

Research theme	Maintenance Engineering
Research title	Continuous Structured Maintenance Concept Improvement with Maintenance Feedback at Tata Steel IJmuiden - The case of strip-tracking deviations at the Hot Strip Mill
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Research period	April 2015 to January 2016
Company	Tata Steel IJmuiden
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Background

The steelworks in IJmuiden was initially founded in 1918 as Koninklijke Nederlandse Hoogovens en Staalfabrieken (KNHS). The KNHS merged in 1999 with British Steel and Corus Group was formed. The whole Corus Group was subsequently purchased by Tata Steel, part of India's Tata Group, in 2007 and was rebranded to Tata Steel Europe in a 5 year time period. The Hot Strip Mill (HSM) is an important works within the main production chain of the integrated steelmaking site of Tata Steel IJmuiden. The hub has currently a total yearly production capacity of roughly 7.5 million tonnes of liquid steel. Of this 7.5 million tonnes, a significant part of 5.1 million tonnes is processed at the Hot Strip Mill (HSM). An internal Cost-Of-Poor-Quality (COPQ) analysis has recognized a 12.2 million euros loss over the financial year '13/'14, which can be allocated to strip-tracking problems.

Assignment

Due to the heavy duty processes, the high age of many installations and the complexity of maintenance, more assets of Tata Steel IJmuiden experience comparable, process-oriented problems, which have a strong relation to maintenance. This might be caused by a missing approach to initiate structured improvements of the maintenance concept. Research aim is to evaluate, structure and improve the current maintenance concept development process at Tata Steel IJmuiden, in such a way that it contributes to higher reliability, availability and performance. A single case study is performed at the Hot Strip Mill on the improvement of the maintenance concept for strip-tracking.

Results

The performed research has provided an initial structured approach to solve complex, maintenance related problems. The combination of various maintenance techniques in a single structured approach was not available as single method at Tata Steel Europe and not covered by existing literature up to now. The result of the case study show a prioritized set of the top five root causes which have a high, maintenance related, influence on strip-tracking deviations. Together they represent approximately 25% of the critical influencers of strip-tracking deviations, creating a positive business case for an improvement process.

Personal experience

Writing my graduation thesis at Tata Steel IJmuiden offered me the unique opportunity to research both the academic side of maintenance concept development and experience how such concept could be applied in practice. This resulted in a very varied graduation period at Tata Steel IJmuiden.