

# INDUSTRY 4.0 NETWORK SITE VISITS

## MJH Engineering

Leadership Competency – Solving Problems with new thinking and technology



### The Profile:

MJH Engineering Ltd are one of New Zealand's leading structural steel fabricators. Established in 1982, they have become industry leaders in the fabrication and installation of large-scale structural steel projects including industrial warehouses, commercial buildings, multi-storey tower-blocks, and seismic strengthening projects.

They are Steel Fabrication Certificated (SFC) and hold AS/NZS ISO 3834 quality assurance accreditation. MJH manage multiple large scale projects safely, smoothly, and on time and their focus on quality provides confidence and peace of mind to clients.

They also have a pedigree in innovation, using technology to improve their capability and efficiency to deliver projects effectively and successfully.

### Background:

MJH Engineering were experiencing a significant growth in building strengthening and post-earthquake retrofitting projects. These projects required a significant amount of surveying to assess the current state of the building structure and highlighting services like water and gas to determine where strengthening steel structures could be incorporated.

Traditionally, surveying was undertaken through manual measurement techniques by experienced surveyors. This survey information was captured and transferred, usually through manual methods, to a detailing team who would then design the necessary solution. The manual aspects of this process introduced the potential for errors in interpretation, as well as double handling of data and the large manual task of 'reconstructing' the building in the CAD software to then

design the retrofitted steel.

With increasing demand for these jobs, and increasingly complex buildings, the capacity for surveying and designing was being stretched and the potential for an error increased at the same time. MJH needed to identify a quicker and more accurate method of surveying and 'reconstructing' the existing building to fulfil this demand so they could make the most of the market opportunity in front of them.

Notably it was not possible to use designs from when the buildings were originally constructed, either because designs didn't exist, were altered during construction or the building had since been damaged or upgraded which made these designs outdated.

### Solution:

One of the senior team at MJH had observed 3D scanning technology being used in Australia to survey similar buildings. They contracted a company from Australia to bring their equipment to New Zealand and survey several structures to save time and increase accuracy on a number of jobs. MJH have always been on the lookout for new and different technologies that would allow them to innovate. By adopting this approach senior managers at MJH could think more laterally around how technology can be part of the solution when new challenges arose.

MJH were offered a project where the complexity and time needed to survey would have made the lead time and cost unviable. This was a trigger point for the company and justified the investment in the 3D scanner technology.

The decision was made easier because they had experienced the technology first-hand and could 'try before they buy'.

They were also aware of the necessary integrations into their existing systems. They had also done preliminary research in-house as to the specific equipment that would suit their purposes so when the time came they were able to react quickly to purchase and implement the 3D scanning technology.

To conduct the preliminary research, the company used their contacts in Australia as well as their relationships with the contractor to ensure they made the right purchasing decision. Even though they were ahead of their time, their previous exposure to the technology provided enough training and insight to make the system almost 'plug & play' and the equipment was used on site the same day it arrived.

Now they had made the decision and could support and train locally, MJH took advantage of their position as leaders in this space.

## Benefits:

- Automation of the surveying processing – 5x faster.
- Removed any manual error – no interpretation. After integration and alignment on a 'coordinate' structure has been completed.
- Skills/capability to bid for more complex jobs and ability to compete on those jobs price wise.
- Could test out solutions virtually, before arriving on site with the steel to ensure it was going to work.

This technology is applicable outside of structural steel in other construction environments and development of prototypes or bespoke projects to ensure that key linkages marry up and there are no clashes with the existing facilities in place at an installation site. Once the technology was available in the business, multiple other uses were identified and help expand the team's horizons in terms of what else they can automate and what projects that can manage successfully and profitably.

## Key Learnings / Take-Aways

- Try before you buy allows you to learn without the investment cost, benefit from the knowledge of an experienced contractor and test the integration with you other systems.
- The advantages of 'leadership competency' in the digital age. Being aware of what is possible by looking outside your immediate network to keep up to date. Allowing more lateral thinking to solve problems.
- Technology allowing an evolution in capability / competitiveness with regards to projects. The technology acts as a differentiator whether directly in capability or indirectly by creating a cost advantage.
- Once the technology is in your business its uses develop.

## About the site visits & 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 the EMA or Frank Phillips at LMAC

### EMA

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

### Frank Phillips

+64 (0) 27 223 3077  
frank.phillips@lmac.co.nz