METCO ENGINEERING

CASE STUDY
Network Site Visit

POWERED BY

CallaghanInnovation
New Zealand's Innovation Agency

PROGRAMME PARTNERS

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INDUSTRY 4.0 Network

Enhancing Manufacturing Quality and Productivity with a 'Foil' Proof Solution!

Background

Metco Engineering offer full turnkey engineering and manufacturing capabilities from their operations in Wellington and Auckland. Always aiming to exceed customer expectations by investing in the best people and equipment; they forge strategic partnerships to bring mutual competitive edge by securing supply lines, new products, and future investment. With engineering services from industrial design for one-off commissions through to runs of tens of thousands of units destined for use in New Zealand and abroad.

Opportunity

Metco Engineering have a vast array of product types, capabilities, and materials, with every day completely different in terms of the production. With product complexity ranging from laser cut profiles through to fully assembled and welded finished product packaged for retail, it is critical that the information provided to the operations team is clear and effective to allow the manufacturing process to proceed without error or delay.

This variability does have an underlying series of recurring products, but the timelines between production runs could be months or even years. Metco was losing the tacit knowledge from achieving a positive outcome in previous production runs, as there were no formal records tracking the product through its lifecycle.

For example, a complex part with a combination of specifications detailed by the customer might involve an exact grain direction in the material, multiple different surface finishes, and exact packaging requirements to meet export demands. Often these requirements were not clearly articulated in customer enquiries, so must be identified through continued collaboration during the project. Once successfully completed, all the appropriate information related to the

project was lost on paperwork filed away and difficult to retrieve or interpret.

This could include details for jigs and tools used; set up instructions; or how long each step took in order to accurately re-price the job – all useful information when repeating projects in future. Compounding this issue was the lack of functionality in the shopfloor manager of Metco's Enterprise Resource Planning (ERP) solution – which only allowed for some basic timing information to be captured. Where other manufacturers can refine processes over time and establish clear work instructions to train teams with, the variability and volume of products made this approach untenable. Though the team's collective memory occasionally prevented errors, the level of rework was too high with engineers and programmers frequently distracted from estimation and design activities to review ongoing projects.

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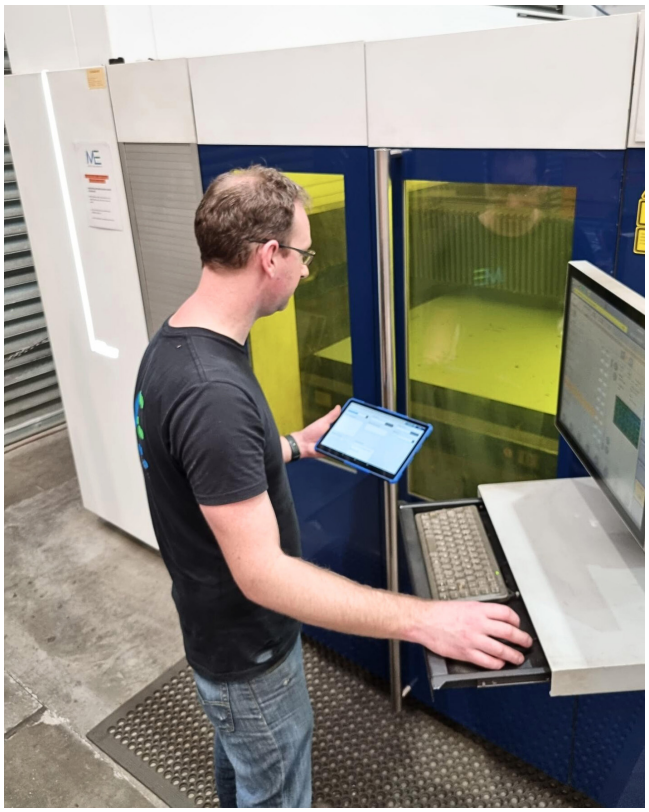

Solution

A solution was proposed whereby a digital footprint of every job would be captured as it progressed through manufacturing. This included key timesaving and quality-maintaining specifications such as tools and setups; and empowering the manufacturing team to review and rapidly find relevant information about their specific task without disrupting other function.

The solution developed was PowerApps-based with the ERP database queried regularly to keep information such as part numbers, machines, and router steps up to date. Running on a tablet, the solution allows anyone to scan the barcode that follows each job to capture relevant information for next time. For example, they may wish to photograph the setup method used that achieved a positive outcome for part quality. In a year's time, when this operation is carried out again, a different operator can scan the barcode and view the associated photographs or notes and instantly get accurate information about setups and tools. The information against each party is separated by 'labour step' so the relevant information (like folding or welding) can be locatedquickly, rather than needing to look at all notes associated with the job – saving significant time.

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Benefits and Next Steps

Metco trialled this solution in the CNC machine shop part of the business initially, but now plan to roll it out across all operations. This approach was beneficial as many iterations were made rapidly toensure the solution was user-friendly and working effectively before exposure to the wider business.

Historically Metco stored 'samples' of each completed job as a reference guide which took up huge volumes of space, were difficult to locate efficiently, and version control was hard to achieve. This solution is viewed as an efficient way of developing 'virtual samples' that are easy to locate and interpret. Ultimately, the solution acts as a tool for democratising data and empowering the workforce with information at their fingertips to achieve the right result for clients.

A training programme to deploy the solution in new departments is planned, with communication supporting the change management process found to be valuable.

Key Takeaways

- Democratising data and empowering shopfloor teams to find the information they need rapidly is a win-win.
- Operators have less frustration, and design and engineering teams become more efficient.
- The pressure on individuals to remember specific details is reduced – so stress levels improve.
- The solution is scalable and built on a common platform – if issues occur the skills required to repair or update the solution are readily available.

About the site visits and Industry 4.0

The purpose of the Demonstration Network is to drive uptake of Industry 4.0 technologies among New Zealand manufacturers with the aim of increasing their productivity and global competitiveness. The Network of Site Visits (NSV) are part of the Industry 4.0 Demonstration Network, which also includes a mobile showcase and smart factory showing cutting-edge Industry 4.0 technologies in action. The NSV takes selected companies through a fully-funded assessment process to help them accelerate their own journey towards Industry 4.0, and sees them share their knowledge with other manufacturers.

Further questions?

To find out more please contact

EMA

+64 (9) 367 0900
manufacturing@ema.co.nz

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