Mining Magazine

Digitisation key to attaining ESG goals

Better record-keeping is critical to meeting environmental and social goals

Miners are under pressure to achieve and surpass ESG targets.

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Achieving improved ESG performance is becoming ever more necessary for mining companies, and is creating an opportunity for companies to use an array of technologies to achieve these ends.

Jax Jacobsen

"I think mining companies have all come to the realisation that market expectations of them to be a good citizen is an essential part of the journey," Partners in Performance's Global Leader of Energy Transition Keith Russel told *Mining Magazine*.

"There are very clear market stakeholder pressures from big funds, and others, and obvious pressures from a government and regulatory perspective as nations go on the pathway to decarbonisation," Russell said. "There's also a growing need desire from customers to be able to buy green metals."

Pressures are not solely external, Russell noted.

"Employees want to be part of a mining company that is green and socially responsible, and very clearly going down this pathway," he said. "From all areas, there is significant pressure to decarbonise."

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r incorporating more renewable ergy into mine projects to lower eenhouse gas emissions, corporating digitisation increases ficiency.

igital is very valuable in nderstanding energy demands, and getting the mix right between storage and the grid," he said.

Partners in Performance's Eric Powell, who heads the North American energy transformation team, said digitisation is necessary to improve grid management.

"When you think about the meter elements, being able to build some solar or renewable resource then understanding how it sinks to the grid, [using digital tools] gives mining companies optionality from a reliability perspective," he said. "You just cannot pour power back onto the grid at will, without it having implications on reliability. That's why digitisation is so critical when it comes to grid management."

Digitisation will allow systems to recognise patterns and flows from the power source to the mine, allowing the grid to quickly respond and also for the grid to be optimised, Powell said.

Employing digitisation technologies also has improvements for asset management, Powell added.

The benefits of digitisation also extend to optimising mining processes, Russell said.

"Digitisation allows us to optimise the overall process all the way through - existing diesel trucks, grinding circuit, smelting circuit," he said.

"It allows us to understand the points at where we're consuming excess energy, understand the raw materials that are going into the grinding circuit, and adjust the circuit in a manner that produces optimum with minimum energy," he said.

Using these tools, mining companies can often a five to 10 percent reduction - and occasionally 15% - in energy use without changing the technology or the source of energy.

"It's maintaining the same processes and using them optimally, which is a very significant digital opportunity."

Embracing more digital tools can also have a positive impact on fleet management, he said.

Making a dent in fleet emissions can only really happen if you have automation, Russell said, and digitising mine operations goes a long way to allowing that automation to happen.

"I think with underground mining, and the capacity to use battery-operated vehicles underground, the technology is in pretty good shape, and that ends up being cost-competitive," Russell said.

"But in open=pit, we're still on a journey that has to happen from a technology perspective to deliver effectively on a zero-emissions machine," he said."

"Another pathway, and the best solution, is to end up with smaller trucks, which only works if you have automation."

Digitisation can also help mining companies move forward on another aspect of ESG which may at times be harder to measure, social relations.

But digitalising these processes can even improve this aspect, Powell said.

"It gives the community more transparency as to what's going on, and how all the moves towards decarbonisation are providing benefits to communities."

Adopting a more digitalised approach can also help with closure issues, Powell noted.

During closure, if a company needs to invest in carbon offsets, having digitised its operations will play "a huge part in that process," Powell said.

"With carbon credits, there's a mine that has committed to reducing an X amount of carbon, and wants to invest in a renewable project or nature-based solution where, for an example, a forest will never be harvested," Powell said.

"What is required is evaluation, verification, and measuring. To calculate the carbon offset, you'll take a sample growth pattern in a forest, look at the canopy, and use AI digitisation to identify carbon absorption and extrapolate it over the whole area, to set the baseline."

Digital tools will also be used for tracking and verification, he said.

"For mining companies navigating multiple reporting schemes, having to report through multinational organisations, you have to report the right way to meet targets," Powell added, emphasising that digitisation was the only way to accomplish this.

Changes to corporate behaviour required

While digitalisation has a myriad of benefits, it will require that corporations reimagine their existing relationships with companies and organisations in their ecosystems, SAP's Global Lead for Mining Ruediger Schroedter said.

"I think that [mining companies] will have to engage more directly with their suppliers to get this data," he told *Mining Magazine*.

"They will need to look into collaborative programmes," he said, adding that SAP has developed software to facilitate collection and maintenance of this kind of data.

Companies will also need to streamline the kinds of data they collect across their company, in all regions, Schroedter said.

"Companies need to look into harmonising IT to capture their data," he said.

"Global companies often have different platforms [within the company], and this makes it much harder" to collect and analyse data.

"For example, if you have the company using SAP in some areas, and Microsoft Excel in others - a scenario which is very common - then having a standardised to track inventory is very difficult."

Companies will also have to revamp their internal processes and expend more effort to provide meaningful and accurate reports to these new carbon-tracking organisations.

"At the moment, a lot of companies are trying to do the bare minimum in reporting standards for their sustainability reports," Schroedter said.

"They do it once a year, and it's quite labour-intensive to collect this data. I believe in the future that they'll have to do it on a quarterly basis, much more frequently. The more manual labour you have involved [in collecting and analysing data], the less capable companies are" in meeting these frequent reporting requirements.

To respond to these new expectations from investors and other stakeholders, companies will need to go full-digital, Schroedter said.

"Everything has to be highly automated, and calculations will have to be auditable - this means no more assumptions and calculations in Excel, and copy and pasting it to the sustainability report," Schroedter said.

"If these companies do not provide the proper sustainability reporting in regards to their emissions, they may get blacklisted by important investors. It could have an impact on their stock prices, on their financing, on their ability to secure their loans, and so on."

While global mining companies are by and large aware of the need to improve their digitisation, not all mining companies have made this realisation.

"You'll find that larger companies are probably more exposed to regulations and scrutiny so they invest heavily in reporting, while smaller companies are a little more behind the curve on this one," Schroedter said.

"At the end, they'll have to do it all the same."