

Silex World Unveils Ultra-Low Energy Process for Continuous Metal-to-Metal Production of Critical Materials

Continuous system converts waste into metals and alloys with ultra-low energy input, eliminating furnace-heavy processes and enabling scalable local production.

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/EINPresswire.com/ -- [Silex](#) World Ltd, a University of Leeds spinout focused on clean critical materials processing, today announced a breakthrough in ultra-low energy manufacturing, enabling continuous metal-to-metal production of critical materials from waste and low-grade feedstock.



Silex World - Image is for illustrative purposes only

The platform combines Silex World's alkali-based extraction process with a proprietary low-energy conversion stage, creating a continuous pathway from recovered material to usable metal and alloy forms.

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Materials production is too fragmented and energy-intensive. We've built a continuous, ultra-low energy system that takes waste to usable metal in a single step.”

Michael Hodges

The system operates with significantly reduced external energy input compared to conventional furnace-based and batch processing methods, shifting materials production toward a self-sustaining reaction-driven model.

Unlike traditional approaches that require multiple discrete stages and high-temperature furnaces, Silex World's system is designed to move directly from recovered feedstock to refined material outputs in a continuous flow.

This enables the transformation of waste-derived inputs into usable metals and alloys within a single integrated process.

As part of its commercialisation strategy, Silex World is advancing the rollout of production facilities in India, establishing an operational base for continuous processing of rare earth and

associated materials. The India deployment is intended to validate industrial-scale operation while supporting future expansion into the United States and Europe.

Critical materials such as rare earth elements and specialty alloys underpin sectors including electrification, defence, advanced manufacturing, and semiconductors. However, their production remains heavily reliant on energy-intensive processes and geographically concentrated refining capacity.

Silex World's platform is designed to address both challenges by enabling:

- * Continuous metal-to-metal processing from recovered and low-grade feedstock
- * Significant reduction in external energy requirements compared to conventional processing
- * Elimination of multiple high-temperature furnace stages
- * Modular deployment of processing capability close to feedstock or end-use

The system represents a shift from batch-based metallurgy toward continuous, energy-efficient materials production, with the potential to reshape how critical materials are manufactured and supplied.

Michael Hodges, Founder of Silex World Ltd, said: "Materials production today is fragmented, energy-intensive, and geographically constrained. What we are introducing is a continuous pathway—from waste to usable metal—that operates with dramatically lower energy input."

He added: "This is about collapsing the process chain. Instead of multiple stages across multiple locations, you have a single, continuous system that can be deployed where it is needed."

The platform has been developed with compatibility across a range of metal and alloy systems, including rare earth-based materials and industrial residues. Silex World is currently engaging with industrial partners, government bodies, and investors to explore deployment of continuous processing systems in key regions.

The company believes the technology aligns with global priorities around energy efficiency, supply chain resilience, and domestic capability in critical materials production.

About Silex World Ltd Silex World Ltd is a clean technology company focused on the recovery and processing of critical materials, including rare earth elements, using environmentally sustainable methods. A spinout from the University of Leeds, the company is developing scalable solutions to enable circular supply chains and reduce dependence on imported refining capacity.

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