

Vale Europe



Vale Clydach is one of Europe's largest nickel refineries

ABOUT VALE

Vale is one of the leading mining companies in the world. It is the world's largest producer of iron ore and iron-ore pellets and nickel. Vale is one of the world's largest producers of manganese ore and ferroalloys. Vale also produces copper, thermal and coking coal, phosphates, potash, cobalt and platinum-group metals. The company is actively engaged in mineral exploration efforts in 24 countries around the globe.

In the heart of a small village in South Wales lies one of Europe's largest nickel refineries. Vale Clydach Refinery produces high-purity nickel pellet and powder products for specialist applications such as high-nickel alloys, batteries, nickel plating and automotive components. Our plant, which has been operating since 1902, employs just over 200 people and produces around 40,000 tonnes of nickel products a year. We supply more than 280 customers in over 30 countries spanning Europe, Asia and the USA, and are one of the biggest employers in the Swansea Valley.

Clydach Refinery has been working on continuous improvement (CI) activities through a formal strategic CI programme since 2009. Our programme has been focused around ensuring that the refinery, which has been in operation for more than 100 years, remains competitive enough to secure the future of our plant and people for the next 100 years. Our CI programme started internally, aiming to improve stability and control in our production process. This was key to ensure a predictable and reliable supply of products to our customers. As we have progressed on our CI journey we have brought our supply chain into the process. We are working with both suppliers and customers, such as the Royal Mint, to ensure that we are all winners from the changes we implement.

Initially, our approach to CI work was the implementation of tools such as 5S around the site. 5S is a fundamental approach for productivity, quality and safety improvement in all types of business. It ensures that the workplace has clear visual management – it is easy to see if there is a problem because everything has a place and everything is in its place.

» SHINGO MODEL
OF OPERATIONAL
EXCELLENCE



The Shingo Institute recognises business excellence around the globe. The philosophy is that world-class performance for quality, cost and delivery can be achieved by the application of continuous improvement tools and techniques in core manufacturing and business processes.

We soon realised that tools alone do not generate CI, and we needed to articulate a clear strategic direction with CI at its heart. To succeed on this journey it was extremely important to engage the entire workforce along with the management team. This was achieved with a series of presentations to the workforce, which continue today every 6 months. We also trained up all our staff to understand what CI is about and equipped key leaders with training in business-improvement techniques – a recognised National Vocational Qualification (NVQ). Once this was done, we could work with teams all around the site, in both production and support, to establish which CI tools were relevant to each of their areas; while simultaneously starting to improve our business.

The process industry in which we work is not well known for its application of CI tools and techniques, which have tended to be more prevalent in automotive or production-line environments. Therefore, we could not simply take tools that have worked in other industries and apply them at our site – we needed to customise them to fit our needs. One of our key innovations was the development of ‘yellow boards’, which ensure that employees understand how



Representatives from Clydach Refinery winning the Shingo Silver Medallion for Operational Excellence

they contribute to the success of the refinery. The boards include key performance indicators and action plans, and allow employees to provide feedback and recognise team success.

As we progressed along our CI journey, we realised that we were applying best practice, and our approach was very well aligned with the CI principles set out in the Shingo model of operational excellence. We completed our application to the Shingo team in July 2013, achieved a site visit from the Shingo examiner team in December 2013, and were delighted to be awarded a Shingo Silver Medallion for Operational Excellence in January 2014. This award provides independent validation that our refinery meets the highest international standards of operational excellence.

‘The Shingo award recognises many years of continuous improvement work by everyone at the site focused on safety, quality, productivity and efficiency. This not only positions our refinery as a world-class benchmark, but provides a strong foundation for the long-term success of the Clydach Refinery.’
(Mike Cox, General Manager, Vale Europe Ltd)

“This award provides independent validation that our refinery meets the highest international standards of operational excellence”



Vale employees are committed to continuous improvement

Organisational benefits achieved

Our CI programme has delivered huge benefits to the site and our local stakeholders, including:

- » a 92% reduction in lost time due to injuries between 1999 and 2014
- » our employees have implemented over 1,500 improvement suggestions since 2009
- » our average monthly production increased from 2,770 to 3,532 tonnes per month – an annual increase of over 9,000 tonnes per year

Vale Clydach produces around 40,000 tonnes of nickel products a year



- » an improvement in energy efficiency of 16% between 2008 and 2014, a reduction of approximately 7,200 tonnes of CO₂
- » zero refinery waste went to landfill in 2014, with 82% of waste being reused or recycled
- » a 75% reduction in refinery-attributable customer complaints between 2007 and 2014 through CI work (root-cause analysis, failure-mode effect analysis (FMEA), error proofing, employee quality awareness).

Being awarded a Shingo Silver Medallion was a great accolade for the plant, but CI at Clydach has always been about 'Improving every day to achieve excellence in all that we do'. We believe that we cannot stand still as a business; we must engage all our employees to help us improve our processes and practices and get better at what we do, in order to secure the long-term future of our business. The Shingo operational excellence model is a great driver for further improvement work, and we are busy working on the opportunities for improvement suggested by the Shingo examiner team.

Our future commitment is to work even harder to engage our employees and to involve them in the development of site strategy. Every employee, alongside the management team, has developed new behavioural standards for the site that will support our CI work. This is an exciting time here at Vale, as all our employees are committed to continuously improve the refinery. To ensure these behaviours are naturally embedded into our culture, we are equipping managers with the tools to coach and support their employees. This will help to promote internal customer-supplier relationships and improvement activities, as well as sustain our refinery as a great place to work.