Mining 4.0 - Leverage Industry 4.0 in the mining industry

Abstract

Industry 4.0, a term coined by the German government in 2011, has become a synonym for the digital transformation of traditional manufacturing processes incorporating cyber-physical systems, the Internet of Things, cloud and cognitive computing. The digitisation of factories including supply and demand chains in addition to a strong convergence of OT and IT on the shop floor represent the backbone of an ever-increasing focus on efficiency, productivity and EHS in the manufacturing world. While conventional factories are on their way of being converted into smart factories by implementing Industry 4.0 guidelines and technology, underlying business processes and business models also need to be adapted to the new paradigm for a conclusive achievement of all objectives of this transformation.

Mining, a conservative and traditional industry, has shifted its focus to efficiency and productivity only in the past decade, after the GFC and even more after the end of an unprecedented mining production boom in 2012/13. Despite the dominance of quasi-continuous processes in mining, at an abstract level, a mine site is not much different to a factory for discretely manufactured goods when it comes to efficiency, productivity and EHS in production and the entire value chain. As a consequence, advances and developments of Industry 4.0 and smart factories, once adapted and transferred to the specific requirements of mine production and the mining value chain as Mining 4.0, will be the main driver and cornerstone of digitisation and the development of smart mines.

After a brief overview on Industry 4.0 and its role in the digitalisation of Germany’s manufacturing industry, the presentation will focus on the state of Mining 4.0, i.e. the implementation of Industry 4.0 in the mining vertical. A few case studies from Australian mines will be presented and benchmarked against examples from the German manufacturing industry with the aim of identifying opportunities, challenges and potential learnings for the mining sector in conjunction with the development of smart mines in the future.

Short Bio Dr Bernd Länger

Bernd graduated in mining engineering / mineral processing from RWTH Aachen University in Germany, where he also obtained his PhD. He spent the first years of his career in process development and plant engineering and migrated to Australia in 1997. Since then, he has facilitated market development and technology transfer for German technology companies into the resources sector, either directly by setting up their Australian operations from scratch, or as a consultant. In his most recent role, Bernd established and managed the Competence Centre for Mining and Resources at the German Australian Chamber of Industry and Commerce in Australia with a focus on facilitating dialogue, collaboration and business between
Germany and Australia in the area of mining and resources including oil and gas. Earlier this year, Bernd founded innoteQ with the aim of facilitating and accelerating collaboration between Germany’s Mittelstand, Hidden Champions and start ups and the resources sector in Australia as well as globally. His special interest and passion include identifying innovative Industry 4.0 technologies and transferring them into the resources sector, driving the development of Mining 4.0, the next generation of resource technology.