Battery metals – The Next Big Thing?

Mining and metallurgy have been linked throughout time to the development of the human race. You can argue that the First Big Thing was precious metals. Gold and silver have been symbols of wealth since at least Egyptian times. Then the Bronze Age signalled the Second Big Thing, base metals. This started initially with copper and tin to make bronze. Lead was also used during the Bronze Age. Then after this, the Iron Age brought on the Third Big Thing – ferrous metals. Initially this involved only iron. Over time platinum group metals were included with the precious metals and zinc, nickel, and aluminium with the base metals. Ferrous metals have certainly expanded the most *via* a vast array of alloys, notably steel and stainless steel.

So, what is the Next Big Thing? It has to be battery metals. After the interruption caused by the Covid-19 pandemic, the world has become engulfed by a green revolution. The most prominent aspect of this is rechargeable batteries, especially those for electric vehicles. These batteries require mainly lithium, nickel, cobalt, and manganese. Nickel and manganese were well established within the ferrous metals sector but lithium and cobalt were previously considered minor metals. Now, of course, lithium in particular is viewed as the 'flavour of the month'. Skyrocketing prices of lithium and cobalt in particular have caused an exploration boom, with geologists all over the world looking for lithium and cobalt, amongst many other metals.

From a metallurgical perspective battery metals bring new challenges. All battery metals have to be supplied as very pure salts, usually a minimum of 99.9%, with lithium in the form of carbonate or hydroxide and the others in the form of sulphates. This has resulted in considerable process development research to meet the ever-increasing purity requirements.

The demand for battery metals has had, and will continue to have, an enormous impact on the global mining industry. Geologists, mining engineers, and metallurgists will continue to face greater challenges in the discovery, mining, and processing of battery metals. It is also fair to say that battery metals have really highlighted the contribution of the mining industry to global economic development. And long may this continue!

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