



Press Release

Sandvik's new powder plant for titanium and nickel-based superalloys achieves AS9100D aerospace certification

Gas-atomized powders made at a new state-of-the-art facility in Sweden will accelerate the adoption of 3D printed titanium parts – and the shift towards sustainable manufacturing

Sandvik's new state-of-the-art powder plant for titanium and nickel-based superalloys has recently received the prestigious 'AS9100 Revision D' certification for deliveries to the aerospace industry. "Having atomized fine metal powders for more than 40 years, and supplying titanium to the aerospace industry since the 1980s, Sandvik is no stranger to powder atomization or the requirements of the most demanding industries," says Keith Murray, VP Global Sales, Sandvik Additive Manufacturing.

Sandvik's powder plant for Osprey® titanium and nickel-based superalloys was inaugurated in the end of 2019 in Sandviken, Sweden, with more than 150 guests including end-users in key industries like aerospace and medical. Since then an extensive work has been ongoing to ramp-up the highly automated plant, finetuning all processes and qualifying the powder to ensure the best possible consistency, morphology and quality suitable for additive manufacturing. As a result of the meticulous and structured work, the 'AS9100 Revision D' certification for aerospace was recently received, in the end of April this year.

"Now we are one of few companies that has the new and prestigious 'AS 9100D' quality certification for our Osprey® titanium powder and nickel-based superalloys used for additive manufacturing. It is a true milestone, which will facilitate many customer collaborations going forward. Imagine what 158 years of leading materials expertise can do for your additive process," says Keith Murray.

DRIVING THE SHIFT TOWARDS SUSTAINABLE MANUFACTURING

Titanium has exceptional material properties, being strong yet light and offering high levels of corrosion resistance. At the same time, it is biocompatible. However, the cost and complexity of machining from titanium billet have historically restricted its use to high value, low volume industries such as aerospace, medical and defense.

The launch of titanium powders for additive manufacturing supports a growing trend towards the 3D printing of titanium parts – and the shift towards sustainable manufacturing. The additive process results in far less material waste than traditional subtractive techniques, while also encouraging new levels of design freedom. This is opening up the use of titanium in other industries such as automotive and tooling. Sandvik's own Lightweight CoroMill® 390 is an excellent proof of the latter, where the additive version of the mill is more than 80% lighter and up to 200% more productive.

Powder metallurgy is also labeled as a 'recognized green technology' – and the net-shape capability of technologies like additive manufacturing not only means that material waste is minimized, but also that great energy efficiency can be achieved, by eliminating manufacturing steps.

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“If combining this with the opportunities with a light and strong material like titanium, the sustainability advantages can be enormous. Weight reduction is for example a constant key issue for the aerospace industry, driven both by fuel cost and carbon footprint. The same is true for cars and trucks, and everything else that moves. Each kilogram of weight loss on an airplane saves about 3,000 US dollars per year in fuel – and can make a great difference for the planet,” says Keith Murray.

INCOMPARABLE LEVEL OF TRACEABILITY AND EXCELLENT CONSISTENCY

Traceability is of vital importance in the aerospace industry. Sandvik can offer an incomparable level of traceability for its titanium powder, which is made possible by having the full supply chain inhouse – from titanium sponge to finished powder. The new titanium powder process uses advanced electrode inert gas atomization technology to produce highly consistent and repeatable titanium powder with low oxygen and nitrogen levels. The automated production process is also supported by several industrial robots and a dedicated downstream sieving, blending and packing facility.

“In additive manufacturing it is essential to use high-quality metal powders with consistent quality, adapted to the different additive manufacturing processes. Our highly automated manufacturing process ensures excellent consistency – and the powders demonstrate optimal particle size distribution,” says Keith Murray.

The new powder plant for titanium and nickel-based superalloys is located in Sandviken, Sweden, just next to Sandvik’s additive manufacturing facility, which includes all relevant additive manufacturing processes for metals. This means that the company can tailor the powder to different printing processes, on the same site.

Kristian Egeberg, President of Sandvik Additive Manufacturing concludes; “Sandvik is a world leader in metal powder for additive manufacturing with the widest alloy program on the market. Titanium powders represent the latest application of 158 years of materials knowledge and R&D – and more than 40 years in-house powder manufacturing capabilities. With the AS9100D certification together with all our experts in materials, metal powder and additive manufacturing, we can now help our customers succeed even faster in this high-growth area.”

The first two titanium powders produced at the plant are Osprey® Ti-6Al-4V Grade 5 and Osprey® Ti-6Al-4V Grade 23. The nickel-based superalloys are Osprey® Alloy 625 and Osprey® Alloy 718. Other alloys are available on request. In addition to the AS9100D certification, the plant is also certified according to ISO 9001, ISO 14001 and ISO 45001.

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Sandviken, Sweden, 29 April 2020

SANDVIK ADDITIVE MANUFACTURING

Sandvik Additive Manufacturing has a leading position within the AM metal powder market and has made sizeable investments into a wide range of AM printing process technologies for metal components since 2013. Adding 158 years of leading expertise in materials technology, 75 years in post processing methods like metal cutting, sintering and heat treatment, Sandvik has well-established and leading competence across the entire AM-value chain. In July 2019, Sandvik acquired a significant stake in BEAMIT, a leading European AM service provider with the largest printing facilities in Europe.

Materials technology is included in Sandvik’s DNA – and the company offers the widest range of metal powders for additive manufacturing and metal injection molding (MIM) on the market.

For further information: www.metalpowder.sandvik or www.metalpowder.sandvik/titanium

Sandvik AB is a high-tech and global engineering group with approximately 40,000 employees and sales of approximately 100 billion SEK in more than 160 countries (2019). The company was founded in Sweden in 1862.

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