

MICRO-X NEXT GENERATION PROPRIETARY CNT X-RAY TUBES INSOURCED

Strategic shift to Insource and Manufacture a superior carbon nanotube emitter - Major technology project completed

KEY POINTS

- **Strategic shift to develop a next generation carbon nanotube emitter proprietary to Micro-X**
- **New Micro-X emitters provide superior quality and performance and improved reliability**
- **Significant commercial benefits of supply chain control, increased yield and margin improvements**
- **Manufacturing at the Micro-X facility in Adelaide - recently expanded for this purpose**
- **X-Ray tube Design Verification completed – ISO13485 and FDA supplier requirements**
- **Emitters manufactured at Micro-X Adelaide facility have passed all verification testing**
- **Reliability testing completing in the current quarter in the *Carestream DRX-Revolution Nano***

Adelaide, Australia, 15 July 2019: Australian hi-tech company Micro-X Ltd (ASX:MX1) (**Micro-X** or the **Company**), a leader in cold cathode x-ray technology for the health and security markets globally, is pleased to announce it has reached substantial completion on a major technology project for the development and manufacture of the next generation of carbon nanotube x-ray tubes, proprietary to and manufactured by Micro-X.

The core of Micro-X's revolutionary technology platform involves an x-ray tube containing a carbon nanotube (**CNT**) electron emitter. Originally this was manufactured by a third party supplier, XinRay, and this x-ray tube was the world's first and only not to use heated-filament electron emission which is the key to reducing size, weight, heat and power.

Now Micro-X has its own proprietary CNT emitter, manufactured in Adelaide, Australia. This technology will be used in all Micro-X's platform of x-ray products.

Strategic Shift to Insource & Produce a Superior emitter

In 2017, the Company identified a strategic need to obtain better control over the manufacturing process of the x-ray tube due to issues related to yield, production delays and transfer cost to the Company.

The Company determined it was necessary to undertake a major technology and engineering programme to overcome these issues for the current product and provide enhanced flexibility in future product designs, including the Rover and the Mobile Backscatter Imager product now being developed jointly in collaboration with Thales.

The core objective of this insourcing strategy was to reduce reliance on a third party vendor whilst achieving higher yield, increased commercial margins and improved reliability for our customers. Before the project, XinRay was the only supplier globally of emitters to Micro-X's requirements. This arrangement required considerable technical and financial assistance from Micro-X, with the technical team having to travel frequently to Raleigh in the United States, from Adelaide.

Overview of the Insourcing Project

This confidential, skunkworks-like project commenced in 2017 and has involved all elements of design, process engineering, production engineering and validation and testing. A key element was to meet or improve existing reliability standards and to ensure the support of key stakeholders including Carestream to create a seamless transition from the existing supplier to the Micro-X internally manufactured x-ray tubes.

As part of this Project, Micro-X recruited a small team of world leading experts in engineering chemistry and nanomaterials science. The team also worked with assistance from Flinders University and the University of Adelaide.

The Project involved the process engineering required to be able to manufacture this new Micro-X emitter in a highly compliant fashion and to meet the rigorous industry and regulator standards. The manufacturing process has now been locked down and design verification of the x-ray tube has been completed. This process meets both the ISO 13485 standards and also FDA requirements for supply of a Class II medical device. The manufacturing will take place adjacent to Micro-X's current Tonsley facility.

The Company has now created its own proprietary intellectual property around both the new CNT emitter and the method of manufacture, with a new patent now filed by Micro-X and in the process of being prosecuted.

Micro-X's first production tubes are now performing above expectations and will be ready to be fitted to *DRX Revolution Nano* deliveries for customers by Carestream following completion of a reliability testing program expected to conclude in Q3 CY 2019. This is to ensure there is no disruption to the sales process with Carestream.

The total project cost, which has already been expended, was approximately \$3 million, including the development work and new capital equipment. Micro-X has also been able to apply some of the funds from the \$2.4 million matching grant under the Federal Government's Advanced Manufacturing Growth Fund. Those grant funds have primarily supported the manufacturing components of the Project including the expansion of the Tonsley facility, announced recently.

Once final testing is completed later in this quarter, Micro-X will be one of only two companies globally capable of manufacturing CNT-based x-ray tubes. This in-house manufacture locally provides substantial benefits in reduced costs, reduced cycle time, improved quality, increased scalability and independence in the supply chain.

The Company currently has in place a supply contract with XinRay for x-ray tubes for the *DRX-Revolution Nano*.

Micro-X Managing Director, Peter Rowland, said: *"Today is a huge moment in Micro-X's history. The strategic and operational importance of having established and proven our own carbon nanotube and x-ray tube technology in-house cannot be overstated. We now have co-located with our product manufacturing in Adelaide, complete control of the technology which will shape our destiny with our current and future products as we develop and take to market the innovative x-ray products which only this technology can permit."*

"This new capability, together with the expansion in our business enabled by Thales's long term investment, will create at least another 20 new high technology engineering and manufacturing jobs at Micro-X in the next eighteen months."

Charlie Hicks, General Manager of X-ray Solutions at Carestream Health said: *"The advances Micro-X has made in this new X-ray tube design - both in the quality and potential lifetime of this innovative new tube - will be of great benefit to healthcare providers. We at Carestream are the first company to introduce carbon nanotube X-ray technology to the medical imaging field and as our sales of this new device grow, Micro-X is well positioned to quickly supply anticipated demand from customers."*

– ENDS –

About Micro-X

Micro-X Limited (the **Company**) is an ASX listed hi-tech company developing and commercialising a range of innovative products for the global health and security markets, based on proprietary cold cathode, carbon nanotube emitter technology. The electronic control of emitters with this technology enables X-ray products with significant reduction in size, weight and power requirements, enabling greater mobility and ease of use in existing x-ray markets and a range of new and unique security and defence applications. The Company has its core R&D, engineering and production capability at its facility in Adelaide, Australia.

The Company's first product, the *Carestream DRX Revolution Nano*, is an ultra-lightweight digital medical x-ray system for the rapidly expanding mobile x-ray market in hospitals and healthcare. The *Carestream DRX Revolution Nano* holds 510(k) and CE Mark certifications and is sold commercially in a number of global markets by the Company's exclusive distributor, Carestream Health, Inc.. The Company has a portfolio of innovative products in development, aimed at customer solutions where there is little or no competition. This includes the Mobile Backscatter Imager or MBI which will image Improvised Explosive Devices for security, defence and counter-terrorism applications. The MBI is being jointly developed in partnership with Thales, a global supplier of defence and security technology systems, who are providing technical support and \$10 million of funding.

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