

MEDIA RELEASE

3 DECEMBER 2021

HITACHI METALS SINGAPORE, A*STAR EXTEND JOINT LAB COLLABORATION IN METAL POWDERS TO DEVELOP NEW SOLUTIONS FOR LOCAL ADDITIVE MANUFACTURING PLAYERS

- *Partnership builds on existing joint lab collaboration – additional investment of S\$8.5m brings total investment to S\$14m*
- *Importance of metal powders customised for AM processes*

SINGAPORE – Hitachi Metals Singapore (HMS) and A*STAR's Singapore Institute of Manufacturing Technology (SIMTech) have extended by three years their existing joint lab collaboration to develop metal powders for additive manufacturing (AM) to enable players in the local AM ecosystem to reap more benefits from 3D printing. An additional investment of S\$8.5 million brings the joint lab's total investment to S\$14 million over six years¹.

Metal powders customised for AM processes are an emerging technology; most metal powders used in AM today are made for traditional manufacturing processes. Metal powders customised for AM processes could help manufacturers achieve breakthroughs in the performance of printed parts, such as in terms of quality.

The collaboration will continue to help HMS build capabilities to venture into AM by developing and producing metal powders for AM processes in sectors such as aerospace, automotive, oil and gas, and semiconductors.

Combining HMS's expertise in materials with SIMTech's capabilities in advanced manufacturing, the joint R&D team will continue to undertake projects in three key areas: develop new high-performance metal powders for metal AM; develop AM processes and relevant post-processes for industrial components; and develop quality assurance methodologies to evaluate the quality of printed parts.

In the past three years, the joint R&D team has established methodologies to optimise metal powders for AM processes, developed end-to-end AM solutions for industrial components, and developed a new process flow for quality assurance. In the next three years, the team will continue to co-innovate and co-develop technologies and processes

¹ October 2018 to September 2024

for high-performance metal powders aligning to the requirements of the industry, and refine powder atomisation process recipes to improve yield and quality.

Players in the local AM ecosystem that could benefit from the joint lab's R&D work include product owners, service bureaus, and AM equipment makers. Local companies can use AM materials developed at the joint lab to design new products and spare parts, or package the AM materials in their equipment processes. Product owners will be able to achieve faster product development with better performance and qualifications through co-innovation, while service bureaus will be able to leverage a wide range of high-performance materials to expand into higher-value businesses. AM equipment makers will be able to develop equipment solutions to better address the quality requirements of critical applications.

3D Metalforge, one of the most established additive manufacturers with manufacturing sites in Houston and Singapore and sales offices in Australia, is using Hitachi Metals' AM powder and metallurgical knowhow to enhance its value proposition for oil and gas parts printing, which require high performance quality such as high corrosion resistance and high strength. Hitachi Metals is looking forward to working with more such AM ecosystem players to bring AM adoptions to greater heights.

Housed at HMS's facility, the joint lab features an atomiser from SIMTech and is equipped with advanced powder-handling and quality assurance facilities. The atomiser can produce reactive powders such as titanium-based and aluminium-based ones, and non-reactive powders such as nickel-based and cobalt-based ones. It can also produce powders in smaller quantities to support local AM ecosystem from the development stage.

Dr Hajime Murakami, Chief Technology Officer of Hitachi Metals, Ltd, said: "Materials make the difference in the quality of AM printed parts. Having this joint lab with SIMTech and our local AM team in Singapore, we are looking forward to enhance our support to Singapore's AM ecosystem and to help accelerate adoption of AM and create value with our powder and the optimal processes jointly developed with SIMTech."

Dr David Low, Executive Director of A*STAR's SIMTech, said: "The quality of 3D-printed parts is crucial in manufacturing, and metal powders are an integral component. Public-private partnerships like the SIMTech - HMS joint lab continue to play an important role in encouraging businesses to adopt advanced manufacturing technologies to improve their processes, products, and services to become more competitive. We are excited to embark on another three years of co-innovation with Hitachi Metals Singapore to develop additive manufacturing solutions for Singapore and beyond."

Mr Lim Tse Yong, Vice President of Conglomerates for the Singapore Economic Development Board (EDB), said, "Congratulations to Hitachi Metals and SIMTech on the extension of their joint lab collaboration. This joint lab is a good example of how companies can forge partnerships with Singapore's public research ecosystem to drive the development of technologies including additive manufacturing. Such public-private

partnerships will contribute to Singapore's ambition to be a global business, innovation and talent hub for advanced manufacturing."

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About Hitachi Metals, Ltd

Hitachi Metals, Ltd., (TSE: 5486), headquartered in Tokyo, Japan, with consolidated revenue totaled about 762 billion yen in fiscal 2020 (ended March 31, 2021), is one of the major member companies of the Hitachi Group. Hitachi Metals manufactures and markets a diverse portfolio of specialty steel products, functional components and equipment, magnetic materials and applications / power electronics, wires, cables and related products. To learn more, visit www.hitachi-metals.co.jp/e/