

Demand for engineers outstripping supply

JAMES DUNN



Far from basking in its status as the producer of Australia's most valuable export in 2018-19, the coal industry is struggling to fill the jobs it has to offer — despite generally being one of the highest-paying of the resources industries.

Coal mining is not only being affected by the stark plunge in the nation's numbers of graduating mining engineers—from 300-plus a year in the mining boom of the 2000s, to a predicted 47 in 2020—but also by the concerted campaign of green activism and 'lawfare' directed against the industry.

But for coalmining professionals, the twin demand-supply situations — for the commodity, and for workers — are both favourable, says Erkan Topal, Professor of Mining Engineering and Metallurgical Engineering at Curtin University's Western Australian School of Mines (WASM).

"Demand for coal will increase further, over the short and medium term, at least until 2035," says Topal.

"I don't think the recent legislative developments and pressures from activists will significantly affect the demand for coal, as the demand for energy increases as well as the increase in world population. Currently, half of the world

population has very limited or no access to electricity and coal is still the cheapest source of energy.

"There are more coal projects coming up in Australia; it is not just Adani in Queensland. More technical specialist jobs will be required in the future, but because of the lack of student enrolments, I expect the salary level for these jobs will further surge in the near future," he says.

Troy Turner, managing director at mining consulting firm Xenith Consulting, says coal jobs usually pay more than similar roles in gold or metals, but he is not so sanguine about the industry's prospects. "Greenfield (new) coal developments have definitely slowed down due to activism and legal challenges, and a lot of recent work has gone more towards brownfield (existing operation) expansions, infrastructure sharing, et cetera, at existing sites. New coal developments could expect a four-to-five-year time frame for full approvals pathways through the state and federal governments."

Turner says the main specialist professions that are employed in the coal industry include mining, maintenance, electrical, processing and geotechnical engineers, as well as geologists, metallurgists, environmental scientists, health and safety specialists, and financial analysts. He says the majority of these skills are redeployable in other mining industries, although some specialists exist in all areas.

"This is usually state-by-state," he says. "For example, coal is by far the largest mining industry in Queensland and NSW, whereas in South Australia and Western Aus-



Workers bore into the coal seam to create an access tunnel for the longwall miner at BHP's Broadmeadow underground mine

tralia, the base metals, precious metals and iron ore are the major industries. Depending on where people want to live drives them into one industry or the other, purely by geography."

While the technical expertise required is similar to other mineral

commodities, Topal points out that coal also requires specialist workers, depending on the mining methods used.

"For the coal seam close to the surface, we use open-cut (strip) mining, which includes removing the overburden using a dragline —

requiring a highly skilled operator — and truck and shovel for the removal of the coal, which is similar to mining of other commodities. If the coal seam is at certain depth, then we need to use an underground mining method, mainly longwall mining which utilises a

machine called a shearer, which has a rotating drum to cut the coal, and moves back and forth continuously. However, most of these skill sets can be utilised in the other mining commodities, if necessary," says Topal.

And coking (steelmaking) coal

has much the same kind of job requirements as thermal coal, says Turner. "Some specialities exist more in the downstream areas of coal processing, logistics and marketing, but on the mine site itself, job requirements are very much the same."

Although it has been slower to adapt to technological applications—for example, 'remote' mining, artificial intelligence (AI) and big data use — than the gold and metals sector, coal mining has made big strides in recent years, since BHP launched an integrated remote operations centre (IROC) in Brisbane, covering 10 coal mines

The Simulation Group, as the future."

Topal points out that there are remote-controlled coal ports and coal washeries, and that automation brings as much potential for new jobs as it is likely to take away from on-site employment. "Any reduction in jobs at the mine sites is likely to be compensated by proportionate increases in the form of remote operators, as well as new jobs in the mining equipment industry, and associated IT-related support systems," he says.

Like the rest of the resources industry, coal mining and processing is trying to build its gender diver-

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WA SCHOOL OF MINES

and the Hay Point Coal Terminal near Mackay, emulating its iron ore IROC in Perth, which controls iron ore operations right across the Pilbara, covering more than 1500km of rail, stockyards, and two separate port facilities.

"The coal industry has been slower to catch up on automation when compared to the iron ore industry in Western Australia, but autonomous haul trucks, drills and trains are all happening now," says Turner. "The remote mining is a big innovation in the last four years. There is a big push on for industrial mathematical problem solving using unique software applications — we are working with our clients in conjunction with companies like Polymathian and

— but it is off a low base, and there is still a heavy preponderance of males. "Due to the university degrees required, it can be traced right back to high school and the fact that girls aren't studying the mathematics, physics and science subjects to allow them into the degrees required to work in mining," says Turner. "These days, gender diversity is generally at the 15-20 per cent female, with some companies aiming even higher."

Topal concurs with that proportion. "There has been a sustained effort by the industry to address the issue, but I think we still have a bit more work to do," he says. Likewise, "pay equality is in a much better position, but still has a bit of a way to go," he adds.

Take care of the planet, but let's not neglect ourselves

KATRINA GRACE KELLY



must have a scapegoat, someone to blame.

What does the weather have to do with Coal Mining? Absolutely nothing, extremely little, or absolutely everything, depending on who you ask.

Ask all the little schoolchildren who just went "on strike" for a day about coal mining, and its import-



large-scale power generation in the National Electricity Market, with the next highest being gas at just under 10 per cent.

Coal's dominance as a reliable source of energy over summer was even clearer in NSW, where 89 per cent of power came from coal. In Queensland it was 85 per cent and Victoria 82 per cent.

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