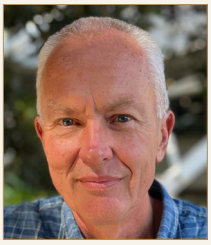
The Potential of the Young



This volume is similar to previous Student Editions in that it covers a range of diverse topics, from the determination of project readiness in a mining house to the welding behaviour of ferritic stainless steels used to fabricate automotive exhaust systems. There is also significant diversity in the experimental techniques used, and the application of probability calculations is particularly noteworthy in several papers. All this illustrates the breadth, depth, and vitality of the next generation starting to contribute to the activities of the various SAIMM technical communities represented by this Journal. It is worthwhile to remember that these papers have been through the same review process as other papers submitted to the Journal.

The present Student Edition had me wondering where the careers of our students showcasing their work here will take them. How many will return to their respective topics discussed in this edition during their careers, and in what way? What other reunions might our students encounter with previous assignments and experiences they embarked on as their careers progress? These reunions between the past and the present could be unexpected and intriguing. I remembered a few examples from my own career.

My first job, in the mid-eighties, was in a now-defunct heavy foundry that produced mining equipment, such as winders, ball mills, crushers, and a range of dragline components. One of the flagship product lines was winders for the gold and platinum mining industry. Recently, 35 years after leaving the foundry, I helped to evaluate one of those winders. I immediately recognized the imprints from the mould assembly and the indifferent surface finish inherent to the Portland cement-based sand system used in that foundry. The winder did not show any evidence of cracking and was probably good for another three of four decades of service. That the component was completely overdesigned will probably stand the owner in good stead. It is almost counterintuitive, but the scarcity of sophisticated finite-element analyses techniques when this winder was designed will help to ensure a long service life.

Some years ago, I took a group of third-year students on a visit to a power station that was still under construction. We were shown around by the commissioning personnel. It was to me, probably more than to the students, a fascinating visit, with the boilers in various states of construction. We looked down on a low-pressure turbine that was shipped from the supplier as a complete unit and had been lowered into position a few days before our visit. While looking at the casing, I realized that I remembered the patternmaker's drawings for this component. There was an incident, many decades ago, when a skip filled with chills (small steel inserts used to affect the solidification front) dropped its load through the pattern, destroying months of patternmakers' work.

I recently helped a mechanical engineer to review the repair procedures for a very large type-316L stainless-steel tank. On working through the documentation, I discovered that the tank was fabricated by a company in Gauteng that I had visited when I started to expand the scope of welding-related activities in the Department of Materials Science and Metallurgical Engineering at the University of Pretoria. The founder and owner of the fabrication company had a very clear and useful perspective on the role that a young engineer should play in such companies: essentially, a young engineer should not spend too much time in the office, get onto the shop floor, and get some holes in his or her overalls. As far as I know, the company has disappeared, but the stainless-steel tank was still in good condition, and it was well worth repairing the few small defects that had developed in over twenty years' service.

It would be unwise to speculate what circuitous routes the careers of the students represented in these ten papers will follow. The world, Southern Africa, and the mining and metallurgical industries are rapidly evolving, and in this dynamic environment, it is unlikely that most of these papers present first steps in a highly specialized career in the respective fields of knowledge for these students. Rather, it is likely that some of these students will again be acquainted with their work in a roundabout way, possibly similarly to what I have encountered.

From a different perspective, the students' papers also embody and demonstrate two important skills, namely the ability to absorb and apply new knowledge and the ability to communicate it. These durable skills are only developed when the quality of investigative work and quality of presentation of the results (in this case, as a journal paper) are high. Finally, it is worthwhile to stay somewhat humble, and remember that some students may take the material that they are taught much further than their professors can ever anticipate.

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