Lithium Universe LIMITED
Building a Lithium Future

ASX ANNOUNCEMENT AND MEDIA RELEASE

20 January 2026

LU7 COMMENCES ENGINEERING PHASE FOR DESIGN OF DEMONSTRATION PV RECYCLING PLANT

Highlights

- Engineering phase commenced for modular PV-silver extraction demonstration plant
- In discussion with various engineering companies with industrial-waste recycling systems
- Proven capability in PV material-separation technology
- Will adapt design to incorporate Microwave Joule Heating Technology (MJHT) for delamination
- Plant to integrate Jet Electrochemical Silver Extraction (JESE) for high-purity silver extraction
- Final engineering company to be selected in the next quarter
- Silver price reaches an all-time high – structural deficit
- Solid state battery EVs to require 1-2 kg of silver per vehicle

Lithium Universe Limited (ASX: LU7) ("Lithium Universe" or "the Company") is pleased to advise that the engineering phase has commenced for its modular photovoltaic panel (PV) silver-extraction demonstration plant. The Company is currently engaging in interviews and technical discussions with several international engineering firms experienced in industrial-waste and recycling systems to progress the detailed design, engineering, and cost definition of the project.

The proposed demonstration plant is planned as a modular system with a nominal capacity of potentially one to four tonnes per hour and will incorporate the Company's proprietary PV material-separation technologies. The design will be adapted to integrate Microwave Joule Heating Technology (MJHT) for PV panel delamination, together with Jet Electrochemical Silver Extraction (JESE) for the recovery of high-purity silver from processed solar cells.

The modular configuration is intended to minimise site civil works, shorten construction and commissioning timelines, and allow future scalability and replication across multiple jurisdictions. Engineering firms under review are being assessed on their capability to deliver fully integrated, containerised or skid-mounted recycling plants, including mechanical design, electrical and automation systems, fabrication, and factory acceptance testing.
A working design workshop will be held in Europe in February with one of these engineering groups. The Company expects to select a preferred engineering partner and progress to the next stage of engineering in the next quarter.

INTEGRATION OF ADVANCED MICROWAVE AND ELECTROCHEMICAL TECHNOLOGIES

The engineering design phase follows LU7's acquisition of Macquarie University's Microwave Joule Heating Technology (MJHT) and Jet Electrochemical Silver Extraction (JESE) method, two complementary breakthroughs in sustainable metal recovery. Microwave Joule Heating Technology (MJHT) uses targeted microwave energy to heat the embedded silicon cells within PV modules, softening the EVA encapsulant that binds glass, silicon, and metallic layers. This enables room-temperature delamination of panels without crushing, furnaces, or toxic chemicals, preserving the integrity of valuable components while drastically cutting energy use and waste.

Jet Electrochemical Silver Extraction (JESE) then directs a fine, low-voltage nitric-acid jet (≈ 5 V) onto the silver pads of the delaminated solar cells. The process achieves > 95% recovery at ≈ 96% purity, while consuming ≈ 83% less acid and producing no heavy-metal waste. The electrolyte is continuously recycled, creating a closed-loop, zero-emission process. Together, MJHT and JESE form a two-stage sustainable recycling system capable of converting discarded solar panels into renewable sources of silver, silicon, aluminium, and critical metals, closing the materials loop for the clean-energy economy.

ENGINEERING SCOPE OF WORK

Under the expected terms of potential engagement:

1. Design a modular 1-4 TPHR demonstration plant integrating LU7's MJHT + JESE process sequence.
2. Develop equipment specifications, layouts, and material-handling schematics, adapting its proven PV-panel lines to replace mechanical shredding with microwave-based delamination.
3. Identify and source key components, including feeders, conveyors, heating chambers, jet-extraction cells, filtration systems, and automation controls.
4. Conduct engineering tests and trials to verify throughput, energy balance, and recovery efficiency.
5. Provide a fixed-price cost package for fabrication and assembly of the full modular unit.
6. Collaborate with LU7-nominated process-engineering partners for integration of the chemical and electrochemical sections of the system.
7. Prepare full fabrication drawings and assembly documentation suitable for pilot-plant construction in 2026.

DESIGN PHILOSOPHY – FROM SHREDDING TO DELAMINATION

Conventional PV-recycling systems rely heavily on mechanical shredding and high-temperature processing to break panels apart. While effective at bulk separation, these methods tend to contaminate materials, pulverise glass, and consume significant energy. The Company is therefore seeking an engineering group capable of supporting a fundamental shift, from destructive recycling to selective delamination.

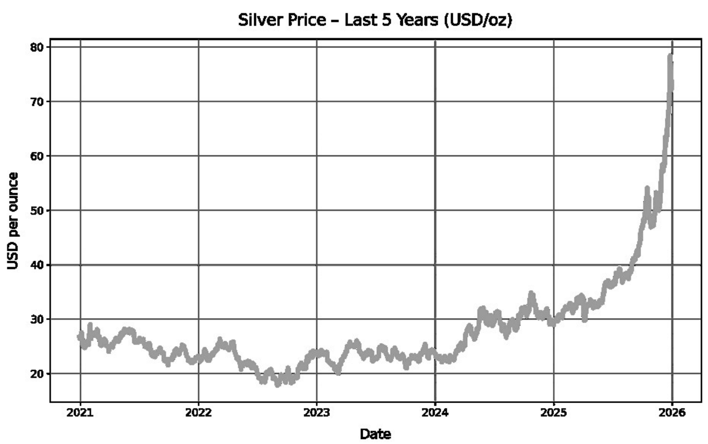
Under the proposed design, Microwave Joule Heating Technology (MJHT) will replace the initial shredding stage used in conventional PV-recycling lines. By selectively softening the EVA encapsulant using microwave energy, complete glass sheets can be separated intact, allowing the clean recovery of high-purity glass and silicon wafers.

Jet Electrochemical Silver Extraction (JESE) will then be incorporated as a downstream module, fitted with micro-jet nozzles, electrolyte recirculation pumps, and filtration cells to enable efficient recovery of silver from the liberated wafers. Together, these technologies are intended to form what is expected to be the world's first modular PV-recycling plant to combine microwave-based delamination with electrochemical metal recovery.

SILVER PRICE AT ALL TIME HIGH

The silver price has recently reached an all-time high, reflecting a growing structural imbalance between global supply and demand rather than short-term market volatility. Unlike previous price spikes driven by speculative cycles, the current strength in silver is increasingly underpinned by fundamentals.

On the demand side, silver consumption continues to rise across multiple industrial sectors. Photovoltaic solar panels remain the single largest growth driver, with silver playing a critical role in electrical conductivity and cell efficiency. This demand is being reinforced by electrification, grid infrastructure upgrades, electric vehicles, electronics, and emerging clean-energy technologies. At the same time, investment demand has strengthened as silver regains attention as both an industrial metal and a monetary hedge. Supply growth, however, has failed to keep pace. Global mine output has remained relatively flat, constrained by declining grades, limited new project development, and long lead times for bringing new capacity online. Much of global silver production is also a by-product of base-metal mining, limiting the industry's ability to respond quickly to higher prices. Recycling has not yet scaled sufficiently to offset these constraints.

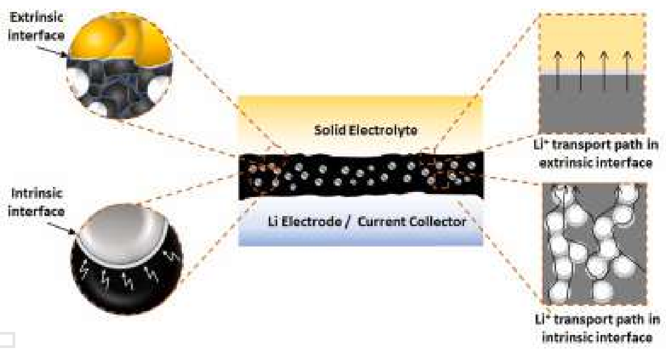


This widening gap between demand and supply has created a structural deficit that is expected to persist. In this environment, technologies that enable the efficient recovery of high-purity silver from end-of-life products, including solar panels, are becoming increasingly strategic, both economically and from a critical-materials perspective.

SILVER IN SOLID STATE BATTERIES

Silver is emerging as a strategically important material in the transition to solid-state batteries, driven by its exceptional electrical conductivity, chemical stability, and reliable performance under high current loads. As battery developers move away from liquid electrolytes toward solid ceramic or polymer systems, one of the central engineering challenges is maintaining low-resistance, durable electrical contact at key interfaces. Silver is particularly well suited to this role.

Samsung's solid-state battery program, led by Samsung SDI, makes deliberate and technically important use of silver, primarily as part of a silver–carbon (Ag–C) composite anode and in high-conductivity interfacial components. Samsung SDI uses silver as a critical enabling material in its solid-state battery design, primarily through a silver–carbon (Ag–C) composite anode and highly conductive interfacial components. Instead of conventional graphite, the Ag–C layer delivers exceptionally low electrical resistance, ensuring uniform current distribution across the anode. This uniformity suppresses localised current hotspots that can trigger lithium dendrite formation in solid electrolytes.



Samsung SDI solid state technology uses silver at the anode as Ag-C to prevent dendrite formation

Solid electrolytes, whether oxide or sulfide ceramics, are mechanically robust but highly sensitive to current inhomogeneity. The silver network acts as a current homogeniser, promoting smooth, controlled lithium plating and stripping at the interface. This directly improves cycle life and safety, addressing one of the historical weaknesses of solid-state battery designs.

Silver's very high electrical conductivity (~6.3×10^7 S/m) also supports high current densities without interfacial degradation, underpinning Samsung's ultra-fast charging claims of around nine minutes. Beyond the anode, silver is used in current collectors, contact grids and thin interface coatings, where its long-term chemical stability and compatibility with lithium and ceramic electrolytes outperform copper or aluminium under repeated cycling.

High-profile developments, including those reported by major electronics and automotive groups (like Samsung SDI), point to solid state batteries capable of ranges of up to 600 miles, lifespans measured in decades, and charging times of minutes rather than hours. With energy densities approaching 500 Wh/kg, almost double that of conventional lithium-ion cells, solid-state batteries have the potential to reshape the electric-vehicle market.

The implications for silver demand are significant. While today's EVs typically contain only tens of grams of silver, mainly in power electronics, solid-state battery vehicles are expected to use far more. Industry estimates suggest that up to around **1-2 kilogram of silver per vehicle** could be required once battery interfaces, internal contacts, and expanded power-management systems are included. As solid-state EVs move toward commercial production, this represents a material step-change in silver demand.

Executive Chairman Comment

"Our search is focused on identifying an engineering company with demonstrated experience in PV recycling and the practical capability to design, build, and commission complete recycling plants. We are engaging with engineering groups that bring deep expertise across photovoltaic, e-waste, and tyre-recycling systems, together with a proven ability to deliver fully modular units that can be rapidly deployed and scaled. Discussions with several shortlisted firms are progressing well.

Our objective is to develop the next generation of PV-recycling plants, moving away from destructive shredding towards controlled delamination and precise metal recovery. By combining robust mechanical engineering and modular plant design with our proprietary chemical and electrochemical processes, we aim to demonstrate a scalable, sustainable, and genuinely circular solution for the recovery of silver and other critical materials from end-of-life solar panels."

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Authorised by the Chairman of Lithium Universe Limited

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Forward-looking Statements

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ABOUT LITHIUM UNIVERSE LIMITED

Lithium Universe Limited (ASX: LU7) ("Lithium Universe" or "the Company") is a forward-thinking company on a mission to close the "Lithium Conversion Gap" in North America and revolutionize the photovoltaic (PV) solar panel recycling sector.

SILVER EXTRACTION - PV SOLAR PANEL RECYCLING STRATEGY

As the global demand for solar energy expands, solar panel waste is projected to reach 60–78 million tonnes by 2050, making efficient recycling solutions critical. Silver is essential for solar panels, electronics, and electric vehicles due to its unmatched electrical conductivity. Industrial demand has surged, especially from photovoltaics and AI technologies, creating a global supply deficit. With production lagging, silver prices have soared to record highs, reinforcing the economic importance of efficient recycling.

Lithium Universe has responded by acquiring Macquarie University's Microwave Joule Heating Technology (MJHT) and Jet Electrochemical Silver Extraction (JESE) method, a breakthrough in recovering valuable metals from end-of-life PV panels. The first stage, developed by Macquarie University, is Microwave Joule Heating Technology (MJHT), a process that uses microwave energy to selectively heat silicon cells softening the ethylene vinyl acetate (EVA) encapsulant that binds a solar panel's layers. This enables room-temperature delamination of glass, silicon, and metal layers without crushing, furnaces, or toxic chemicals. The result is a clean separation of materials, drastically reducing energy use, emissions, and chemical waste while preserving the integrity of high-value silicon and silver components. Following delamination, Lithium Universe applies its Jet Electrochemical Silver Extraction (JESE) process, a micro-jet electrochemical system that directs a fine stream of dilute nitric electrolyte onto the silver pads of solar cells. This method achieves over 95% silver recovery at 96% purity, while using 83% less acid and no chemical additives. The process operates at just 5 volts, recycles its electrolyte, and produces zero heavy-metal waste, establishing a true closed-loop recycling system. Together, MJHT and JESE form a sustainable, scalable recycling platform that converts discarded solar panels into a renewable source of silver, silicon, and other critical materials, a vital step toward circularity in the global clean-energy supply chain.

LITHIUM DIVISION

Lithium Strategy: Closing the Lithium Conversion Gap

Lithium Universe is at the forefront of efforts to meet the growing demand for lithium in North America. As electric vehicle (EV) battery manufacturers prepare to deploy an estimated 1,000 GW of battery capacity by 2028, the need for lithium is expected to rise dramatically. However, with only a fraction of the required lithium conversion capacity in North America, LU7 is determined to play a pivotal role in reducing dependence on foreign supply chains. The company is building a green, battery-grade lithium carbonate refinery in Bécancour, Québec, leveraging the proven technology developed at the Jiangsu Lithium Carbonate Plant. This refinery will produce up to 18,270 tonnes per year of lithium carbonate, focusing initially on the production of lithium carbonate for lithium iron phosphate (LFP) batteries. The refinery's smaller, off-the-shelf plant model ensures efficient operations and timely implementation, positioning LU7 as a key player in the emerging North American lithium market. With a strong leadership team, including industry pioneers like Chairman Iggy Tan, LU7 is well-positioned to deliver this transformative project. The company's strategy is counter-cyclical, designed to build through the market downturn and benefit from the inevitable recovery, ensuring sustained exposure to the growing lithium demand.

Second Refinery Strategy

Lithium Universe Limited has launched a second lithium refinery strategy in Brownsville, Texas, complementing its flagship Bécancour project in Québec. The initiative creates a binational refining platform to address North America's lithium conversion shortage and strengthen supply chain resilience. Strategically located near the Port of Brownsville, the potential site offers deep-water access, low labour costs, and streamlined permitting within one of the U.S.'s most business-friendly regions. Leveraging a "copy and paste" design from the proven Bécancour refinery, the Texas project can be rapidly deployed to serve nearby gigafactories, aligning with U.S. policy incentives under the Inflation Reduction Act.

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