Proof-of-Concept Completed for Medical Isotope Separation Technology

20 December 2023

Silex Systems Limited (Silex) (ASX: SLX) (OTCQX: SILXY) is pleased to announce the successful completion of Stage 1 – Proof-of-concept in the Medical Isotope Separation Technology (MIST) Project, which commenced in February 2023. Proof-of-concept was achieved with a Silex custom-built test system at its Lucas Heights facility, south of Sydney.

The Stage 1 results involve the demonstration of an isotopic enrichment effect for the Ytterbium-176 (Yb-176) isotope, the key pre-cursor for the production of Lutetium-177 (Lu-177) – a breakthrough in nuclear medicine therapy for advanced cancers.

Michael Goldsworthy, Silex's CEO/Managing Director, said:
"The proof-of-concept demonstration for enrichment of Yb-176 is a great result to end 2023, and clears the way to proceed to Stage 2 of the MIST Project – which aims to validate the process at prototype scale, including the first level of scale-up. Lu-177 underpins a revolutionary therapy for late-stage cancers called targeted beta therapy, and is already approved for use with prostate cancer patients in the US, UK and Europe. Clinical trials for the treatment of several other cancers, including breast, neuroendocrine, melanoma and thyroid, are ongoing around the world, with more approvals anticipated to follow."

"Yb-176 is difficult and costly to produce, with the Western world facing disrupted supply that previously came entirely from Russia until the invasion of Ukraine. Silex has learned from several sources that Yb-176 has traded for around US$16,000 per gram[1], which reflects the difficulties in producing this rare isotope. While the world market for targeted therapies is emerging, Silex believes it could grow rapidly with broader adoption," he added.

The results to date are preliminary in nature and follow-up testing will continue in the new year to build accuracy in test measurements and improve initial process efficiency. The focus in CY2024 will then turn to the design and construction of a prototype demonstration system, followed by enrichment testing.

The MIST Project also has the potential to provide a technology platform for application to other high value medical isotopes. The technology and all associated IP is wholly owned by Silex Systems.

Silex Systems Limited | ABN 69 003 372 067
LHSTC, New Illawarra Road, Lucas Heights NSW 2234
Telephone: +61 2 9704 8888 | Facsimile: +61 2 9704 8851 | Website: www.silex.com.au

1. Russia's Electrokhimprebor – the principal supplier of Yb-176 – has a production capacity of c.700g of enriched Yb-176 per year. This capacity can be compared with future expected demand: the volume of Yb-176 required for the treatment of 100,000 patients (four doses per patient) with Lu-177 is estimated at c.3kg annually (four times higher than current worldwide production capacity), and would constitute a US$48m annual market (at a cost of US$16,000 per gram Yb-176). Source: European Commission, Co-ordinated Approach to the Development and Supply of Radionuclides in the EU, pp. 127-128 (2021).

Authorised for release by the Silex Board of Directors.

Further information on the Company's activities can be found on the Silex website: www.silex.com.au or by contacting:

Michael Goldsworthy
CEO/Managing Director
T +61 2 9704 8888
E investor.relations@silex.com.au

Julie Russell
CFO/Company Secretary
T +61 2 9704 8888
E investor.relations@silex.com.au

Forward Looking Statements and Risk Factors:

About Silex Systems Limited (ASX: SLX) (OTCQX: SILXY)

Silex Systems Limited ABN 69 003 372 067 (Silex) is a technology commercialisation company whose primary asset is the SILEX laser enrichment technology, originally developed at the Company's technology facility in Sydney, Australia. The SILEX technology has been under development for uranium enrichment jointly with US-based exclusive licensee Global Laser Enrichment LLC (GLE) for a number of years. Success of the SILEX uranium enrichment technology development program and the proposed Paducah commercial project remain subject to a number of factors including the satisfactory completion of the engineering scale-up program and nuclear fuel market conditions and therefore remains subject to associated risks.

Silex is also at various stages of development of additional commercial applications of the SILEX technology, including the production of 'Zero-Spin Silicon' for the emerging technology of silicon-based quantum computing. The 'Quantum Silicon' project remains dependent on the outcomes of the project and the viability of silicon quantum computing and is therefore subject to various risks. Silex is also conducting research activities in its Medical Isotope Separation Technology (MIST) Project, which is early-stage and subject to numerous risks. The commercial future of the SILEX technology in application to uranium, silicon, medical and other isotopes is therefore uncertain and any plans for commercial deployment are speculative.

Additionally, Silex has an interest in a unique semiconductor technology known as 'cREO®' through its 100% ownership of subsidiary Translucent Inc. The cREO® technology developed by Translucent has been acquired by IQE Plc based in the UK. IQE has paused the development of the cREO® technology until a commercial opportunity arises. The future of IQE's development program for cREO® is very uncertain and remains subject to various technology and market risks.

Forward Looking Statements

The commercial potential of these technologies is currently unknown. Accordingly, no guarantees as to the future performance of these technologies can be made. The nature of the statements in this announcement regarding the future of the SILEX technology as applied to uranium enrichment, Zero-Spin Silicon production, medical and other isotope separation projects, the cREO® technology and any associated commercial prospects are forward-looking and are subject to a number of variables, including but not limited to, unknown risks, contingencies and assumptions which may be beyond the control of Silex, its directors and management. You should not place reliance on any forward-looking statements as actual results could be materially different from those expressed or implied by such forward-looking statements as a result of various risk factors. Further, the forward-looking statements contained in this Announcement involve subjective judgement and analysis and are subject to change due to management's analysis of Silex's business, changes in industry trends, government policies and any new or unforeseen circumstances. The Company's management believes that there are reasonable grounds to make such statements as at the date of this Announcement. Silex does not intend, and is not obligated, to update the forward-looking statements except to the extent required by law or the ASX Listing Rules.

Risk Factors

Risk factors that could affect future results and commercial prospects of Silex include, but are not limited to: ongoing economic and social uncertainty, including in relation to the impacts of the COVID-19 pandemic; geopolitical risks, in particular relating to Russia's invasion of Ukraine and tensions between China and Taiwan which may impact global supply chains, among other risks; uncertainties related to the effects of climate change and mitigation efforts; the results of the GLE/SILEX uranium enrichment pilot demonstration program; the market demand for natural uranium and enriched uranium; the outcome of the project for the production of Zero-Spin Silicon for the emerging technology of silicon-based quantum computing; the outcome of the MIST program; the potential development of, or competition from alternative technologies; the potential for third party claims against the Company's ownership of Intellectual Property; the potential impact of prevailing laws or government regulations or policies in the USA, Australia or elsewhere; whether IQE's commercialisation program for cREO® is resumed, the results from the program and the market opportunities for cREO® products; actions taken by the Company's commercialisation partners and other stakeholders that could adversely affect the technology development programs and commercialisation strategies; and the outcomes of various strategies and projects undertaken by the Company.