



Clean energy

Solutions for a clean energy world

Cleaner copper mining in a carbon neutral world

Introducing a new series of notes from Ellen Thomson – PGNAA & Minerals Senior Applications Specialist – looking at the challenges facing miners, and solutions to address them.

As the dust settles on COP26, we return to the hard work of implementing programs that will deliver the agreed objectives and keep 1.5C alive. Around 90 % of the world now has net zero targets in place, and these are becoming progressively more ambitious.¹ Progress in transport is particularly notable, with the largest car manufacturers aiming for a 2040 (2035 in leading markets) cut off for all new sales to be zero emissions.¹ After much negotiation, a commitment was made to move away from unabated coal power generation, focusing on the UN Sustainable Development Goal of providing ‘access to affordable, reliable, sustainable and modern energy for all’ by 2030.²

Realizing the vision of a clean energy world brings the issue of metal supply into sharp focus. Electric vehicle (EV) production is currently increasing the demand for many metals – cobalt, lithium, nickel, aluminum, and copper – and renewables are notoriously copper hungry, being around five times more copper intensive than conventional systems.³ We need to be smarter about recycling to make the most of every ounce of metal we take from

the ground. But there is no escaping the fact that we also need a far greater quantity of many metals in circulation. For copper, predictions suggest a growing divergence between supply and demand, with a shortfall of 15 million tonnes by 2034 based on current mine output.⁴

How will miners respond to this issue? Strong demand is good for business, but the industry faces strong headwinds too. Accelerating the discovery of new deposits and bringing them onstream will be crucial, but this typically means tackling poor quality ores – the low hanging fruit has gone. Working with copper concentrations of just 0.5 % is not uncommon. And negotiating the social license to operate is becoming tougher. Increasingly, communities expect mines to have smaller footprints and to minimize the environmental impact of tailings, leaving water supplies safe and intact, and not compromising energy reliability. Society is demanding more metals, but at the same time, better mining solutions.

As an engineer – a problem solver – I believe that, in many instances, the foundation of better mining solutions will be relevant and reliable information about the ore, the process and the product. This is where we – Thermo Fisher Scientific – have an important contribution to make. Using our sampling and analytical technology, miners can access the data they need to make smart decisions and build more efficient mining operations. Operations that use less energy and water, extract more metal from every tonne of rock, use less chemicals, and have lower environmental impact. This is how we plan to help mining customers to deliver a clean energy world.

In future notes I'll be exploring these ideas in more detail, starting with a closer look at exactly what you can measure with our technology. If you want to read ahead then take a look at thermofisher.com/copper.

References

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<https://ukcop26.org/cop26-keeps-1-5c-alive-and-finalises-paris-agreement/>

2 COP26 Outcomes 'Global coal to green power transition statement' Released 4th November 2021. Available to view at:

<https://ukcop26.org/global-coal-to-clean-power-transition-statement/>

3 J. Desjardins 'Copper: Driving the Green Energy Revolution', May 15th 2018. Available to view at:

<https://www.visualcapitalist.com/copper-driving-green-energy-revolution/>

4 O Da Silva News Item 'Rio Tinto Copper CEO: Copper Market to See Deficit by 2020s', April 10th 2018. Available to view at:

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