
Key Trends in Aerospace Advanced Manufacturing (2025)

Core Technology Advancements

- **Digital Twin & Modelling:** Real-time simulation and predictive maintenance using digital replicas of aircraft systems are transforming design and lifecycle management.
- **Additive Manufacturing (3D Printing):** Rapid prototyping and lightweight component production are accelerating innovation and reducing waste.
- **Advanced Composite Materials:** Carbon fibre, ceramic matrix composites, and hybrid laminates are enabling stronger, lighter, and more heat-resistant structures.
- **Precision Manufacturing:** Ultra-tight tolerances and zero-defect standards are being met with AI-enhanced machining and inspection systems.

Platform & System Innovations

- **Propulsion Systems:** Electrification, hybrid engines, and sustainable fuels are reshaping propulsion architectures for both commercial and defence aircraft.
- **Electronic Aviation Systems:** Integration of avionics, sensors, and autonomous control systems is expanding capabilities in UAVs and next-gen aircraft.
- **Heat Shielding & Thermal Management:** New materials and coatings are critical for hypersonic vehicles and reusable space platforms.

Strategic and Market Drivers

- **Supply Chain Resilience:** Post-pandemic disruptions and geopolitical tensions are pushing manufacturers toward more agile, localized, and digitized supply chains.
- **Sustainability & Emissions Reduction:** Lightweight materials, fuel-efficient designs, and circular manufacturing practices are central to meeting global climate targets.
- **Defence Modernization:** Increased global defence spending is driving demand for multi-domain integration, stealth technologies, and rapid deployment capabilities.
- **Commercial Space Expansion:** Startups and private ventures are accelerating timelines and lowering costs for satellite and launch vehicle production.

Emerging Business Models

- **Modular Design & Multi-Tenant Platforms:** Aerospace OEMs are adopting modular architectures to support variant configurations across defence and commercial fleets.
- **M&A and Strategic Partnerships:** Consolidation and joint ventures are reshaping the competitive landscape, especially in propulsion, avionics, and space systems.
- **Workforce Transformation:** Upskilling in digital tools, automation, and systems engineering is critical as legacy expertise retires and new talent enters.

Aerospace Advanced Manufacturing: Strategic Outlook and Sector Trends for 2026

Executive Summary

The aerospace advanced manufacturing sector is poised for a period of transformative growth and fundamental change leading into 2026. The market is defined by the powerful and inseparable convergence of two meta-drivers: comprehensive **digitalisation** (Industry 4.0/5.0) and an urgent, policy-driven push for **decarbonisation**. For the advanced manufacturing businesses of the Farnborough Aerospace Consortium (FAC), navigating this landscape requires a dual focus on enhancing operational resilience through technology and strategically aligning with the UK's ambitious green aviation agenda.

The global aerospace market is projected to reach a value of USD 409.08 billion in 2026, exhibiting a strong recovery and a forecast compound annual growth rate (CAGR) of 7.18% from 2026 to 2035.¹ Within this, the aerospace additive manufacturing (AM) sub-sector represents a nexus of high growth, projected to reach USD 8.8 billion in 2026 with a remarkable 16.2% CAGR.² The UK market reflects this positive trajectory, with aerospace parts manufacturing growing at a 3.7% CAGR and exports forecast to reach USD 40.3 billion by 2026.³

However, this growth is set against a backdrop of significant operational headwinds, including persistent supply chain disruptions and critical skills shortages. This report provides a detailed analysis of the key trends, challenges, and opportunities that will shape the sector in 2026, with a specific focus on their implications for UK Small and Medium-sized Enterprises (SMEs).

Key findings and strategic imperatives include:

- **Technology as a Prerequisite:** The adoption of digital technologies is no longer a competitive advantage but a prerequisite for participation in prime supply chains. By 2026, the industrialised **Digital Twin** will become central to lifecycle management, requiring suppliers to provide not just physical components but also their high-fidelity digital counterparts. **Additive Manufacturing** will continue its transition to certified, serial production, with automation in post-processing becoming a key enabler and a strategic opportunity for specialised service providers. **AI-driven quality control** will be critical to achieving the zero-defect standards demanded by the industry.
- **The Green Imperative Creates New Markets:** The UK's proactive environmental policy provides a clear market roadmap. The **Sustainable Aviation Fuel (SAF)**

Mandate, which requires a **3.6% blend in 2026**, creates a guaranteed domestic market for SAF and its entire ancillary supply chain—from specialised production hardware to certification systems.⁵ Similarly, significant UK investment in **hydrogen and electric propulsion**, led by projects from ZeroAvia and Rolls-Royce, signals long-term opportunities in novel powertrain and energy storage systems.⁶

- **Leveraging UK Strategic Programmes:** Government-led initiatives offer SMEs a direct pathway to funded R&D and strategic market positioning. The **Global Combat Air Programme (GCAP) / Tempest** should be viewed as a national technology accelerator, providing opportunities for SMEs to develop dual-use capabilities in areas like AI, advanced sensors, and digital engineering.⁸ The **Future Flight Programme** is actively building the ecosystem for Advanced Air Mobility (AAM), creating near-term opportunities in ground infrastructure, manufacturing, and traffic management systems.¹⁰
- **Building a Resilient and Skilled Future:** The critical skills gap, exacerbated by an ageing workforce, demands proactive engagement from SMEs. Partnering with new national initiatives, such as the **Defence Technical Excellence Colleges** launching in 2026, is essential for building a future talent pipeline.¹² Concurrently, embracing the **Circular Economy** by developing capabilities in high-value material recycling and designing for disassembly will become a key competitive differentiator and a requirement for resilient supply chains.

For FAC members, success in 2026 and beyond will be determined by their ability to make strategic investments in digital capabilities, align their innovation with the UK's decarbonisation targets, diversify into high-growth adjacent markets like commercial space, and collaborate to overcome shared challenges in skills and supply chain development. This report serves as a strategic guide to navigating that future.

2026 Strategic Outlook: The Convergence of Digitalisation and Decarbonisation

Global Market Dynamics & Forecasts

The global aerospace market is set to enter 2026 on a strong growth trajectory, having substantially recovered from prior disruptions. The market's total size is projected to reach **USD 409.08 billion in 2026**, with forecasts indicating further expansion to USD 762.7 billion by 2035, driven by a robust CAGR of **7.18%** over that period.¹ This expansion is underpinned by two primary forces. The first is the sustained resurgence in commercial aviation, which accounts for an estimated **70% of market growth**, fuelled by rising international passenger traffic and fleet renewal cycles.¹ The second is the continued strength of the defence sector, contributing the remaining **30%** of growth as nations modernise their air capabilities in response to a complex geopolitical environment.¹

Despite this positive outlook, the operational landscape remains fraught with challenges that will continue to define business strategy in 2026. The most significant restraints are systemic and persistent. Supply chain disruptions are reported to impact as much as **50% of all aircraft deliveries**, creating production bottlenecks and delaying revenue recognition for the entire value chain.¹ Compounding this issue are acute labour shortages, particularly in the Maintenance, Repair, and Overhaul (MRO) sector, where they affect an estimated **40% of operations** and are forcing airlines to extend the service life of older aircraft.¹ For the advanced manufacturing businesses that constitute the FAC, this global context signals a market characterised by strong fundamental demand but significant operational friction. This environment places an unprecedented premium on production agility, supply chain visibility, and manufacturing efficiency—qualities that can only be achieved through deep technological integration.

The UK Context: Navigating a Proactive Policy Landscape

The United Kingdom's aerospace sector is forecast to mirror the positive global trend, albeit with its own unique set of drivers and strategic parameters. The UK aerospace parts manufacturing market is projected to grow at a steady **3.7% CAGR** through 2030, building from a 2022 base of USD 53.1 billion.³ On the international stage, British aerospace exports are forecast to climb to **USD 40.3 billion by 2026**, reaffirming the sector's critical role in the UK's trade balance.⁴

This growth is not merely a reflection of market forces; it is being actively shaped and stimulated by a clear and proactive government industrial strategy. The cornerstone of this is the **Advanced Manufacturing Plan**, a comprehensive framework backed by **£4.5 billion** in targeted funding for strategic sectors. Within this, **£975 million** has been specifically allocated to the aerospace sector to support R&D and innovation through 2030.¹⁵ The plan's ambitious goal is to nearly double the annual rate of business investment in advanced manufacturing by 2035, from £21 billion to £39 billion.¹⁷ This central strategy is complemented by other major policy initiatives, including the **Jet Zero Strategy**, which sets the national roadmap for aviation decarbonisation, and the **Future Flight Programme**, which is investing £300 million to accelerate the development of drones and advanced air mobility.¹⁰

This highly structured policy environment creates a distinct operational context for UK-based firms. It provides clear signals on national priorities, de-risks investment in targeted technology areas through co-funding, and establishes regulatory frameworks that can shape market demand. For FAC members, understanding and aligning with this policy landscape is not just a matter of compliance but a core strategic imperative for unlocking growth and securing a competitive position.

The Twin Pillars of 2026

Analysis of the technological, market, and policy drivers reveals that the aerospace advanced manufacturing sector in 2026 is fundamentally shaped by two powerful, intersecting meta-drivers:

- 1. Digitalisation (Industry 4.0/5.0):** This represents the pervasive integration of digital technologies across the entire value chain. It is the imperative to create 'smart factories' that are connected, data-driven, automated, and intelligent.²⁰ This drive is a direct response to the operational challenges of supply chain fragility and the need for enhanced productivity. It encompasses technologies such as the Digital Twin, AI-driven process control, and automated manufacturing systems.
- 2. Decarbonisation (Net Zero):** This reflects the global and national commitment to achieving Net Zero emissions by 2050. This imperative is driven by both stringent regulations and increasing market demand for sustainable products and processes. It is the primary force behind innovations in propulsion (SAF, hydrogen), lightweighting through advanced materials, and the adoption of circular economy principles to minimise waste and resource consumption.¹

By 2026, these are not separate trends but two sides of the same coin. Digital tools are essential for designing and manufacturing more efficient, sustainable aircraft. Decarbonisation goals, in turn, are accelerating the demand for the very advanced manufacturing technologies that fall under the digitalisation umbrella. This convergence is the central dynamic that all businesses in the sector must navigate.

Table 1: Aerospace Advanced Manufacturing Market Forecasts (2026)

<i>Market Segment</i>	2026 Forecasted Value (USD)	Key Growth Driver / CAGR	Source(s)
<i>Global Aerospace Market</i>	\$409.08 Billion	7.18% (2026-2035)	¹
<i>Global Aerospace Additive Manufacturing</i>	\$8.8 Billion	16.2% (2026-2035)	²
<i>UK Aerospace Parts Manufacturing</i>	~\$57.1 Billion (Extrapolated)	3.7% CAGR (2023-2030)	³
<i>UK Aerospace Exports</i>	\$40.3 Billion	1.1% YoY Average Growth to 2026	⁴

The data in Table 1 immediately grounds the strategic discussion in tangible market realities, allowing FAC members to benchmark their own growth ambitions against the wider industry. The stark contrast between the overall market's healthy 7.18% CAGR and the explosive 16.2% CAGR of the additive manufacturing sub-sector provides a clear, quantitative signal as to where the most dynamic technological and commercial opportunities are concentrated.

This landscape, however, presents a complex challenge for the UK's SME-driven supply chain. While the UK government is channelling significant investment into high-level R&D through initiatives like the Aerospace Technology Institute, the most pressing day-to-day threats for SMEs are operational volatility and skills gaps.¹ This creates a potential "productivity paradox," where firms may have access to funding for forward-looking innovation but lack the stable operational foundation—a resilient supply chain and a skilled workforce—to effectively capitalise on it. The strategic imperative for FAC members in 2026 is therefore to strike a critical balance: they must pursue government-backed innovation while simultaneously making essential internal investments in digitalisation and workforce training to enhance their core operational resilience.

Furthermore, the UK's specific and ambitious regulatory frameworks, such as the SAF Mandate and the UK Emissions Trading Scheme (ETS), should be viewed not merely as compliance burdens but as instruments for creating a competitive moat. The SAF Mandate, for instance, creates a legally guaranteed domestic market for SAF-related technologies and components, beginning in 2025.²³ Similarly, the phasing out of free aviation allowances under the UK ETS by 2026 will compel UK-based airlines and primes to prioritise suppliers who can demonstrate low-carbon manufacturing processes and provide efficiency-enhancing technologies.²⁵ FAC members who align their capabilities with these specific UK mandates early will establish themselves as indispensable partners for primes operating within the UK, granting them a distinct and defensible advantage over international competitors who are not subject to the same powerful domestic drivers.

Core Technology Advancements: From Potential to Production

The Industrialised Digital Twin

By 2026, the concept of the Digital Twin will have matured from a specialised tool for design and simulation into a fully integrated platform for managing the entire lifecycle of an aircraft, its systems, and its manufacturing processes. Global investment in the technology is on a steep trajectory, projected to surpass **USD 48 billion by 2026**, a clear indicator of its perceived value.²⁶ This investment is driven by tangible returns,

particularly in the realm of predictive maintenance, where the implementation of digital twin-driven programmes has been shown to reduce unplanned downtime by **15%** and increase labour productivity by **20%**.²⁶

Major UK-based primes are at the global forefront of this transition. Rolls-Royce has extensively deployed digital twins for its engine fleet, creating precise virtual copies of in-service engines that are continuously updated with real-time sensor data. This allows engineers to monitor engine health, predict component wear, and optimise maintenance schedules with unprecedented accuracy, moving from probabilistic to deterministic maintenance planning.²⁶ Similarly, Airbus is pursuing a strategy of "end-to-end digitalisation" for its aircraft families, including the A320 and A350. The company uses digital twins not only for product simulation but also for manufacturing optimisation, simulating factory workflows and using 3D data as the master reference to significantly reduce quality issues and shorten production lead times.²⁹

The defining trend for 2026 is the deepening convergence of Digital Twin technology with Artificial Intelligence (AI) and Machine Learning (ML). This fusion transforms the digital twin from a passive repository of data into an active, intelligent system. AI algorithms can analyse the vast streams of data from an asset in real-time, identify subtle anomalies that precede failures, and run complex "what-if" scenarios to model the impact of different operational decisions or potential supply chain disruptions.²¹

This evolution among primes has a profound and direct implication for the supply chain. The creation of comprehensive digital twins for entire aircraft and engines necessitates the integration of equally high-fidelity models for every constituent part. As a result, by 2026, the delivery of a physical component will increasingly be insufficient. A new "digital handshake" will become a contractual norm, requiring suppliers to provide a validated "component twin" that can be seamlessly integrated into the prime's master digital ecosystem. This represents a fundamental redefinition of the "deliverable" from a purely physical good to a tightly integrated physical-digital package. For FAC members, this means that investing in the skills and software to design, validate, and deliver these digital assets is no longer a forward-looking aspiration but an urgent business necessity to maintain their position in the supply chain.

Additive Manufacturing at Scale

Additive Manufacturing (AM), or 3D printing, will continue its rapid ascent in 2026, with the global aerospace AM market projected to reach **USD 8.8 billion** on the back of a powerful **16.2% CAGR**.² The industry's focus is now firmly on the transition from rapid prototyping to the certified, serial production of flight-critical parts.³¹ This shift is exemplified by major suppliers like GKN Aerospace, which is scaling up to 100% serial

production of a flight-critical Fan Case Mount Ring using AM by the end of 2025, a landmark achievement demonstrating the technology's maturity.³³

The primary enabler for this scaling is the increasing **automation of post-processing**. Historically, the manual labour required for tasks like support removal, surface finishing, heat treatment, and inspection created a significant bottleneck that limited throughput. In response, leading AM facilities are now integrating their printers with automated multi-axis machining centres, robotic handling systems, and automated pallet changers to create a seamless production line, particularly for the low-volume, high-mix part portfolio typical of aerospace.³²

In terms of materials and processes, advanced metal powders such as titanium alloys, nickel superalloys (e.g., Inconel 718), and high-strength aluminium alloys remain the dominant choice for structural and high-temperature applications.³⁴ Concurrently, high-performance polymers (like PEEK) and advanced composites are seeing increased adoption for cabin interiors, ducting, and complex non-structural components.³⁴ Powder Bed Fusion technologies, including Selective Laser Melting (SLM) and Electron Beam Melting (EBM), have become the industry standard for producing parts with the high precision and material integrity required for aerospace applications.²

Despite this progress, significant hurdles remain for SMEs. The high initial capital investment for industrial-grade metal AM systems and the lengthy, complex process of achieving part certification from bodies like the FAA and EASA act as substantial barriers to entry.² The Aerospace Technology Institute (ATI) has highlighted the 2026-2028 period as a critical window, with key decision gates for integrating AM into next-generation defence and civil aircraft programmes rapidly approaching. Missing this window could risk long-term exclusion for a generation of aircraft.³⁶

This dynamic, however, creates a clear strategic opportunity within the regional ecosystem. The high cost of automated post-processing equipment, in particular, makes it prohibitive for many individual SMEs to acquire. This opens the door for a new, collaborative business model: "AM Finishing-as-a-Service." One or more FAC members could strategically invest to become a regional centre of excellence for automated, certified post-processing. Such a facility would serve multiple other members who are leveraging AM for part production but lack the capital or expertise to finish these components to the stringent standards of the aerospace industry. This service-based model mitigates capital risk for individual companies, leverages regional strengths, and collectively elevates the capability of the entire Southeast manufacturing cluster.

Next-Generation Composites: The Rise of Multifunctionality

The utilisation of composite materials in aerospace is well-established, with modern wide-body aircraft like the Airbus A350 being approximately 50% composite by weight.³⁷ The global aerospace composites market is forecast to continue its strong growth, expanding from USD 11.5 billion in 2015 to a projected USD 24.8 billion by 2025.³⁷ Looking ahead to 2026, the most significant trend is the evolution from composites valued solely for their strength-to-weight ratio to the adoption of **multifunctional composites**.

These next-generation materials are engineered to deliver multiple performance attributes simultaneously. Instead of being passive structural elements, they are becoming active components of the aircraft's systems. This includes embedding conductive fibres or materials to provide electromagnetic interference (EMI) shielding for sensitive avionics, integrating resistive elements for thermal management or self-curing capabilities, and incorporating fibre-optic sensors for real-time structural health monitoring.³⁸

UK-based companies and research institutions are playing a pivotal role in this field. Firms like James Cropper are developing innovative non-woven veils and laminates that act as carriers for these functionalities. For example, a single, specialised veil can be used to improve resin flow during manufacturing, enable energy-efficient out-of-autoclave curing through Joule heating (a process that can reduce energy consumption by over 95%), and provide a network for embedded sensing throughout the product's lifecycle.³⁸

To meet the high production rates required by OEMs, the industry is increasingly dependent on automated manufacturing processes. Technologies like **Automated Fibre Placement (AFP)** and **Automated Tape Laying (ATL)** are essential for rapidly and consistently fabricating large, complex structures such as wing skins and fuselage sections.³⁹ The UK's **National Composites Centre (NCC)**, a key part of the High Value Manufacturing Catapult, serves as a crucial national asset for developing and de-risking these high-rate manufacturing technologies, providing a vital bridge between academic research and industrial application for companies across the supply chain.³⁷

AI-Driven Precision and Quality

The pursuit of zero-defect manufacturing is a constant in aerospace, and by 2026, Artificial Intelligence will be an indispensable tool in this quest. The limitations of manual inspection are well-documented; human inspectors can miss up to **20-30% of defects**, particularly in high-volume or repetitive tasks where fatigue and inconsistency are factors.⁴¹ AI-powered quality control, particularly using computer vision, fundamentally changes this paradigm. These systems can analyse thousands of high-

resolution images per second, identifying and flagging microscopic cracks, surface imperfections, or dimensional deviations with a level of speed and accuracy that is impossible for human operators to match.⁴¹

The application of AI extends beyond final inspection into the heart of the manufacturing process itself. In precision machining, AI and ML algorithms are being deployed to optimise CNC toolpaths in real-time, predict tool wear to prevent out-of-tolerance parts, and schedule predictive maintenance on machinery before a failure occurs, maximising uptime and part consistency.⁴² In the quality management workflow, AI is used to analyse historical non-conformance reports and production data to identify the root causes of recurring defects. This enables a critical shift in quality philosophy, moving from a reactive mode of simply detecting defects to a predictive mode of preventing them from occurring in the first place.⁴³

This trend culminates in the creation of a "connected quality ecosystem." Metrology software providers are developing solutions, set for launch around 2026, that fully embed measurement and inspection data into the digital thread of the manufacturing process.⁴⁴ This creates a closed-loop system where data from a Coordinate Measuring Machine (CMM) or a 3D scanner on the shop floor provides real-time feedback that can be used to adjust design models or production parameters instantly. This integration of design, production, and quality into a single, data-driven workflow is the ultimate enabler of the ultra-tight tolerances and absolute process control that define modern aerospace manufacturing.

Platform and System Innovations: Engineering the Future Fleet

The Propulsion Revolution: SAF, Hydrogen, and Electrification

The drive to achieve Net Zero aviation by 2050 is the single most powerful force shaping the future of aircraft platforms and systems. By 2026, this strategic goal will be manifesting in three distinct but complementary technological pathways, each with profound implications for the advanced manufacturing supply chain.

Sustainable Aviation Fuel (SAF)

SAF represents the most critical and commercially viable near-term solution for decarbonising air travel, as it can be used as a "drop-in" fuel in existing aircraft and infrastructure.²² The United Kingdom has established one of the world's most definitive policy frameworks to stimulate its adoption. The **UK SAF Mandate** came into force on January 1, 2025, with a legally binding obligation for fuel suppliers to ensure SAF constitutes **2%** of the total aviation fuel mix. This figure is mandated to rise linearly,

reaching **3.6% in 2026**.⁵ This creates a guaranteed, non-discretionary domestic market for SAF, estimated to require approximately **286 million litres** annually from 2025 onwards.²²

The mandate is designed with a sophisticated structure to encourage technological advancement. It includes a cap on the use of Hydroprocessed Esters and Fatty Acids (HEFA), derived from waste oils and fats, which will begin in 2027. This is intended to leave market space for more advanced fuel pathways. Furthermore, a specific sub-mandate for **Power-to-Liquid (PtL) fuels**—synthetic fuels produced using renewable electricity, water, and captured carbon dioxide—will be introduced in 2028, signalling a clear long-term direction for the industry.⁵

This government-mandated market creation extends far beyond fuel producers. It ignites demand across an entire ancillary ecosystem. The construction of SAF production facilities requires a vast array of advanced manufacturing capabilities, including the fabrication of modular processing skids, specialised pumps, high-pressure valves, and advanced sensor suites for monitoring fuel quality and composition. Moreover, the scheme's reliance on a system of tradable Renewable Transport Fuel Certificates necessitates the development of robust, secure data management and tracking systems to ensure the integrity and certification of every batch of fuel. This presents a significant and immediate opportunity for FAC members to apply their expertise in precision engineering, process control, and digital systems to a new and rapidly growing domestic energy sector.

Table 2: UK Sustainable Aviation Fuel (SAF) Mandate Trajectory (2025-2030)

Year	Main Obligation (% of total fuel)	PtL Obligation (% of total fuel)	HEFA Cap (% of Main Obligation)	Total Obligation (% of total fuel)
2025	2.0%	0%	100%	2.0%
2026	3.6%	0%	100%	3.6%
2027	5.2%	0%	92.31%	5.2%
2028	6.6%	0.2%	87.88%	6.8%
2029	8.2%	0.2%	80.49%	8.4%
2030	9.5%	0.5%	74.74%	10.0%

Source: Data compiled from UK government policy documents ⁵

Hydrogen Propulsion

While SAF addresses the near term, hydrogen is widely seen as a key long-term solution for achieving true zero-emission flight. The UK government and industry are making substantial investments to secure a leading position in this revolutionary technology.⁶ By 2026, several key UK-led projects will be reaching critical stages of maturity.

UK-based **ZeroAvia** is a global leader in developing hydrogen-electric powertrains, which use fuel cells to convert hydrogen into electricity to power electric motors. The company is targeting certification for engines capable of powering 9-19 seat aircraft by the end of 2025, with a scaled-up version for 40-80 seat regional aircraft planned for 2027.⁷ In the large commercial aircraft segment, **Rolls-Royce** is actively developing hydrogen-compatible gas turbines through its partnership with easyJet, exploring the direct combustion of hydrogen as a fuel source.⁶ Meanwhile, **Airbus** is progressing its ambitious **ZEROe programme**, which, after extensive research, selected hydrogen fuel cell technology in 2025 as the primary propulsion method for a planned entry-into-service in 2035.¹³

The primary technical challenges for hydrogen aviation are twofold. First is the onboard storage of the fuel, which must be kept as a cryogenic liquid at -253°C, requiring highly advanced, lightweight, and perfectly insulated composite tanks.⁴⁸ Second is the development of entirely new airport infrastructure for the safe storage, handling, and refuelling of cryogenic hydrogen.⁶ Both of these challenges represent significant opportunities for the advanced materials and manufacturing sector.

Electric & Hybrid-Electric Propulsion

Fully electric propulsion remains constrained by battery energy density, limiting its application to smaller aircraft and the emerging Advanced Air Mobility (AAM) market. However, hybrid-electric architectures, which combine traditional gas turbines with electric motors, are a major focus for improving the efficiency of regional and short-haul aircraft. This pathway is a central pillar of the UK's **Aerospace Technology Institute (ATI) Programme**, which has seen its funding extended with up to **£2.3 billion allocated through to 2035**.¹⁸ These hybrid systems are viewed as a vital transitional technology, enabling significant emissions reductions and serving as a testbed for the high-power electrical systems, motors, and power electronics that will be essential for the "electrified air transport revolution" envisioned by UK industrial strategy.⁴⁹

The Rise of Autonomous and Connected Skies

The **UK Future Flight Programme**, a £300 million joint government and industry initiative, is the driving force behind the creation of a new aviation ecosystem for

Uncrewed Aircraft Systems (UAS, or drones) and Advanced Air Mobility (AAM) vehicles, often referred to as eVTOLs or air taxis.¹⁰ By 2026, the programme's focus will be on transitioning from isolated technology trials to demonstrating the integrated systems and infrastructure required for initial commercial operations.

Key projects are already laying this groundwork. Ambitious plans are in motion to establish a **165-mile "drone highway"** connecting major towns and cities including Reading, Oxford, Cambridge, and Coventry, creating a dedicated corridor for autonomous logistics.¹⁰ In parallel, consortia are demonstrating end-to-end AAM ecosystems, including flights of eVTOL aircraft between hubs like London Heathrow Airport and newly developed **vertiports**—specialised micro-airports for these new vehicles.¹⁰ A critical technological enabler for this vision is the development of a sophisticated **Uncrewed Traffic Management (UTM)** system, a digital framework that will allow drones and AAM to operate safely alongside traditional crewed aircraft in congested airspace.¹¹

From a regulatory standpoint, a primary objective for 2026 is the maturation of the framework to permit routine **Beyond Visual Line of Sight (BVLOS)** operations for drones. This is the single most important step needed to unlock their commercial potential for applications like long-distance logistics, infrastructure inspection, and emergency services support.¹¹ Additionally, new drone product standards, known as the 'Class Marking' framework, are set to come into legal force on **January 1, 2026**, creating a clear compliance pathway for manufacturers.⁵⁴

While the development of the eVTOL vehicles themselves is a high-profile, capital-intensive race dominated by a few major players, a more immediate and accessible opportunity exists for the broader manufacturing supply chain. The success of AAM is entirely contingent on the build-out of a vast network of ground infrastructure. This creates a "picks and shovels" opportunity for FAC members to supply the essential hardware needed to make this ecosystem function. This includes the precision manufacturing of lightweight, modular vertiport structures; the development of high-power, rapid battery charging systems; the creation of automated ground handling robotics for moving vehicles and baggage; and the engineering of sophisticated physical security and sensor systems for these new transport hubs. This infrastructure market will need to scale significantly well before widespread passenger services commence, representing a tangible, near-term growth vector for the UK's advanced manufacturing base.

Thermal Management for High-Performance Systems

For the next generation of high-performance platforms, including hypersonic vehicles and advanced combat aircraft, managing extreme heat is a primary engineering

challenge. At hypersonic speeds (above Mach 5), air friction can heat the leading edges and surfaces of a vehicle to temperatures of **2,500°F (1,370°C) or higher**, far exceeding the operational limits of conventional aerospace alloys.⁵⁵

Materials innovation is at the heart of solving this problem, and UK research institutions are at the cutting edge. A notable breakthrough from the **University of Manchester**, in collaboration with Central South University, has produced a new carbide-based ceramic coating that has demonstrated thermal resistance up to an extraordinary **3,000°C**. This material, which is applied to a carbon-carbon composite substrate, has proven to be 12 times more effective at resisting ablation than the conventional Zirconium Carbide used in similar applications.⁵⁶ Alongside such coatings, the development of bulk materials like **Ceramic Matrix Composites (CMCs)** and coated carbon-carbon composites is critical for creating structures that can withstand these temperatures while remaining lightweight and strong.⁵⁵

Development is proceeding along two parallel tracks. **Passive Thermal Protection Systems (TPS)** rely on these advanced materials to form the vehicle's structure, absorbing and radiating heat away without active intervention. **Active TPS**, required for the most extreme environments like engine inlets or nose cones, involve complex cooling systems. These can include transpiration cooling (pumping a coolant through a porous surface) or convective cooling, where a fluid—often the aircraft's own cryogenic hydrogen fuel—is circulated through channels within the structure to carry heat away.⁵⁵ The design and manufacture of these intricate, high-temperature systems demand the most advanced manufacturing capabilities, from composite fabrication to the additive manufacturing of complex internal cooling channels.

Strategic and Market Drivers: Navigating the Geopolitical and Economic Landscape

Resilient and Regionalised Supply Chains

The fragility of globalised supply chains, starkly exposed by the COVID-19 pandemic and exacerbated by ongoing geopolitical tensions such as the war in Ukraine and its impact on titanium supplies, has elevated supply chain resilience from an operational concern to a primary strategic imperative.¹ In response, there is a clear and accelerating trend towards regionalisation, risk diversification, and the strengthening of domestic manufacturing capabilities.

The UK's **Advanced Manufacturing Plan** explicitly identifies building supply chain resilience as a core objective. The strategy aims to reduce the nation's vulnerability to global shocks by mitigating reliance on near-monopoly sources of critical inputs and actively fostering a more robust and diverse domestic industrial base.¹⁷

Regional trade associations like the Farnborough Aerospace Consortium are pivotal in executing this national strategy at a local level. The FAC plays a crucial role as an enabler of business between large primes and the SME supply chain, facilitating the connections needed to identify and fill capability gaps within the region.⁶⁰ A key tool in this effort is the promotion of national improvement programmes like **SC21 (Supply Chains for the 21st Century)**. SC21 provides a standardised framework for suppliers to enhance their operational performance, quality, and delivery metrics, thereby increasing their competitiveness and making the entire UK supply chain more attractive to global primes.⁶³ By championing such programmes, the FAC helps its members meet the increasingly stringent performance standards required to compete and thrive in a more demanding global market.

Defence Modernisation as a Catalyst for Innovation

A sustained increase in global defence spending, driven by a renewed focus on national security, serves as a powerful market driver for the advanced manufacturing sector.¹³ In the United Kingdom, the **Global Combat Air Programme (GCAP)**, which is developing the next-generation 'Tempest' fighter aircraft in partnership with Italy and Japan, is the cornerstone of defence modernisation and a significant engine for technological innovation.⁶⁷

The economic scale of the programme is substantial. Projections indicate that GCAP will contribute at least **£25.3 billion** to the UK economy and support an average of **20,000 to 21,000 jobs annually** between 2026 and 2050.⁹ Crucially, the programme's strategy involves harnessing innovation from a diverse supply chain, explicitly including high-tech SMEs and companies from outside the traditional defence sector.⁶⁷ The Ministry of Defence (MOD) is backing this with a planned investment of over **£85 billion** in equipment and support over the next four years, coupled with procurement reforms aimed at increasing SME participation.⁶⁹

For FAC members, GCAP should be viewed as more than just a series of defence contract opportunities. It functions as a de-facto national R&D accelerator. The technologies at the heart of the Tempest programme—including AI-driven mission systems, highly integrated sensors, advanced digital cockpits, and a revolutionary open systems software architecture—are the very same foundational technologies that will define the future of commercial aviation, from autonomous cargo drones to the next generation of connected airliners.⁸ The UK government is investing billions of pounds to mature these technologies at an accelerated pace.⁶⁷ Therefore, for an SME, securing a role in the GCAP supply chain is a strategically vital, government-subsidised pathway to developing next-generation, flight-certified capabilities. A contract to develop a novel sensor or a secure software module for Tempest is not merely a single revenue stream;

it is a paid-for R&D programme that places the company at the cutting edge of aerospace technology, creating dual-use products and expertise that will be highly marketable in the broader commercial sector in the decades to come.

The UK Commercial Space Sector

The UK's commercial space sector has emerged as a vibrant and rapidly growing industry, representing a significant adjacent market for advanced manufacturing firms. In the 2022/23 financial year, the sector generated **£18.6 billion in income** and supported **55,550 direct, high-skilled jobs**.⁷¹ While a small number of large prime contractors account for the majority of the revenue, the industrial base is broad and dynamic, with **90% of the nearly 1,800 organisations** in the sector being classified as SMEs.⁷²

South East England is the epicentre of this activity. The region is home to the **Space South Central** cluster, one of the UK's largest and most active space hubs, comprising approximately **450 organisations** and contributing an estimated **£4.2 billion** to the national economy.⁷³ This cluster boasts a comprehensive range of capabilities, from the large-scale satellite manufacturing facilities of Airbus in Portsmouth and Surrey Satellite Technology Ltd (SSTL) in Guildford, to innovative start-ups focused on in-orbit servicing, microgravity testing, and downstream data applications.⁴⁰

The technological convergence between the aerospace, defence, and space sectors means that the barriers to entry are becoming increasingly porous. The core competencies of FAC's membership—precision manufacturing of complex components, fabrication of lightweight composite structures, and design of sophisticated radio frequency (RF) electronics and control systems—are directly applicable to the needs of the space industry.⁴⁰ For an SME, the most significant growth opportunities in 2026 may lie not in the traditional civil aviation market, but in diversifying to supply high-performance components for satellite constellations, hardware for ground stations, or structures for launch vehicles. A deliberate strategy of market diversification into this adjacent sector is therefore not merely opportunistic but an essential component of a robust growth plan. The FAC can serve as a crucial "super-connector" in this process, fostering collaboration and creating business development opportunities between its established aerospace manufacturing members and the dynamic space companies within the regional ecosystem.

Evolving Business Models and Imperatives

The Workforce of 2026: Bridging the Skills Gap

The aerospace and defence sector is facing a workforce crisis that poses a direct threat to its growth prospects. The industry is experiencing a high attrition rate, with a **13% turnover** reported among members of the Aerospace Industries Association, a figure significantly higher than the US national average of 3.8%.¹ This is compounded by a looming "retirement wave," with data indicating that **29% of the US A&D workforce is over the age of 55**.⁷⁵

This demographic shift is creating a critical skills gap in the very areas most essential for future competitiveness. There are pronounced shortages of technicians skilled in the lay-up and repair of **advanced composites**, as well as a dearth of talent in **digital engineering, data analytics, automation, and cybersecurity**—the foundational skills of the modern aerospace industry.¹³ While large primes with significant resources and brand recognition may be able to attract talent, SMEs will bear the brunt of this shortage, finding it increasingly difficult to recruit and retain the skilled personnel needed to operate advanced machinery and manage digital workflows.

In response, the UK government is launching a series of major skills initiatives set to take effect around 2026. The new **Defence Industrial Strategy** includes the establishment of five **Defence Technical Excellence Colleges**, which will begin launching in 2026 to provide specialised training for the sector. The strategy also includes a new apprenticeship clearing system and funding for thousands of short upskilling courses.¹² In the civil sector, the **Generation Aviation programme**, supported by a team of high-profile Aviation Ambassadors, is working to attract a new and more diverse generation of talent into the industry.⁷⁶ These national programmes are supported by industry-led efforts, such as the **Aerospace Growth Partnership (AGP) Skills Working Group**, which focuses on designing specialist courses to upskill the existing workforce.⁷⁷

The launch of these government-backed training institutions in 2026 presents a critical opportunity, but it requires proactive engagement from industry. SMEs cannot afford to be passive recipients of talent. The most effective strategy for FAC members is to engage directly with these new colleges during their formation. By offering to help shape the curriculum, providing industry-expert guest lecturers, and establishing formal apprenticeship and work placement programmes, they can ensure that the skills being taught are directly aligned with their specific technological needs. This early engagement will establish their companies as preferred employers for the first cohorts of graduates, creating a direct and sustainable talent pipeline to secure their future workforce.

The Imperative of the Circular Economy

Driven by a combination of rising material costs, supply chain vulnerabilities for critical minerals, and mounting environmental pressure, the aerospace industry is beginning a fundamental shift away from a traditional, linear "take, make, waste" economic model. The adoption of **circular economy** principles is transitioning from a corporate social responsibility initiative to a core business and engineering imperative.⁷⁸ The UK as a whole has a significant opportunity for improvement in this area, with a current national circularity rate of only **7.5%**, meaning the vast majority of materials are not circled back into the economy after use.⁷⁹

In aerospace, the focus of circularity is on two main areas: high-value material recovery and designing for disassembly. The industry relies on expensive and energy-intensive materials like titanium, cobalt, and nickel superalloys. Specialist companies are now developing advanced metallurgical processes to reclaim these critical materials from manufacturing by-products (revert) and end-of-life components, reintroducing them into the supply chain as high-quality secondary raw materials.⁷⁸

Research conducted by the **Advanced Manufacturing Research Centre (AMRC)**, part of the High Value Manufacturing (HVM) Catapult, has demonstrated the clear economic viability of such approaches. A detailed simulation of recycling aircraft cabin seats found that it was possible to recover enough aluminium, plastics, foams, and fabrics to account for **70% of the material** required for new seat production. This process not only conserved resources but also reduced the associated carbon emissions by more than half, demonstrating a viable business case for circularity.⁸⁰

By 2026, these principles will become an increasingly important factor in supplier selection. Primes, under intense pressure to report on their Scope 3 (supply chain) emissions and to de-risk their access to critical materials, will inevitably favour suppliers who can demonstrate circular practices. A supplier that can provide components made from certified, recycled titanium, or one that has designed a cabin interior panel for easy disassembly and material separation at the end of its life, will possess a powerful competitive differentiator. Investing in circular capabilities is therefore not just an environmental strategy but a commercial one, positioning a company to win business in a future where sustainability and resource security are paramount.⁸¹

Strategic M&A and Partnerships

The mergers and acquisitions (M&A) landscape for 2025 and 2026 is defined by a distinct "flight to quality." While the overall number of transactions has seen a decline, the value of deals has remained resilient, and in some cases surged, as buyers focus on fewer, but larger and more strategic, acquisitions.⁸²

Aerospace & Defence stands out as one of the most active sectors for M&A, leading activity in 2025 with **£90.5 billion in transactions**.⁸² This activity is primarily driven by two strategic needs. The first is the acquisition of key technologies and capabilities. Large corporations are using M&A to rapidly gain expertise in high-growth areas such as **Artificial Intelligence, digital transformation, and advanced materials**, rather than developing these capabilities organically. The second driver is the consolidation of supply chains to enhance resilience and achieve economies of scale.

For SMEs within the FAC, while being an acquisition target is one potential outcome, a more common and proactive strategy involves the formation of strategic partnerships and joint ventures. These collaborations are essential for de-risking participation in large-scale, capital-intensive R&D programmes, such as those funded by the ATI or related to GCAP.²⁰ By partnering with other SMEs, academic institutions, or even larger Tier 1 suppliers, smaller companies can pool resources, share expertise, and collectively bid for work that would be beyond the scope of any single entity.

The UK and South East England Context: A Focused Analysis for FAC Members

UK Policy and Regulatory Deep Dive (2026)

For businesses operating in the UK, the national policy and regulatory environment in 2026 will be a defining feature of the competitive landscape. Several key frameworks will directly impact investment decisions, operational costs, and market opportunities for FAC members.

In the fiscal domain, the government's policy of **permanent full expensing** is a significant incentive for capital investment. This allows companies to claim 100% capital allowances on qualifying plant and machinery, directly reducing the cost of acquiring the new automated and digital manufacturing technologies essential for competitiveness.⁸⁶ This is complemented by a competitive corporation tax rate and established R&D tax relief schemes, which collectively aim to create an attractive environment for industrial investment.

On the regulatory front, environmental policies will become increasingly influential. The **UK Emissions Trading Scheme (ETS)** is set to phase out the free allocation of carbon allowances for the aviation sector in 2026.²⁵ This means that airlines will have to purchase allowances to cover every tonne of carbon they emit on applicable routes. This direct carbon cost will intensify pressure on airlines to improve fuel efficiency, which in turn will drive demand throughout the supply chain for lightweight components, aerodynamic improvements, and more efficient systems—all core capabilities of advanced manufacturing firms.

Furthermore, the digital and security landscape will be reshaped by the new **Cyber Security and Resilience Bill**, which is expected to come into force in 2026.⁸⁸ This legislation will expand upon existing regulations to impose stricter cybersecurity standards on operators of the UK's critical national infrastructure, a category that includes the aviation sector. These requirements will cascade down the supply chain, as primes will need to ensure the digital integrity of the components and software they procure. This will necessitate greater investment in cybersecurity measures and could become a key differentiator for suppliers who can demonstrate robust digital security protocols.

Mapping the South East Ecosystem

The South East of England is unequivocally the heart of the UK's high-tech aerospace and space industries, providing FAC members with a uniquely rich and accessible ecosystem of partners, research institutions, and adjacent market opportunities.⁶⁰

The region is home to a world-class network of R&D and innovation assets. These include the **National Composites Centre (NCC)** in Bristol, a global leader in advanced composites research and manufacturing automation.³⁷ **Cranfield University**, with its unique airport and the state-of-the-art **Digital Aviation Research and Technology Centre (DARTeC)**, is a focal point for innovation in digital airspace and airport infrastructure.⁴⁹ The region also benefits from the **UK Aerospace Research Consortium (UK-ARC)**, a network of leading universities including Southampton, Bristol, and Cambridge, which provides a direct channel for industry to engage with cutting-edge academic research.⁶⁴ The broader **High Value Manufacturing (HVM) Catapult** network offers critical support for SMEs looking to scale up new technologies from prototype to production.⁹⁰

This dense concentration of R&D excellence is complemented by a dynamic landscape of industrial clusters. The **FAC** itself serves as the primary hub for the aerospace and defence supply chain.⁹² This is geographically and technologically intertwined with **Space South Central**, one of the UK's largest and most economically significant space clusters, which brings together major players like Airbus Defence and Space with a vibrant community of SMEs.⁷³ Adding another layer is **The Solent Cluster**, a cross-sector initiative focused on decarbonisation, with a particular emphasis on hydrogen production and application. This cluster's work aligns directly with the aerospace sector's Jet Zero ambitions and creates opportunities for collaboration on hydrogen storage, handling, and propulsion technologies.⁹² The strategic priorities of the former Enterprise M3 Local Enterprise Partnership, which covered the Farnborough area, also identified the "JetZero" aviation cluster as a key engine for regional economic growth.⁹³

The true strength of the South East lies not in any single one of these assets, but in their intersection and the potential for cross-cluster collaboration. The most innovative and resilient businesses in 2026 will be those that operate fluidly across these traditional sector boundaries. For example, an FAC member with expertise in advanced composites could apply this knowledge to developing lightweight cryogenic hydrogen storage tanks for the marine and energy sectors, engaging with partners in The Solent Cluster. A firm specialising in secure communications for defence could adapt its technology to meet the needs of the Future Flight programme's Uncrewed Traffic Management system. This cross-pollination of technology and market access is the region's single greatest competitive advantage, and the FAC is uniquely positioned to act as the "super-connector" that facilitates these high-value collaborations.

Table 3: Key UK Government Funding and Strategy Alignment

2026 Technology/Business Trend	Relevant UK Government Strategy	Primary Funding Body / Programme
Additive Manufacturing (AM)	Advanced Manufacturing Plan	Innovate UK; ATI Programme; Made Smarter
Hydrogen & Electric Propulsion	Jet Zero Strategy; Advanced Manufacturing Plan	Aerospace Technology Institute (ATI) Programme
Digital Supply Chains / Smart Factory	Advanced Manufacturing Plan	Made Smarter Adoption Programme; Innovate UK
Advanced Air Mobility (AAM) / Drones	Future Flight 2030 Action Plan	Future Flight Programme (Innovate UK)
Defence SME Innovation	Defence and Security Industrial Strategy (DSIS)	Defence Technology Exploitation Programme (DTEP); DASA
SME Skills & Training	Defence Industrial Strategy; Generation Aviation	Defence Technical Excellence Colleges; Apprenticeship Levy
Commercial Space Technologies	National Space Strategy	UK Space Agency; European Space Agency (ESA)

Source: Compiled from UK government and agency publications ¹⁰

This matrix serves as a strategic map for FAC members, demystifying the complex landscape of government support. For an SME, it provides a clear, one-page guide showing which government priority and which specific funding programme aligns with their area of expertise or strategic ambition. By using this tool, companies can frame their funding proposals and business plans in the language of national strategy, demonstrating clear alignment with government objectives and significantly increasing their likelihood of securing the public co-investment needed to de-risk innovation and accelerate growth.

Strategic Recommendations for Farnborough Aerospace Consortium Members

The analysis presented in this report culminates in a set of actionable strategic recommendations tailored for the advanced manufacturing SMEs that form the membership of the Farnborough Aerospace Consortium. These recommendations are designed to help members navigate the challenges and capitalise on the opportunities of the 2026 aerospace landscape.

Technology Adoption

- **Prioritise Investment in a "Digital Foundation":** The evidence overwhelmingly shows that by 2026, digital capability will be a non-negotiable prerequisite for meaningful participation in prime supply chains. The immediate priority for FAC members should be to invest in a foundational digital infrastructure. This includes implementing a modern Manufacturing Execution System (MES) or Enterprise Resource Planning (ERP) system to enable real-time production tracking and data collection. Critically, members must also develop the capability to create, manage, and deliver "component digital twins." This is the "digital handshake" that primes like Airbus and Rolls-Royce will increasingly demand, and firms lacking this capability risk being designed out of future programmes.
- **Pursue a Collaborative "Capital-Light" Model for Additive Manufacturing:** While AM offers transformative potential, the high capital cost of industrial-scale systems, particularly for automated post-processing, is a major barrier for individual SMEs. Rather than attempting to build a complete, end-to-end AM capability in-house, a more resilient and capital-efficient strategy is to pursue a collaborative model. Members should partner with other FAC companies or specialised regional service bureaus to access high-cost post-processing and certification services. The focus for individual SMEs should be on developing deep expertise in a specific niche of the AM value chain—such as design for

additive (DfAM), a particular material set, or rapid tooling—while leveraging the regional ecosystem for capital-intensive production and finishing steps.

Market Diversification

- **Actively Target Adjacent High-Growth Markets:** The technological convergence between sectors means that core manufacturing competencies are highly transferable. FAC members should formulate a deliberate strategy to target the UK's burgeoning **commercial space** and **AAM ground infrastructure** markets. The South East is a national hub for both sectors. The FAC should facilitate this by organising targeted "meet the buyer" events and workshops with leadership from the Space South Central cluster and key players in the Future Flight Programme. Members should proactively repackage their existing aerospace capabilities—be it in composites, precision machining, or electronics—to address the specific needs of these dynamic adjacent markets.
- **Engage with the GCAP/Tempest Supply Chain as a Funded R&D Opportunity:** Participation in the Global Combat Air Programme should be viewed through a strategic, long-term lens. It is not simply a defence contract; it is the UK's primary state-funded accelerator for the dual-use technologies that will define the entire aerospace sector in the 2030s. Members should actively seek entry points into the supply chain through the MOD's SME Action Plan and initiatives like the Defence Technology Exploitation Programme (DTEP).⁶⁹ The goal should be to win contracts that not only provide revenue but also fund the development and certification of cutting-edge capabilities that will have direct applications in future commercial platforms.

Collaboration and Funding

- **Systematically Leverage Government Funding Programmes:** The UK government has put in place a comprehensive, albeit complex, suite of funding mechanisms to support the sector. FAC members should make systematic use of these programmes. The **ATI SME Programme**, which offers grant funding of up to £1.5 million per project for civil aerospace R&D, is a prime example.⁹⁵ When applying, proposals should be explicitly framed to align with the national strategies outlined in Table 3 of this report, demonstrating how the proposed project contributes to the goals of the Advanced Manufacturing Plan or the Jet Zero Strategy. This alignment dramatically increases the probability of success.
- **Utilise SC21 as a Framework for Competitive Excellence:** The **SC21 programme**, actively promoted by the FAC, provides a structured and industry-recognised framework for improving operational performance.⁶⁵ Engaging with SC21 is a powerful way for SMEs to benchmark their performance, implement best practices, and, most importantly, demonstrate their commitment to supply

chain excellence to current and potential prime customers. Achieving SC21 recognition (Bronze, Silver, or Gold) can be a significant competitive advantage in contract bids.

Talent Development

- **Proactively Engage with New Skills Institutions:** The national skills shortage is a systemic threat that requires a proactive response. FAC members should not wait for graduates to emerge from the new **Defence Technical Excellence Colleges** launching in 2026. They must engage *now* with the government bodies and academic partners responsible for establishing these institutions. By offering to help shape the curriculum, providing equipment, and establishing formal, long-term apprenticeship and internship partnerships, members can ensure the creation of a direct talent pipeline that produces graduates with the specific digital and manufacturing skills their businesses require.
- **Invest in Cross-Training the Existing Workforce:** The aerospace technician of 2026 and beyond must be a multi-skilled professional, equally comfortable with mechanical assembly and digital interfaces. They will need to be able to operate a collaborative robot (cobot), interpret work instructions from an augmented reality headset, and understand process data from a digital twin dashboard. Companies must invest in structured cross-training programmes to upskill their existing, experienced workforce, blending traditional craft skills with the new digital competencies that the smart factory demands. This is the most effective way to retain valuable institutional knowledge while preparing the business for the future.

Conclusion

The aerospace advanced manufacturing sector stands at a pivotal juncture. The path to 2026 is not one of incremental change but of fundamental transformation, driven by the non-negotiable imperatives of comprehensive digitalisation and aggressive decarbonisation. For the members of the Farnborough Aerospace Consortium, this environment presents both profound challenges and unprecedented opportunities. The operational headwinds of supply chain volatility and a critical skills deficit are real and persistent, demanding immediate attention and investment in resilience.

Simultaneously, a clear and proactive UK industrial strategy is creating new, government-backed markets and de-risking innovation in high-growth areas. The SAF Mandate, the Future Flight Programme, and the Global Combat Air Programme are not merely policy documents; they are strategic roadmaps that signal where future value will be created. The technological trends identified—from the industrialised Digital Twin

and serial Additive Manufacturing to multifunctional composites and AI-driven quality control—are rapidly moving from the realm of competitive advantage to being the price of entry into prime supply chains.

Success in this new era will not be achieved in isolation. It will require a strategic blend of internal investment in digital and workforce capabilities, a proactive approach to market diversification into adjacent sectors like commercial space, and a deep commitment to collaboration. By leveraging the unique strengths of the South East's innovation ecosystem and aligning with national strategic priorities, FAC members can navigate the complexities of the coming years. The companies that thrive in 2026 will be those that embrace this dual challenge: fortifying their operational foundations while boldly seizing the technological and market opportunities of a net-zero, data-driven future.

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