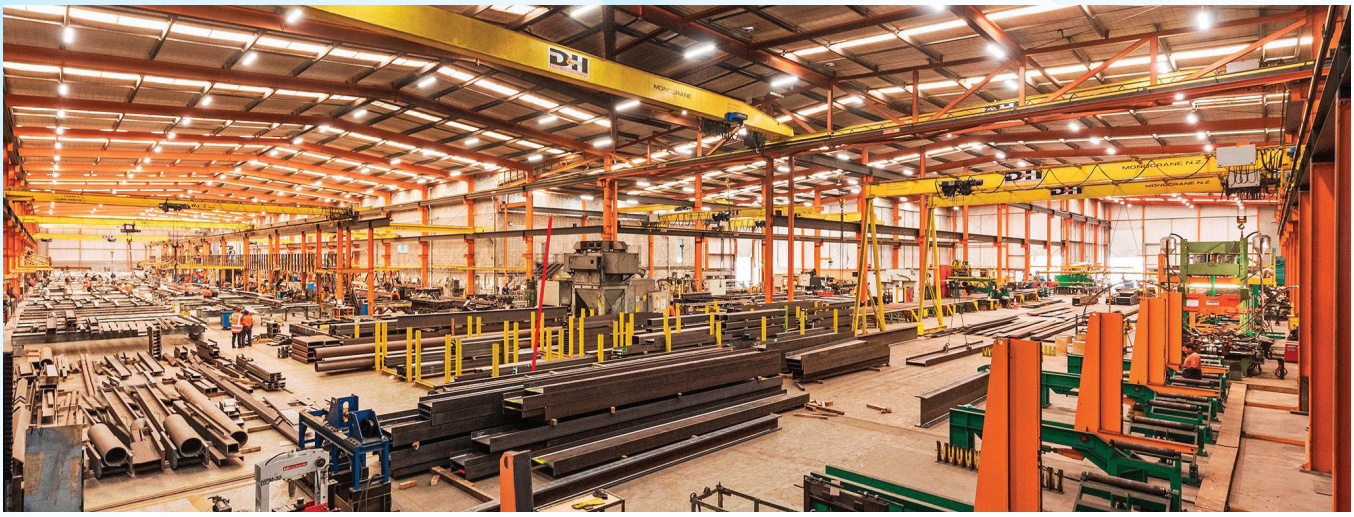
INDUSTRY 4.0 NETWORK SITE VISITS

D&H Steel Construction



Business overview

With 50 years of experience in the Structural Steel industry in New Zealand, D&H have built a reputation as a preferred supplier to some of the countries most iconic building projects. From airports to universities their expertise covers estimation, detailing, project management, manufacture, procurement and site erection. With a culture of innovation which led them to be the first accredited SFC company in New Zealand, D&H have started their Industry 4.0 journey looking for opportunities to improve the value their teams can add to the New Zealand Construction Industry.

Projects can stretch to multi-year engagements with clients, contractors and architects, with every project being unique in its physical structure. This engineer to order requirement for design and fabrication exposes the business to some unique challenges that have been difficult to overcome with off the shelf solutions.

Background

Structural Steel has specific certification requirements to meet industry standards. Many of these standards originate with the manufacture of the raw material itself, which must be traceable all the way through it's lifecycle into a structure. In order to manage this traceability requirement D&H has established a robust quality management system to collate all documentation and parameters which increase in number through the supply chain as more parties interact with the material.

Until recently the collation of this documentation was manually controlled by Quality Assurance Engineers working across Goods-in, Manufacture and Site processes. The objective here being to deliver to the end client a package of information and data related to the structure. It was recognised that the current format, that was email based and ad-hoc, was time consuming and was restricting the ability of the Quality Engineer to add real value by being on the shopfloor working with the teams to improve product and process quality. It is thought that over 3 days a week are spent on this compliance procedure.

In addition to this, the timely availability of quality data was limited to a paper based system with traditional data entry and analytics restrictions and labour requirements. This was leaving the team with limited insights that allowed effective problem solving / root cause analysis following a non-conformance. Ultimately this restricted their ability to put preventative actions in place to reduce non-conformance.

The solution

D&H had previously used full stack developers to generate app solutions of workflows for specific problems, however these were siloed, time-consuming and often expensive solutions which limited the breadth of their use. More recently, with the introduction of low and no code solutions that allow users to generate their own applications with no formal training or experience, D&H have broadened their approach with the overall aims of; reducing enterprise administration; improve data accuracy and timeliness and deliver useful insights to the relevant people.

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Using Sharepoint, PowerApps and PowerBI – all Microsoft applications, the on-site team at D&H have developed into an agile solution delivery team whereby they can work through the developing business needs and adapt to changing requirements to deliver application solutions that allows the business to collect and collate data into a format that can be interrogated to generate business insights.

Although these solutions could be applicable to any area of the business (Shopfloor, Enterprise, Facility), this case study focuses on the opportunities at the enterprise level. See our Case Study from Longveld Ltd to understand a typical shopfloor example.

To begin the journey around improving the time-consuming nature of collating the vast quantities of quality assurance data surrounding each project, the internal IT team (2 people) at D&H began by investing in a SQL database to form a foundation of data management and control. Following this, they used the Microsoft tool suite of low code application builders (Sharepoint, Powerapps, PowerBI) to start addressing some of the most labour intensive elements of the process.

One example is that all Material certifications for every delivery to D&H were emailed as attachments, making them difficult to quickly locate and interrogate as required. D&H approached their supplier, Steel and Tube and proposed a collaborative approach by which they could reduce workload for both parties whilst increasing accuracy and maintaining compliance. The internal team developed an easy to use front-end on Sharepoint with unique access for external parties that allowed them to upload the relevant material documents and allocate them to the required projects.

One of the key attributes of this programme is that the team have adopted the Think Big, Start Small, Scale Fast methodology. They have a long term vision of the entire project QA documentation collation process being automated but have started with smaller elements that will engage the team by removing a frustrating aspect of the process.

"We aim to build user-owned products, if the user is part of the development, we can be sure they will use it effectively in reality because it delivers value to them and the business".

Key Learnings/ Take-Aways

- Low and no-code solutions available on commonly used platforms are becoming ever more accessible to SMEs looking to leverage the power of enterprise automation.
- It can allow your team to become agile solution providers internally.
- These solutions can be shopfloor or enterprise focused.
- The integration of these solutions with 'back-end' software such as PowerBI means real time insights can be given to the right people at the right time.

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

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