



Mine of the Future — A mining CEO's perspective

The School of Mining Engineering at the University of the Witwatersrand held its 120th anniversary celebration on 23 March 2017. The keynote speaker at this momentous occasion was the Chief Executive Officer (CEO) of Gold Fields Limited, Mr Nick Holland. He spoke passionately about his vision on the Mine of the Future and indicated how Gold Fields was positioning itself for the future. The presentation was extremely insightful and well received by the audience, and I thought I should share with you some of the issues that were articulated.

Does the vision on the Mine of the Future have anything to do with our readership of the Journal or the SAIMM membership in general? I think it is very relevant, because mining professionals must have a sense of, and plan for, how their profession will be affected by decisions shaping the future. This understanding also helps us to participate meaningfully in shaping the future of our industry. I will sketch below an overview of the Mine of the Future as presented by Mr Holland.

The Mine of the Future will be sustainable and create value for all its stakeholders by focusing on four key areas: operating practices and technology, talent and leadership, partnerships with key stakeholders, and governance. The first two areas are directly relevant to professional bodies in the mining industry. Operating practices will entail embracing mechanization and automation, as the technology of the Mine of the Future will be characterized by remote controlled mining operations. The technology should be energy- and water-efficient in view of the increasing scarcity of these resources, which are critical for a successful mining operation. However, this technology will generate attendant 'big data', requiring mining professionals to develop competencies in advanced analytics for converting the data into useful information to enhance cost-effectiveness, productivity improvements, and create safer mining environments. All these technical innovations demand a different skills set from the mining workforce. Therefore mining companies, universities, and professional bodies such as the SAIMM need to work together more closely to develop and train the personnel required for the Mine of the Future.

The mining CEO of the future will be a strategist capable of navigating complex integrated stakeholder management, forging sustainable win-win partnerships, and enforcing regulatory adherence and good governance. Such a CEO is likely to succeed as he or she can enlist the support of shareholders, governments, employees, and communities that are increasingly, and rightfully, demanding to share in the benefits of the resources mined in their jurisdictions.

It is important that educational institutions revisit their curricula so that graduates in mining-related disciplines are adequately prepared for the Mine of the Future. Professional bodies such as the SAIMM need to ensure that continual professional development (CPD) activities embrace the articulation of new technologies, big data analytics, creative leadership, and good governance. This process begins with you!

This edition of the *Journal* contains papers selected from the Heavy Minerals Conference held a few months ago by the SAIMM. Heavy minerals are minerals for the future. Heavy minerals generally occur in placer-type deposits containing zircon, titanium minerals such as ilmenite, rutile, and leucoxene, and other minerals such as staurolite, garnet, and chromite. These deposits are typically formed by gravity concentration of the mineral grains. They are important for the future because developing economies such as China require increasing quantities of zircon for ceramic tiles for urban floor space construction. What will the future heavy mineral sands mine look like? One sure thing is that it will need a more skilled workforce. Preparing that workforce begins with us!

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