"YOU'VE GOT TO GET DIRTY, TO GET GREEN"

THE FUTURE OF MINING

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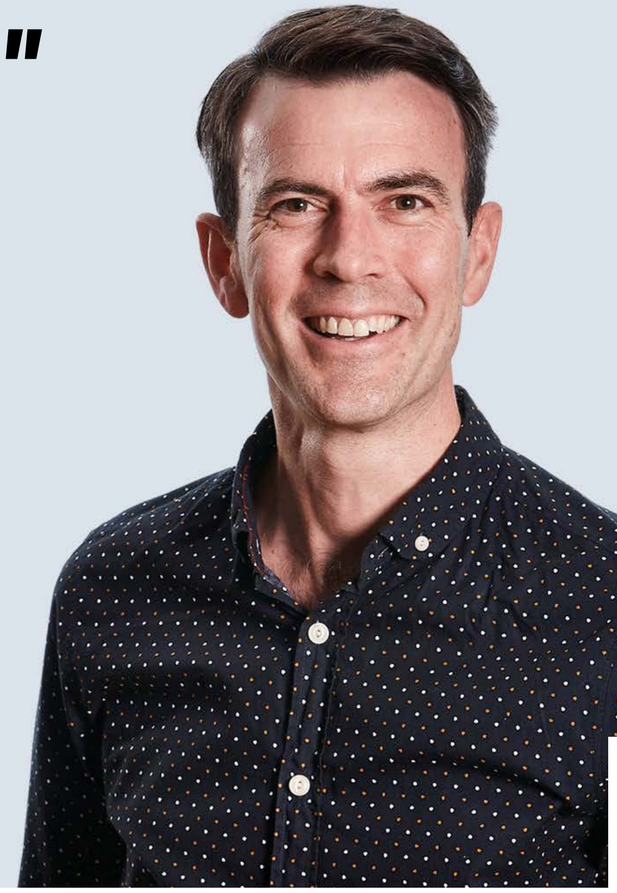
Following MDD's Energy Insights Event in January, Integra CEO, Leo Dixon, caught up with Conrad Biegel and Brad Ebel from MDD to delve a little deeper into their presentation on the day.



Conrad Biegel

Brad Ebel

"WE ALL WANT THE FUTURE TO BE GREEN BUT IT'S GOING TO REQUIRE SOME 'DIRTY WORK' OVER THE NEXT 10 TO 25 YEARS TO GET THERE."

I'm going to kick off with the soundbite of your presentation, "You've got to get dirty, to get green" Can you elaborate on that?

Conrad: That's connected to the energy transition. It requires critical minerals, which we don't have enough supply of, and the only way to obtain more is by mining. We all want the future to be green but it's going to require some 'dirty work' over the next 10 to 25 years to get there.

Do you think all the UN nations and their populations signed up to COP understand this point?

Conrad: I think so. Their critical mineral strategies concentrate on locking down supply for the energy transition. So, I think the countries do understand but, the general population, that's a different story.

Brad: I believe all the significant countries are aware of this, but they're not all on the same page. What we're seeing right now is how the West is trying to keep their supply chain and simultaneously we're seeing China starting to protect their monopoly as well. So, it's going to be very challenging in the geopolitical sense. China has already gone through all the hard lessons and it has been incredibly dirty. They've learned how to do it and they decided per the statement emanating from Beijing on 21st December2023 that they're no longer exporting their critical mineral processing technology outside of the country.

This a competitive advantage situation, with China leaping ahead, whilst other countries are left behind?

Conrad: You're exactly right. It's not only solar panel production, but we see exactly the same with battery production as well. China produces 75% or more of EV batteries globally and they use coal as a production energy source, so it's a bit of a conundrum for them to achieve the greener new future. And right now, they're in the dirty phase.

You referred to the 'future of mining' and the possibility of mines operating in a greener way. Could you elaborate on this?

Conrad: The most energy-intensive areas are loading and hauling. As you know, this typically involves large vehicles running off diesel fuels. There are plans to electrify fleets, but the technology is not ready at present. Another option is to convert to using biodiesel fuels. Finally, mines can reduce their carbon footprint in activities like crushing, grinding and conveying, all of which use electricity, by purchasing from renewable sources if available.

Brad: The challenge is there's very little way to reduce power consumption in a mine's mill operations. When you're moving 20,000 tonnes a day, how does an operator make milling less dirty? You can't! You can't reduce the power consumption; you've just got to find a cleaner source of power that's as cost-effective as coal. And that's the challenge, the greener sources of power are typically the most expensive.

On the back of China's defensive position regarding the mining of critical minerals, there's a significant amount of mine construction expected around the globe. An example being Canada constructing 102 new mines. How long do you think the construction period would be in Canada?

Brad: I'd say five to 10 years. Some of the construction projects that have already started are up to three, four or five years old, but some still haven't even dug ground yet.

Conrad: Yes, it really depends. Some of these planned sites are close to the Arctic. There's no road networks, no energy grid, not even places to live up there. So, it's more than just the construction of the mine that's required. It's everything that is required to support it and its workforce that needs to be constructed. So, five to 10 years but I wouldn't be surprised if it's more like 20 for some of the sites that are more remote.

Where do you see the opportunities and challenges for the mining insurance sector?

Brad: There's going to be a boom in construction and that will create all the challenges - shortage of skilled labour, shortage of equipment and the necessary transportation to deal with it. Some projects will carry more risk, so underwriters will have to decide how they feel about that. There are also insurers who have declined to insure the sector due to their ESG guidelines. I think they will need to revisit these guidelines as a result of China's position, as without access to heavy rare earths, we may not reach the planned production of EV cars in 2050.

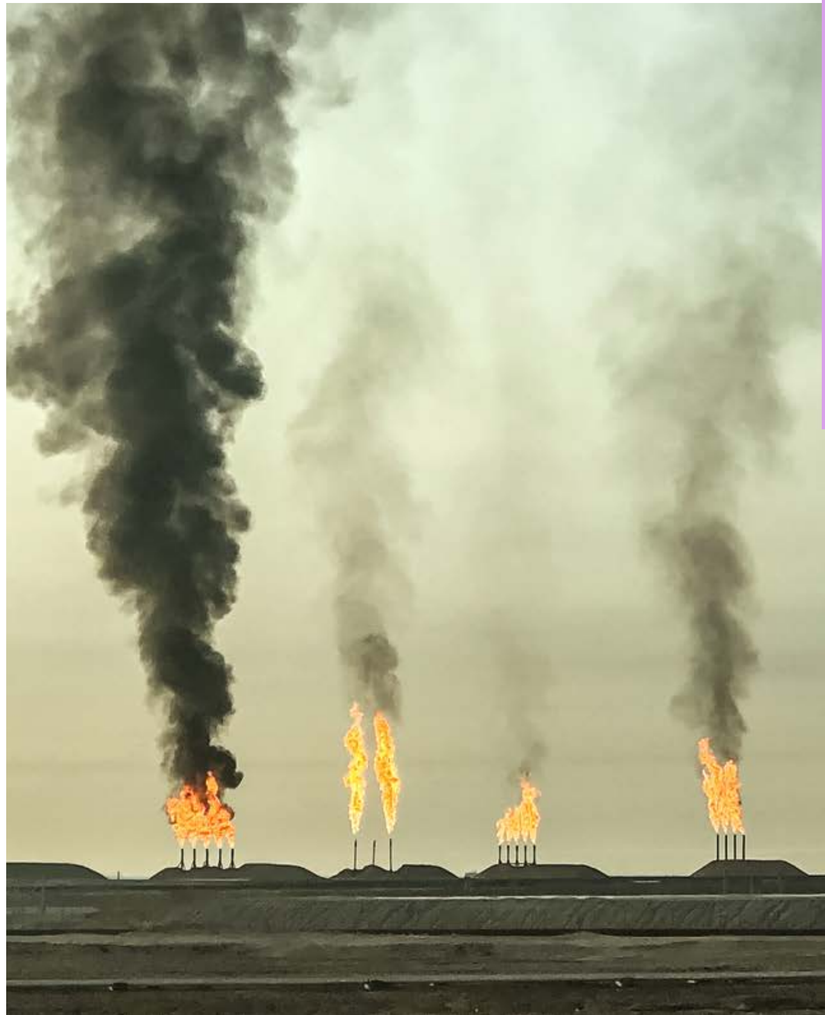
Keep in mind that governments know these projects need to have insurance and if insurers don't step up, there may be some governmental intervention.

Conrad: I think the question for insurers and brokers is how do you hope to achieve the planned net-zero targets if you don't support some of this dirty work at the front end which will help enable us to get there?

You've touched on supply chain and labour shortages. In the past when these have occurred, what effect has it had on large claims? And secondly, do you think it's going to change miners' approach to holding spares and stock?

Brad: In BI claims, it's the classic 'time is money'. At times it's not only the large items that drive the critical path of a repair project. Even small items have to be examined to make sure they can be brought in on time or on a fast-tracked basis.

Conrad: The mining equipment market is supposed to triple in the next decade so, if you have some critical piece of equipment that fails or breaks and you need to replace it, all of a sudden you have three times the competition out there for the same parts and equipment. This heightened demand for equipment could delay the repair timeline.



Some industry sectors are known for their collegiate response to major incidents, and history has shown competitors sometimes collaborate and share parts or cede positions in OEM's production queues. Do you have experience of the mining sector behaving that way?

Brad: I've seen that over and over in certain industries. But mining process equipment is so bespoke to the site and the process and I've rarely seen critical equipment that could be found elsewhere. As well, the mining world isn't that well known for having bigger, more costly units as spares.

The position that 'we've got to get dirty before we get green' is not factored into many (if any) commentators' graphs that illustrate the pathway to 1.5ºC above pre-industrial levels in 2025. Were it to be factored into temperature outcome graphs, it would likely illustrate an increase in temperature over the next 10 years before a more rapid decrease towards 1.5ºC levels as we approach 2050. Only time will tell what the shape of the actual temperature achieved graph will look like in 2050. For now, there appears significant opportunities for the insurance sector to support the construction of new mine sites in order to achieve the forecast production of EV cars in 2050.

THERE'S GOING TO BE A BOOM IN CONSTRUCTION AND THAT WILL CREATE ALL THE CHALLENGES - SHORTAGE OF SKILLED LABOUR, OF EQUIPMENT AND THE NECESSARY TRANSPORTATION TO DEAL WITH IT.