



VEDANTA INNOVATION AND DIGITISATION

FACT SHEET – MARCH 2019

TRANSFORMING ELEMENTS

TRANSFORMING IDEAS

“Cutting edge
technology &
innovation is in
Vedanta’s DNA.”

– Anil Agarwal, Chairman
Vedanta Resources

Vedanta has made innovation a strategic priority by acknowledging the role innovation plays as an enabler across every facet of the business. Beyond the ideology, Vedanta has instilled innovation as a corporate value and the Group’s leadership supports and incentivises employees in the establishment of a culture of innovation. This is because Vedanta’s leadership believes that innovation, and not just incremental improvement, will help mitigate the volatility in commodity prices.

Innovation, which encompasses technology and digitisation, drives efficiency and sustainability. It is a central part of the Group’s drive for operational excellence. We want to become an innovator company and to do this, we are focused on not only acquiring best-in-class technology for our assets, but on creating our own.

INNOVATION MANIFESTO

- We believe in working smarter
- We support technology development and digitisation
- We are acquiring and implementing best-in-class technology for our assets, people and the digital transformation of our business
- We actively incentivise our people to contribute their ideas
- We believe in innovation
- We believe in creating the mine, and the society, of the future
- We will adapt and thrive

A CULTURE OF IDEAS

Ideas drive innovation and innovation is crucial to business success and sustainability in the natural resources industry. Whether assessing mineral deposits, facilitating cost management, ensuring worker safety, or addressing environmental imperatives, innovative practices hold the key to value creation.

Calling on two of our core values of entrepreneurship and innovation, we have stepped up our efforts to discover and implement new, innovative and disruptive technologies through the introduction of new systems and incentive programmes.

The first is Eureka, a digital platform that is used to nurture and incubate in-house innovation. It encourages our 70,000 direct and indirect employees to come up with innovative ideas focusing on using technology to support mining in a sustainable way by reducing waste and improving energy efficiency.

Across our business units, employees are encouraged to be creative in their thinking and approach. Ideas are valued and by continually asking employees to think about what they and the Group can do differently, more than 1,000 ideas have been submitted. Of these, 200 were selected for implementation and are being rolled out across the Group.

Employees are incentivised to think innovatively with quarterly innovation awards held to reward to those employees who produce the most innovative ideas.

In-house technological innovations in the field of exploration, processing, waste disposal and new product development have been among those awarded, as have innovations that are working to include the use of nanotechnology for various processes.

Our aim is to work smarter, improving the sustainability of our operations and optimising our costs.

Beyond the nurturing and incubation of in-house ideas, we also work with various institutions of the Council of Scientific and Industrial Research (CSIR) and academic institutions such as The Indian Institutes of Technology and National Institutes of Technology.

The CSIR is a world-class African research and development organisation that undertakes directed, multi-disciplinary research and technological innovation that contributes to the quality of life of South Africans.

The Indian Institutes of Technology and the National Institutes of Technology are institutes of higher education of national importance. These institutes have been tasked with developing a skilled workforce to support the economic and social development of India.



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GREAT IDEAS



WASTE TO VALUE:

ways to reduce wastage



EASE OF DOING BUSINESS:

ways of optimising and improving processes and technology



REDUCE CYCLE TIME:

'Finance 2.0' targeted at crowd-sourcing ideas to improve and enhance the finance function



MAGMA:

a technology that allows conversion of red mud into pig iron



REFLEX:

recovering zinc and lead from slag, which is generated during the smelting of zinc



SUSTAINABILITY:

processes to reduce water consumption, convert fly ash into geo-polymer cement, and cut down on paper consumption



THE APPLICATION OF IDEAS

Of all the trends impacting the mining industry at present, digitisation is arguably the most crucial, given its over-arching impact on every aspect of operations. Offering significant potential for improving operational efficiency and lowering costs, digitalisation is opening up exciting opportunities at several of our leading mines.

Hindustan Zinc's Sindesar Khurd mine is our most automated mine and has successfully implemented mine digitalisation. Here, we are moving into a new era of mining, where high speed WiFi networks and high bandwidth optical fibre forms the backbone of a new digital-enabled operating model.

At our Oil & Gas business, the world's longest, continuously-heated and insulated pipeline is one example of high technology standards. We remain ahead of the curve with industry-leading extraction techniques like enhanced oil recovery and alkaline surfactant polymer, which have been deployed at the Mangala field. Extensive use of digital oil field software has improved reservoir management.

At Gamsberg, we have taken the application of technology a step further. Gamsberg has been conceptualised to be a digital mine. By introducing technology and digitisation from the start, the operation will have leading-edge systems that report the state of the mine, the quality of ore, the conditions of the concentrator and the quality of the concentrate, all in real-time, to enable minute-by-minute decisions.

Gamsberg's zinc deposits have long been seen as challenging to develop, but through the use of innovation, we are unlocking previously inaccessible resources. Early adoption of the Smart Ore system detects ore impurities early in the production

process, allowing management to be more operationally responsive.

The project, which is being undertaken in collaboration with GE South Africa and mining software developer MineRP, will see the implementation of the Smart Ore system throughout the development phase of the project. This is a first for a greenfields project in South Africa. By starting the project the way we want to operate it, we expect to improve efficiency by between 10% and 15%.

“A core philosophy at Vedanta is to embrace new technologies and practices, and we welcome the opportunity to become part of the disruption revolution.”

– Deshnee Naidoo, CEO Vedanta Zinc International

It is not the software itself, but rather the stage at which the system is being introduced, that makes the digitalisation of Gamsberg unique. While around 90% of platinum and gold producers in South Africa already use the system, none of these were introduced before going into production.

The mining industry is abandoning its older business model and is embracing new technologies. Gamsberg's design and construction is intended to be at the forefront of this digitalisation. For us, the digitalisation of the Gamsberg project represents the successful transition from traditional to future, modernised mining operations.



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