MADE CYMRU

CASE STUDY

Prifysgol Cymru
Y Drindod Dewi Sant
University of Wales
Trinity Saint David

UNDEB EWROPEAIDD
EUROPEAN UNION

Llywodraeth Cymru
Welsh Government

Cronfa Gymdeithasol Ewrop
European Social Fund

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Quarry Manager
Hanson

Ella Maciver
LEAD Trainee Supervisor
Hanson

About Hanson UK

Hanson UK is a leading supplier of low carbon heavy building materials to the construction industry.

They are part of Heidelberg Materials, one of the largest building materials manufacturers in the world, the global market leader in aggregates which also has leading positions in asphalt, cement, concrete and other downstream activities.

Ella Maciver, LEAD Trainee Supervisor & Mark Boyall, Quarry Manager are both studying the Continuous Improvement with Industry 4.0 Level 5 course with MADE Cymru at University of Wales Trinity Saint David. As part of the short course, students are involved in a final project that looks at solving a challenge within their workplace.

Why did you sign up to the MADE Cymru course? What did you hope to get out of it?

We signed up to the course due to our business embracing 5S strategies. It was an opportunity to gain a good foundation of understanding of 5S practices and other Continuous Improvement tools that we will be implementing for Hanson going forward.

Prior to studying with us, what and when did you last study?

Mark Boyall – *2020 Derby University* – Foundation Degree.
Ella Maciver – Currently doing an apprenticeship program with Hanson.

How have you found the course?

We found the course really interesting and informative; I think it has given us a very good base to understand what all the tools are about and how it can help us eliminate non productive aspects of our job.

There are going to be a few parts of the course that will become a regular way of looking at how we do things in the business and on site. Tools that we had no knowledge of prior to the course are now being used to help with how we run the production process on site.

The visual stream map, for example, is a brilliant tool that can easily identify waste in our processes.

Overall, the course format was delivered very well. Distance learning with weekly sessions where we can study at our own pace, two examinations and a work-based project that re-enforces that distance learning.

What was the challenge that your final project sought to address?

We looked at reducing the loading times at Mercaston Quarry, using some simple 5S tools we managed to reduce our loading times by 6 minutes, the knock-on effect of that is we have saved the site money and reduced the site's carbon impact.

It is also a transferable skill that we could use on numerous sites across the whole of Hanson UK, resulting in a greater saving on fuel and carbon reduction.

This works towards meeting our Net Zero 2030 targets. We recognised that by reducing loading times across the 300 production sites, it could save time, money and have a positive impact on the company's carbon footprint.

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What was the process you went through to address this challenge?

We listened to the Voice of the Customer, we had several complaints from customers and internal hauliers about our loading times being too long. As a result, this impacted the customers and hauliers' ability to complete jobs in the day, setting them behind target.

The length of loading time also had a knock-on effect on the business. Which can be measured in time, money, loss of customers and carbon emissions.

It was only after being on the course and listening to the lesson where the Voice of the Customer was explained, that we realised we could base our 5S project on reducing loading times.

Using Six Sigma Tools, we wanted to determine how long the loading process took based on the analysis of data gathered at the site's weighbridge.

We had to determine what we could potentially do on site to speed up the loading process and as a result reducing waste time for Hanson, hauliers, and customers.

By loading faster, we could reduce the sites carbon footprint, time wasted and with the raising costs of fuel, save money.

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What were the final results and impact of your project?

We decided to move our weighbridge from upstairs to downstairs, as a result this nearly halved the distance wagon drivers had to walk to collect their tickets. In some cases, this time reduced from 48 seconds to 23 seconds saving a total of 50 seconds per load.

The final results showed that by reducing all loading movements within Hanson UK by 1 minute we could potentially save the business £180,000 and a reduction of 450 tonnes of carbon over the course of a year.

We installed 3 coloured flag system on site to help direct drivers to where they needed to be. We installed an orange flag for gravel loading, a pink flag for loading off the processing plant and a blue flag for loading sand. These flags helped to prevent the driver from getting lost as we ask the drivers to drive to the coloured flag and wait to be loaded, this as a result helps to reduce wasted time.

We created a drivers map to be issued to drivers when they first come to site.

- On average we have reduced loading times by 6 minutes per load at Mercaston quarry.
- In the first 6 months of the year, this equates to 83.3 hours.
- If sales were to continue at the same trend as the first part of the year, then total deliveries for the year would be 1,666.
- Which would total 166.6 hours saved over the course of the year which means 16 working days and 6 hours saved.
- It is 129 potential additional haulage opportunities to load at Mercaston or another Hanson Site.
- According to Mercaston's fuel system the loading shovels use on average 80.59 liters of white diesel a day.
- 80.59 liters of diesel x 16.6 working days = 1337.79 liters of fuel potentially saved.
- Site purchases fuel at a cost currently at £1.14.

So, by saving 6 minutes a load over the course of a year we could save the site and the business a total of £1,525 in fuel costs.

As you can see, using our internal carbon calculator. By reducing our usage of fuel by 1,338 litres at Mercaston that can save us 3.69 Tonnes of Carbon a year.

If we reduce fuel by the potential 165,3467 litres company wide, that could save Hanson 455.97 tonnes of carbon a year.

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How will you build on this impact – what is next?

Continue to find ways to implement the 5S tools we have learnt. We already operate a 5S culture on site, but now we have a good solid foundation in which we can keep improving site.

We both have already discussed another 5S course, hopefully looking at moving on to the Black Belt.

To find out more about the MADE Cymru Upskilling for Industry 4.0 and Innovation Management courses, please visit **www.madecymru.co.uk**

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Mercaston Quarry