

Mining Centre of Excellence

Concept Paper

Background

Without mining all the items that a modern society takes for granted would not exist. Mining provides the basic materials for metals, building materials, transportation, health and fertilisers for the food we eat. Yet despite this key role in modern life, the complexities, difficulties and challenges in mining are poorly understood, and even less appreciated. Mining has a negative image, particularly in some parts of the developed world and this is also true in India. In light of this and the rising future problems mining faces, the industry needs to establish a Centre of Excellence to develop new methods of working including automation, innovative new technologies, enhanced mining services, career opportunity and ways to address the perceived negative environmental footprint of the industry.

Proposed Centre of Excellence

As India grows and its demand for materials increases, mining and mining services will become ever more important, both internally and in other parts of the world that provide India with its key raw materials. It is therefore proposed to establish a key centre supporting mining within an Indian context; this will include aspects pertaining to mining in the local environment and to areas where raw materials are produced and exported to India. Centre of Mining Excellence is being set up by the Government of Gujarat, supported by Gujarat Mineral Development Corporation, with University of Wollongong Australia, coming as the international university and Gujarat NRE the industry partner to achieve this purpose. Local academic partners are IIT Kharagpur, and Pandit Deendayal Petroleum University (PDPU). The centre of excellence would seek to develop a wide range of activities in support of the mining industry.

This facility will act as a combined technology and technical centre with focus on research & innovation and would also serve as an educational establishment for skill development offering educational courses in mining – safety and automation. The location at Ahmedabad, in the rapidly growing state of Gujarat, will be ideally placed to offer a range of courses and services to support improved new mining initiatives across India and the wider Asian region. It will act as a magnet attracting high calibre graduate and post graduates to study state of the art mining techniques, new mining services as well as offering research opportunities with an Indian context.

Proposed Courses and Facilities

The Centre will establish a strong presence in key areas of mining technology and services. This will include automation, health and safety, mine planning and mining efficiency together with developing emerging global best practices and tailoring them for the Indian environment.

Suggested key areas of activity will be:

- **Automation:** increasingly the shortage of skilled miners is leading to increased automation across the whole mining value chain, from automated drilling, to driverless trucks, driverless trains, automated underground mining, recent advances in this field has seen major breakthroughs which can be adopted to the Indian context.

- **Mining Practices**: with mining becoming more complex as grades decline, overburden ratios rise and transportation distances increase, optimisation across the full supply chain becomes more important. Optimisation and transfer of global best practice increasingly becomes vital and will be critical if India is to benefit from its own resources.
- **Occupational Health and Safety**: is an area that has become critical for miners to gain and maintain their licence to operate. Falling injury frequency rates, new safety protocols and working practices have been highly successful in making mining far safer than a decade ago. However, much needs to be done; the Centre will develop new methods to assessing safety and safe working practice, something that is urgently needed today in Indian mining.
- **Mining Technology**: is continually advancing, larger more sophisticated mining equipment is capable of improved reliability, operational efficiency and cost reduction, well beyond that of a few years ago. Improved beneficiation and mineral separation techniques have increased the grades of resources and opened up new deposits that were previously uneconomic. Further development of some of these technologies with a focus on innovation in the Indian mining sector will be a key part of the Centre.
- **Mine rehabilitation**: is becoming a vital part of the final stages of mining as green activism rises. The ability to successfully return a depleted mine site to its native state is now a critical part of any environmental approval and this will only grow in importance in the future. Research and techniques native to India to rehabilitate mines will allow the Centre to be at the forefront of providing green mining services in the future.

Current Status (at Feb 2015)

The Gujarat Mineral Development Corporation will meet capital costs of US\$10M for the first 5 years, and support operational cost for a further 5-10 years; they will work to increase industry involvement in terms of both direct funding and in-kind support.

Work is already nearly complete on Stage 1 of the campus, a 3000 square metre facility which will house administration, seminar rooms and laboratories. Phase 2 will be larger again, with formal education and research spaces.

The campus location is amongst a developing research and development cluster 40 km from Ahmedabad, the largest city in Gujarat State, with excellent transport links.

More information is on the website: <http://www.icem.in/about.html>

Conclusions

The proposed Mining Centre of Excellence will play a key part in development of world class mining in India. The adoption and tailoring of global best practice together with India specific solutions and the development of the next generation of highly skilled miners badly needed for India would make the centre of excellence a pivot for mining industry in India.