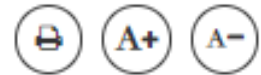


# The digital twin that's been helping Vedanta steer out of the crisis

*From deploying digital twin at smelters to testing new technologies in the health and safety space for its workforce, Vedanta has left no stone unturned to ensure 24/7 operations without any disruption.*

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Avijit Deb, CDO, Vedanta Ltd - Aluminium & Power Business

In the year 2020, where many industrialists and their technology leaders struggled to keep their business running, there were a few who managed to steer through this pandemic but it was a narrow squeak for them.

Vedanta Ltd - Aluminium & Power is one such company in India, which being India's [largest Aluminum producer](#), could not stop their operations, including their smelters running 365x24x7.

"We challenged ourselves to ensure that the wheels of [manufacturing](#) keep running with minimum resources and all precautions so that the country does not have to suffer. We have implemented intelligent automation and digitalization with innovations at the plants in different parts of the country to help sustain production of these critical raw materials for the nation," [Avijit Deb, Chief Digital Officer](#), Vedanta Ltd - Aluminium & Power Business said.

While we can see that many technology leaders are wrestling with the transition of business requirements and they are struggling to address them. There are a few which remember that the early bird catches the worm. Pre-planning of BCP readiness, early technology implementation for the future ready business, and investing in the risk of new technology use cases, are few characteristics of leaders with a sustainable approach to support their business.

Avijit Deb chalked out a strategy which helped the aluminum producer to maintain operational efficiency. He has left no stone unturned to keep the business running even in such a difficult phase.

And the journey of implementing different technologies and digital innovations started from their smelters and manufacturing plants.

Vedanta's smelter at Jharsuguda is India's first, and the world's third smelter to deploy [Digital Smelter Solution](#) using digital twin technology, which allows remote monitoring and control of plotlines operations, enhances energy efficiency, reduces raw material consumption and arrests wastage of material through remote advisory system.

Additionally, it allows quality and process control for the core manufacturing process. Deep Learning algorithms and various advanced model techniques are also being leveraged which allow Advanced Asset Performance Management at both smelter and power plant assets.

"We are in the process of deploying advanced data analytics technologies in our power plants by incorporating digital twins for both predictive and prescriptive analytics to enhance power plant availability, asset and process reliability while reducing operational cost and improving sustainability of operations and reducing safety risks with minimal or zero human touch," Deb added.

The company has adopted image and video analytics, contextual analytics, situational awareness, safety and security risk analysis available in real-time with accuracy. This averts any hazards/accidents with minimal human intervention. Vedanta has already embarked upon the journey of using vision analytics and contextual analytics in multiple plant sites like identification of hot spots for improving asset reliability. Their security and surveillance function uses drones, image analytics and other technologies for enhanced surveillance to ensure safety and security of employees, business partners and allied service partners.

“Top of the use case of analytics and other technologies which are being leveraged at several operational units, we have implemented SAP and Manufacturing Execution System (MES) across all the aluminium plants. This is to ensure visibility of all critical plant operations, which also allows us for decision making remotely through mobile applications, thus ensuring seamless sustainability of operations while employees can maintain social distancing and yet fulfil their activities on the plant floor,” Deb highlighted.

Vedanta’s Aluminium & Power business is the first metal and mining company in India to implement the full scope of S4HANA thus automating all functional processes. The complex and diverse procurement of commodities, materials and services are fully automated and backed with analytics thus unlocking substantial cost reduction, faster O2C cycle and business realisations.

“Apart from maintaining operational efficiency, safety of the workforce is at the core for us. We are testing various solutions in the health, safety and environment space. We are exploring the use case of technology-based tracking to monitor health of assets, receive pre-intimation of potential equipment failure or breakdowns, unsafe conditions or even fluctuations in productivity for immediate action,” Deb emphasised.

The aluminum producer is also testing [Robotics Process Automation \(RPA\)](#) in commercial, finance and supply chain functions and is optimising repetitive and hazardous process activities.

The company has built end-to-end digital Logistics Control Towers for coal, alumina and bauxite with [Machine Learning](#) and OR (Operations Research) based mathematical modelling that have enabled Vedanta to do simulation based planning, reduce costs and pilferages and improve efficiencies, impacting topline and enabling paperless operations. Even within plants, all operational parameters are monitored virtually while ensuring there is minimum physical proximity.

GPS, RFID sensors, OR based schedule modelling at each operational point capture critical operational parameters within the plant.

Aluminium production being a continuous operation industry that needs to run 24X7x365, BCP is extremely critical for the company and is integral to their operations, even without the pandemic.

“We are certified with the ISO/IEC 22301:2012 (BCMS – [Business Continuity Management System](#)) for business continuity, which is the one and only credible framework for effective business continuity management in the world. The BCMS certification stands testimony to the fact that the company is best prepared for a disruptive incident, while having the capabilities to resume critical functions

immediately and recover operations, functions, sites, services or applications – again aided by technology,” Deb highlighted.