



Waldrich Slab Miller – Process Efficiency Improvements

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Introduction

This project evaluates and enhances the operational efficiency of a new Waldrich Slab Miller at TIMET Waunarlywydd.

Motivated by the need to replace outdated machinery and improve throughput, the project applies Lean and Six Sigma methods. Using tools such as VSM, SMED, and Spaghetti Diagrams, inefficiencies were identified and addressed.

Project Aims

- Establish baseline cycle times and yields from existing operations
- Compare operational performance of the new Waldrich Miller with historical data
- Apply Lean principles to improve throughput and efficiency
- Validate interventions through comparative KPI analysis

Methodology

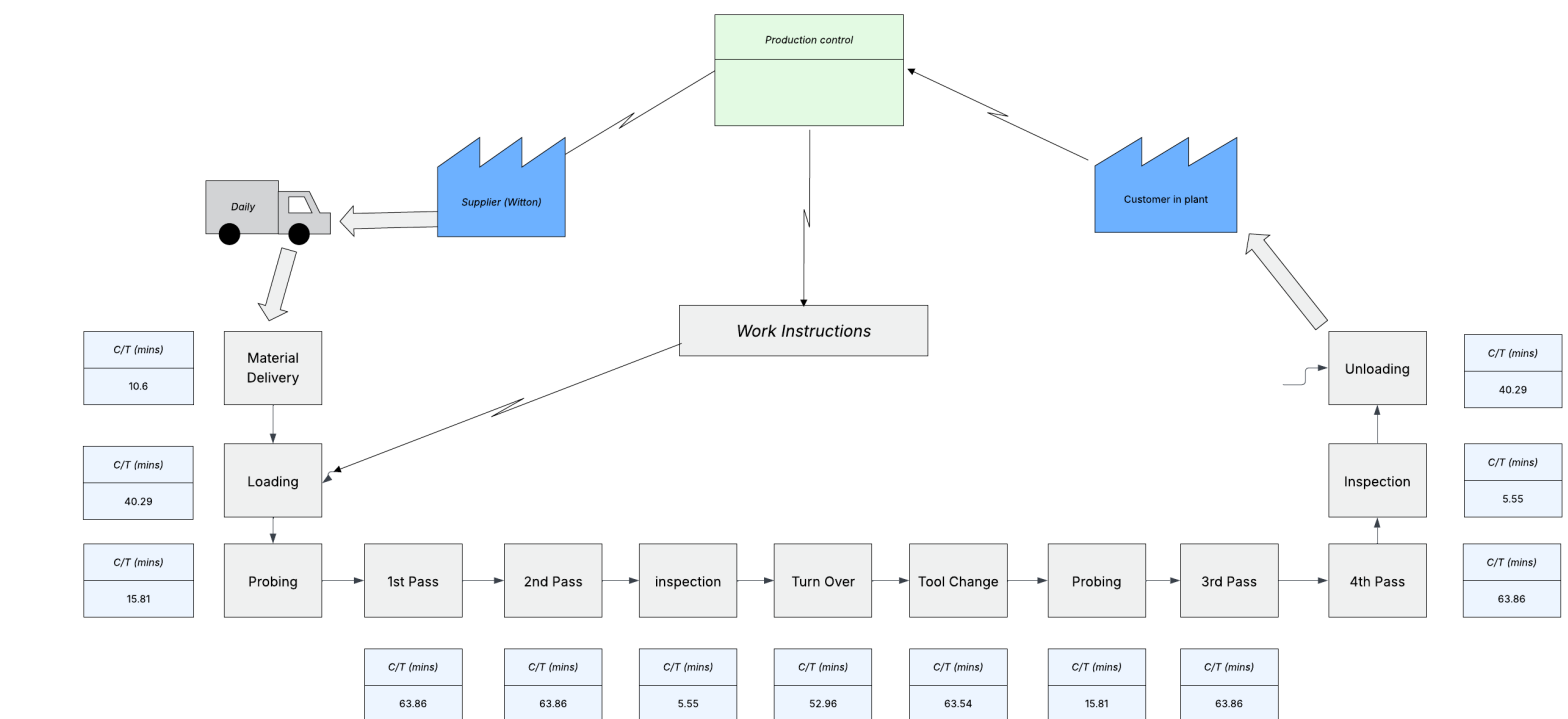
Process Mapping & Gemba Walks: Documented each process step and observed operations on the shop floor.

Value Stream Mapping (VSM): Used to identify bottlenecks in tooling changeover and material handling.

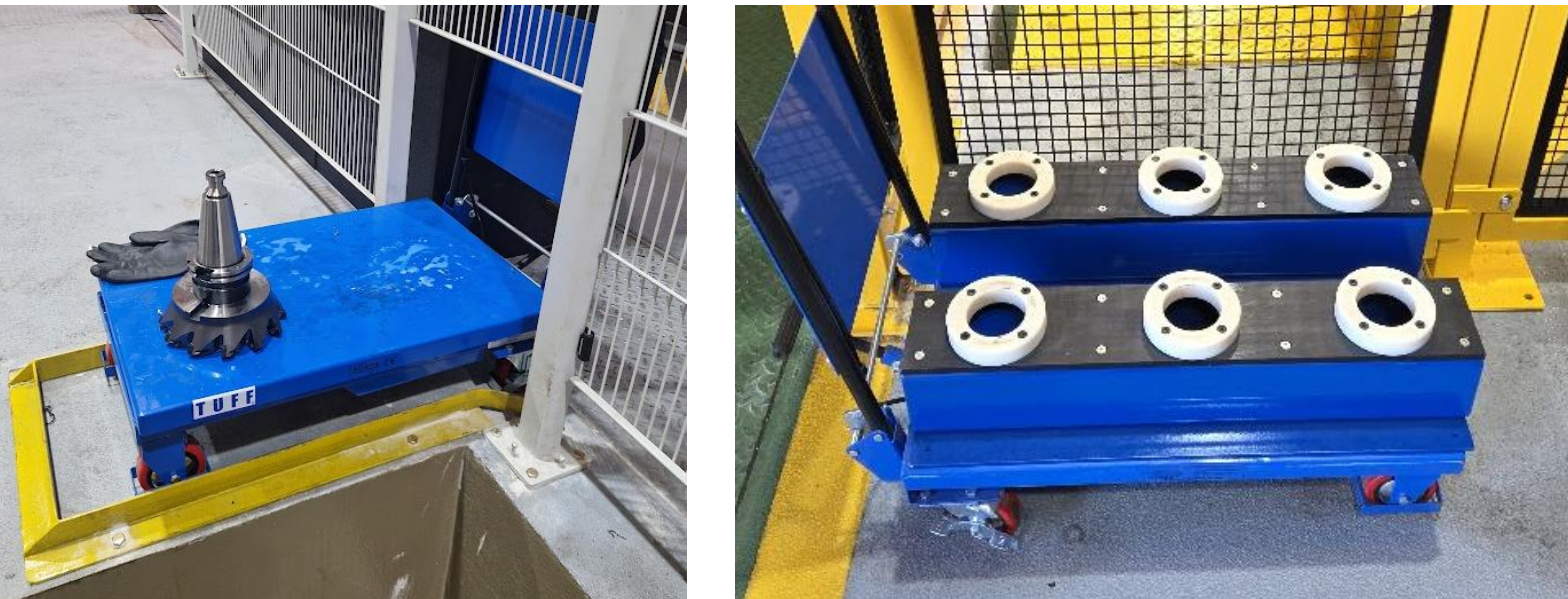
Time Studies & Spaghetti Diagrams: Quantified movement inefficiencies and operator travel paths.

Pilot Testing: Trialled tool transport systems, and offline tooling strategies.

Data Analysis: Measured changes in KPIs like cycle time, tool change duration, and yield.



Initial Process VSM



Tool Changing Trolley and Mods to Guarding to allow reduced movements of Tooling



Changes To Existing Guarding to Improve Material Movements during Loading/Turnover/Unloading Operations

Initial Cutting Parameters for MFT

Medium Feed	
slab cutting data	
Vc	25 m/min
Vf	250 mm/min
cutter dia	200 mm
overlap	80.00%
effective cutting	160 mm

Increased Cutting Parameters for MFT

Medium Feed	
slab cutting data	
Vc	25 m/min
Vf	300 mm/min
cutter dia	200 mm
overlap	80.00%
effective cutting	160 mm

Improvements Implemented

Tool Change Time: Introduced tool trolleys and workstations, reducing operator movement by over 80%.

Material Handling: Modified guarding and layout to streamline slab loading/unloading.

Offline Tooling Strategy: Enabled tool indexing during machine operation.

Program Optimisation: Increased feed rate of MFT by 20%

Results

KPI	Before	After	Improvement
Total Cycle Time (per slab)	8.4 hrs	4.8 hrs	-43.08%
Tool Changeover Time	63.54 mins	5.32 mins	-88.90%
Material Movement Time	133.27 mins	49.92 mins	-62.56%
Yield	~91.7%	Higher (TBC)	Improved

Conclusions

The Waldrich slab miller integration demonstrated substantial gains in throughput and operational efficiency. Lean tools such as SMED, VSM, and Spaghetti Diagrams were key in identifying and eliminating waste.

Future Work

- Apply offline tooling strategy fully with additional MFTs.
- Implement Cpk/Ppk studies once data is available.
- Collaborate with ISCAR to optimise insert design.
- Review cell layout to further reduce operator movement and improve ergonomics.