

News Release

FOR IMMEDIATE RELEASE

Globally Expanding Sales of Electron Sources for Metal 3D Printing, Which Is Seeing Growing Demand

Tokyo, October 14, 2020 – Hitachi High-Tech Corporation (President and CEO : Masahiro Miyazaki/ Hitachi High-Tech) today announced that it intends to expand sales of single-crystal electron sources*¹ manufactured by Hitachi High-Tech's group company Applied Physics Technologies, Inc. (APTech) and currently used in electron microscopes etc., to the metal 3D printing markets in all countries around the world by using the global sales network it has built up.



【APTech Electron Sources】

In most manufacturing processes, the molds used in the manufacturing of metallic and resin components make mass production more efficient. However, in the cases of manufacturing prototypes or in high-mix low-volume production, the time and cost involved in making molds has become a major challenge. This is why 3D printers that form a structure by layering metal or resin have been garnering attention in recent years. Not only can this technology produce a prototype from design data without the use of a mold, but through the use of additive layers, it can also reduce the size of designs and components, as well as the number of components, which is difficult when using conventional production methods. In addition, with the use of 3D printing technology being promoted as national policy around the world, such as under Germany's Industry 4.0^{*2}, China's Additive Manufacturing Industry Development Action Plan^{*3}, and India's Make in India^{*4}, market forecasts predict that the equipment market, which was JPY 120 billion in 2017, will grow by up to five times that by 2030.

APTech has a wealth of experience and a proven track record in designing and

shipping electron sources to suit customers' required molding speed and density, offering several electron source product lines, including those using raw materials LaB₆ (lanthanum hexaboride), CeB₆ (cerium hexaboride) and HfC (hafnium carbide). APTech's strength also lies in its ability to independently design and manufacture single-crystal tip shapes and electron source assemblies to a variety of specifications. Hitachi High-Tech has leveraged APTech's product development expertise and proven quality and supply capabilities to promote the development of new customers and new applications outside of electron microscopy. As a result, Hitachi High-Tech will sell APTech electron sources for electron beam-type metal 3D printers, in which we expect to see future growth. In metal 3D printing, there is a laser-beam method and an electron-beam method. However, the electron-beam method, using APTech's electron sources, offers higher speed and output than the laser-beam method. In addition, as the manufacturing takes place in a vacuum, this method is capable of handling metals that have high melting points, such as titanium and copper, which are corrosion-resistant, heat-resistant and strong, yet susceptible to oxidization. It is therefore expected to be used in a wide range of fields, including manufacturing high-mix low-volume components such as aerospace engine system parts and automotive aftermarket parts—which used to suffer from high costs and long lead times to create molds—and also for prototyping custom products such as medical implants and prosthetics. In this way, research and development of metal 3D printers has not only made possible the production of prototypes, but also mass production of products and components. This brings with it great advantages for the future of manufacturing, such as further reducing the capital investment needed in integrating factory assembly lines and shortening supply chains, and customized mass production of products to meet customers' individual needs.

Hitachi High-Tech will continue to promote sales of electron sources to customers all over the world, leveraging Hitachi High-Tech Group's overseas network. Going forward, Hitachi High-Tech is committed to global sales leveraging the personal connections, business relationships and expertise it has cultivated as a specialist trading company, and creating high-value-added businesses that start with resolving customer's issues, in order to provide solutions that contribute to resolving the issues facing our customers in the manufacturing sector.

*1 Electron source: An electron component that generates an electron beam from its tip. It is used as a key part in electron microscopes, analyzers, metal 3D printers, etc.

*2 Industry 4.0: A national project for the manufacturing industry promoted by the German government, announced in 2011. One of the priorities in the High-Tech Strategy 2020 Action Plan.

*3 Additive Manufacturing Industry Development Action Plan: An action plan for the additive manufacturing industry, announced by the Chinese government in 2017.

*4 Make in India: An industrial policy announced and promoted by the Indian government, announced in 2014.

Website about APTech

https://www.hitachi-hightech.com/jp/products/advanced/electronics/electron_source/

■ Contact

Electronic Materials Dept., Social Infrastructure Div., Industrial Solution Business Group, Hitachi High-Tech Corporation (Contact: Araki)

Phone: +81-70-4300-0277

■ For Media inquiries

CSR & Corporate Communications Department, CSR Div.

Hitachi High-Tech Corporation (Contact: Nishikawa)

Phone: +81-80-9207-5949

###