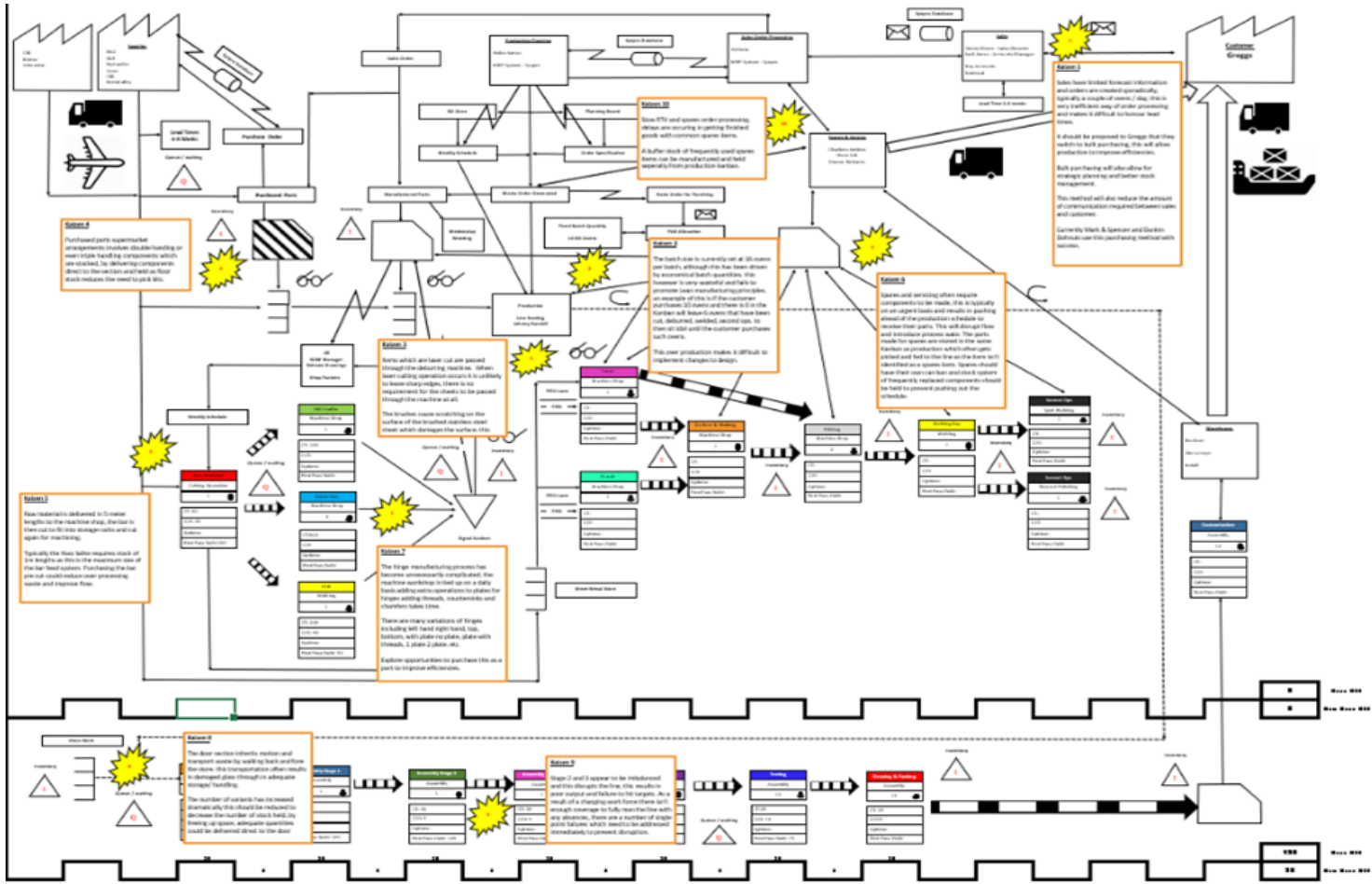


Manufacturing process map

Greggs warranty data was used and analysed to understand the failure types a pareto chart was developed.

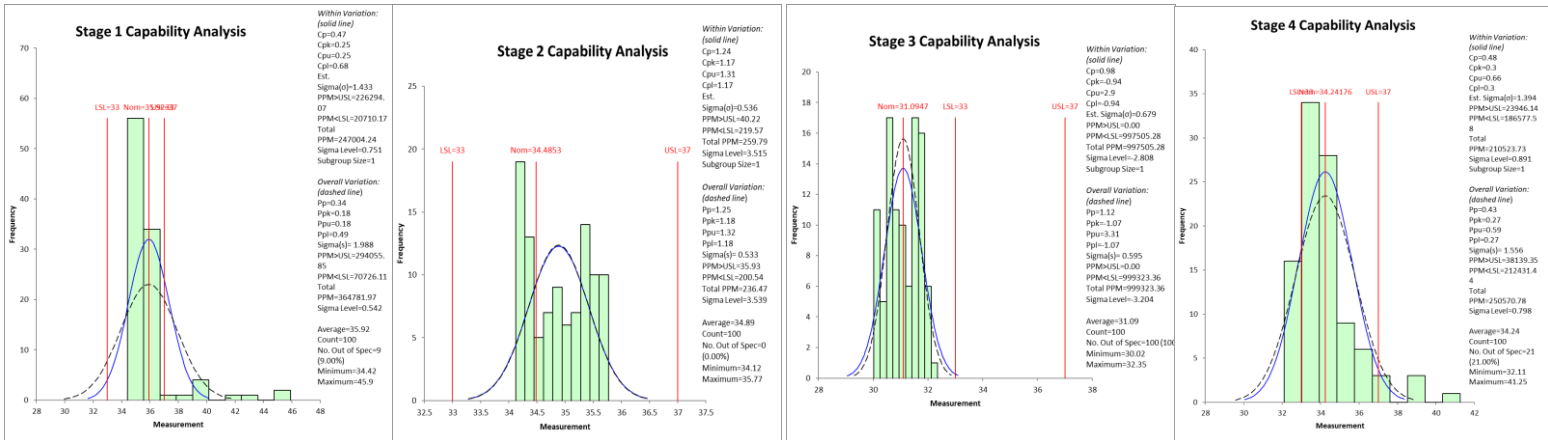


Pareto analysis of faults by type



VSM identifying KAIZEN opportunities

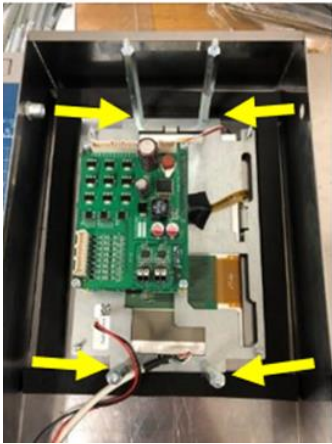
VSM Identified the production line was failing due to lean wastes an SPC was conducted on each of the 4 stages.



SPC created for each of the 4 stages, 100 sample of build times were taken. High variation between S1 & S4 with S2 showing good process control, S3 had good control but fell outside spec limits

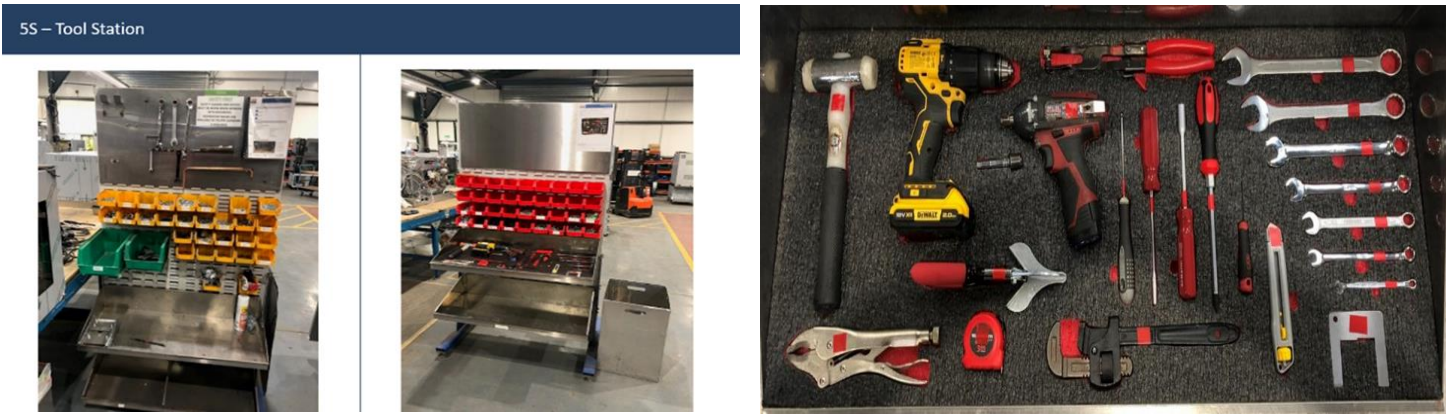
To prevent controller failures several changes were introduced:

- New PCB cover.
- Fuse hard soldered.
- Recalibration function.
- µSD card upgrade.



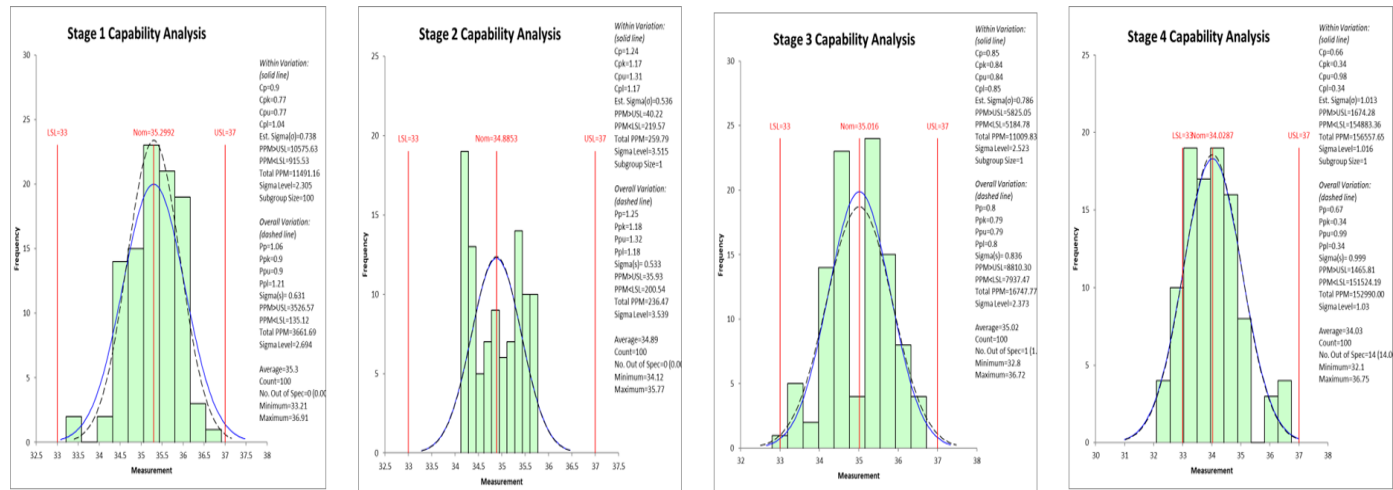
New PCB cover introduced to protect against steam/ humidity

8 Wastes and 5S were tools used to identify and improve the tool storage.



5S Implementation – Tool storage

The line was balanced and lean wastes reduced which improved process control.



SPC improvements were observed post improve phase

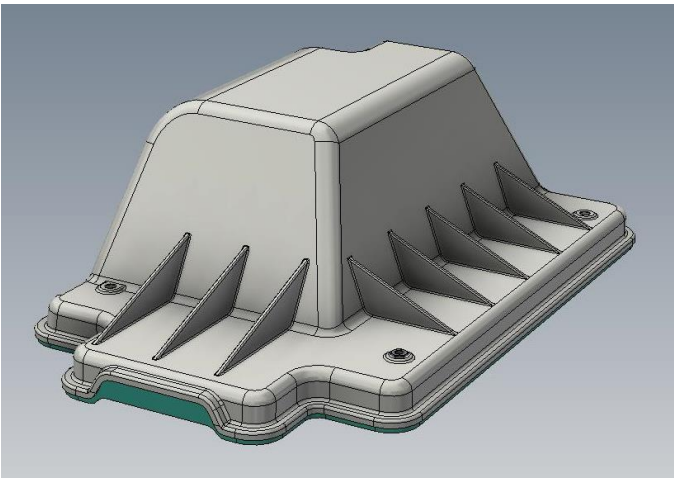
Results

- ✓ Reduction of warranty claims from 30% to 4.8%. Saving £26,000.00 in contractor fees over 6 months.
- ✓ 21.43% increase in output from production line based on CUSUM.
- ✓ Bulk purchasing generated a reduction of sheet metal usage by 6.97% saving £9860.88/ annum.
- ✓ Reduction in motion/ transportation wastes equaling £161,080.59 over 12 months.

Future Developments

Plastic PCB Cover.

Injection moulded PCB cover estimated to save Over £500,000.00 over the next 10 years.



Conclusion

- Reduced defects.
- Increased output.
- Successful implementation of lean six sigma.
- Continuous improvement.

Acknowledgements

I would like to give thanks to my colleague Darryl Evans from Mono Equipment.

References

Summers, D. C. (2011). Lean Six Sigma. New Jersey: Pearson.