

ALVANT MEDIA KIT: ABOUT ALVANT

A full-service supplier of unique advanced materials technology that's right for the time

With management changes and contract wins, Alvant has transformed itself from an R&D company into the provider of high-strength, low-weight Aluminium Matrix Composites

Alvant is a business specialising in Aluminium Matrix Composites (AMCs). Having operated as Composite Metal Technology (CMT) until June 2018, Alvant owns the proprietary rights to the AMC manufacturing process and has full-service capability, offering clients everything from engineering consultancy, concept development, and component design through to prototype manufacture, low-volume production, and intellectual property licensing for high-volume production.

Aluminium Matrix Composites are an advanced class of composite materials suitable for applications where conventional metals are expected to approach or exceed their performance limits. When compared to unreinforced metals, AMCs' advantages are many: greater strength, higher stiffness, lower weight, superior wear resistance, and lower coefficients of thermal and electrical conductivity. AMCs provide the strength and stiffness of steel at less than half the weight. This means highly loaded components made from traditional metals, such as steel, titanium and aluminium can be replaced by lightweight, low inertia parts without any increase in package size.

AMCs also offer advantages over carbon composite material, including higher transverse strength and stiffness, superior damage tolerance, and a higher thermal operating range. This means AMCs can be used to engineer more durable lightweight components for harsh environments.

Sophisticated Advanced Liquid Pressure Forming manufacturing process

Alvant was established (as CMT) in 2003 to explore the potential of Liquid Pressure Forming (LPF), the ground-breaking process for manufacturing AMCs. Alvant's original, primary role was as a research and development operation, to develop and refine LPF. This has resulted in Alvant's creation of the more sophisticated process known as Advanced Liquid Pressure Forming (ALPF). Alvant owns proprietary intellectual property rights to ALPF and additional processes.

Production-readiness of AMCs comes at a time of increasing commercial demand for strong but lightweight components in many forms of transportation, as well as industrial and consumer applications. Aerospace, automotive, marine and consumer goods manufacturers are all looking for ways to increase product capabilities and performance while simultaneously meeting ambitious goals for fuel efficiency and sustainability – conflicting challenges in which Alvant's AMCs are an attractive solution.

Richard Thompson, commercial director of Alvant, commented: "Alvant developed and refined Aluminium Matrix Composites during the years when high-tech industries were going through the honeymoon period with carbon composites. Now that certain disadvantages with

carbon composites and polymer composites are better understood, , AMCs' time has arrived.

“Product manufacturers are becoming more aware of how AMCs can sometimes be a better alternative than other composite materials or unreinforced metals, and the calibre of partners signing-up to new projects with Alvant is evidence of this. Increased interest in AMCs has coincided with a more commercially-driven, relaunched business renamed as Alvant, along with a revitalised management team. It's fair to say the real story of AMCs is just beginning.”

Growing interest in AMCs is affirmed by big-brand collaborative projects and government funding. In the last year alone, aerospace companies Rolls-Royce and Safran Landing Systems and car maker Ford Motor Company have all engaged in collaborative projects with Alvant. Some of these projects have been awarded, between them, £2m in grant funding, including £1.5m from the government-backed innovation agency Innovate UK.

Projects in aerospace, automotive, and 'breakthrough materials'

Some of ALVANT's work is subject to confidentiality agreements but a number of the company's recent and current projects can be identified to illustrate the industry sectors lining-up as early adopters of Aluminium Matrix Composites.

In March 2017 AMC received a £705,000 grant from Innovate UK as part of a £1.4m project developing 'Next generation, low cost aluminium matrix composites for the emerging global market'. This project focuses on materials and process optimisation to achieve piece cost reductions of at least 25 percent whilst maintaining AMC's mechanical properties.

In April 2017, with £1.9 m of funding from the Government-backed Advanced Manufacturing Supply Chain Initiative (AMCSI), ALVANT concluded a £7.9m four-year collaborative project to bring its AMC technology to production readiness.

Since October 2017 ALVANT has been engaged in a £1.6m, 30-month R&D project with Ford Motor Company, developing a new casting method for the manufacture of hybrid-AMC components for high-performance production cars. For this project ALVANT was awarded £751,000 of grant funding from Innovate UK.

In November 2017 ALVANT was invited by the international high-technology group Safran - active in the aviation, space and defence sectors - to participate in a £28m, two-year R&D project titled 'Landing Gear of the Future.' This will develop, mature and demonstrate key technologies to improve aircraft landing gear design, manufacture, operation, and cost of ownership. ALVANT anticipates receiving a £513,000 grant for its contribution to this work.

In May 2018 ALVANT will conclude a three-year, £1.2m R&D project it is leading with a grant of £412,000 awarded under the 'Make it lighter, with less' competition run by Innovate UK. Collaborating with industry world-leader GE Aviation, electric motors and controllers producer YASA Motors, and the National Composites Centre, this project is creating new computer aided engineering (CAE) software modelling packages for the design and analysis of AMCs to reduce product development lead times.

Alvant's ownership and operation

The Alvant Group comprises Alvant Group Plc and its wholly-owned subsidiary, Alvant Ltd. Through its research and development activities Alvant has a world-leading level of understanding of the behaviour and performance of industrial AMC materials. The Group owns intellectual property in the form of patents and technological know-how for the Advanced Liquid Pressure Forming (ALPF) technology that has been developed specifically for the manufacture of Metal Matrix Composites (MMCs). The ALPF patent has been granted to Alvant in the world's three largest market territories for MMCs, Europe, Japan, and the United States.

Alvant has a staff of 15 people including a management team that was revitalised in 2017 through a combination of internal promotions and external appointments. The company operates from industrial premises on the Prisma Business Park in Basingstoke, Hampshire, where it has three factory units, with a total floor area of 7,5000 sq ft, adjacent to its 1,800 sq ft offices. Alvant's first factory unit accommodates casting machines and foundry equipment, the second factory unit contains secondary processing machinery, and the third unit houses materials analysis and testing laboratories.

Alvant has the ability to undertake the processing of cast AMC components in-house, with fully operational production equipment that can manufacture reproducible, high-quality AMC components to OEM quality standards.

Alvant has the internationally-recognised ISO 9001:2015 quality management system accreditation. The company is working towards also obtaining the AS9000 aerospace accreditation and the automotive accreditation TS16949.

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