

New tech to recover pure graphite from aluminium waste granted patent

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A new technology developed by India's leading aluminium producer Vedanta Aluminium and Institute of Minerals and Materials Technology (IMMT), Bhubaneswar to recover high-purity graphite from aluminium waste has been granted patent.

The sophisticated technology enables the recovery of high-purity graphite (greater than 99 per cent) from aluminium industry waste. "Battery-grade graphite can be recovered from spent pot lining (SPL) and shot blast dust, the two waste streams generated during aluminium production, by using the new technology," said a scientist at IMMT.

This innovation not only aligns with India's circular economy and sustainability priorities but also holds the potential to significantly reduce India's dependence on imported graphite, which currently exceeds 70 per cent.

The graphite recovered by using the technology has demonstrated exceptional electrical conductivity and structural properties suitable for lithium-ion battery applications. Its atomic structure makes it highly effective for lithiation and delithiation, processes critical

for battery performance.

CEO of Vedanta Aluminium Rajiv Kumar said the patented technology is expected to be a game-changer as India's demand for electric vehicles, energy storage, and high-tech electronics is set to skyrocket in coming years. "The breakthrough technology has been developed by the in-house research and development (R&D) team in collaboration with IMMT. It also strengthens our

contribution to India's critical minerals roadmap while advancing the company's vision of zero-waste, future-ready manufacturing," he said.

Last year, India imported approximately \$41 million worth of natural graphite, to feature among the top three importers in the Asia-Pacific region, alongside South Korea and Japan. The high volume import underscores India's continued reliance on foreign

sources for critical minerals essential to high-tech industries, including electric vehicles and renewable energy storage.

"The patented technology for recovering high-purity graphite from aluminium industry waste offers a promising solution to reduce this dependency, aligning with national objectives for self-reliance in critical mineral resources," Kumar added.



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