



midlands aerospace alliance

MIDLANDS

AEROSPACE

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MAGAZINE



THEATRE OF INNOVATION

MAA CONFERENCE LOOKS TO REPEAT NATEP SHOWCASE SUCCESS – PAGE 7-10

SHOWCASING NATEP SUCCESS STORIES

Programme moves into publicity phase – p4-5

MOOG OPENS DOORS TO MAA

Members rate latest site visit as invaluable – p6



COVENTRY AND WARWICKSHIRE

Area builds on its legacy of engineering excellence – p12

Update

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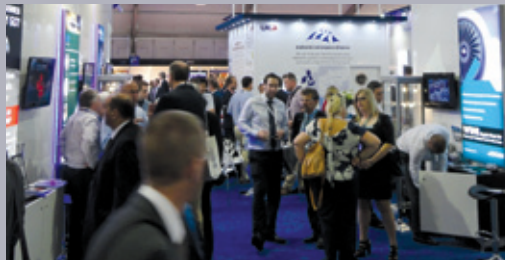


Calm before the storm: The MAA's record-breaking stand at Farnborough 2014. This year's stand features similar clarity, visibility and branding.

FARNBOROUGH PREVIEW



The MAA stand attracted VIP visitors, including the Prime Minister, with its prominent location in Hall 1.



NEWS

ON THE WEB

CLICK THROUGH TO THE MAA WEBSITE FOR CURRENT NEWS ON MEMBERS' ACTIVITIES:

- MAA member **Bodycote**, a specialist in thermal processing services, has launched an interactive history of metallurgy.
- Shropshire-based **Advanced Chemical Etching** has seen a 20% rise in sales after investing in new machines.
- Midlands manufacturer **CMA Moldform** has achieved a breakthrough with an innovative seating solution for the military market.

→ Derby-based **EPM Technology** has won its first business in the aerospace sector, an order worth £22 million.

→ **JJX Logistics** has boosted capabilities with major new warehousing facilities.



www.midlandsaerospace.org.uk/news

MAA launches new website

The MAA website has been relaunched with a new design to make it easier for you to read our pages and articles, and book onto our events, from your mobiles and tablets as well as desktops and laptops. Take a look at www.midlandsaerospace.org.uk.



There's still time to book space on the record-setting MAA stand at Farnborough 2016.

Once again, the MAA has its now-familiar space in Hall 1 within the UK Pavilion. This year's stand is designed around the successful pod concept. The stand has 28 pods – making it the show's biggest regional stand of any country.

"You really should be there," says marketing manager Emma Burgess. "Come and be a part of the biggest region at our 'home' airshow."

Exhibitors at the 2014 show praised the MAA stand for its organisation, convenience and prominence. "The

way the MAA helped us showcase our company so professionally makes us proud to be representing the company," said one. Another said the support from the MAA made it "a smooth and easy process to exhibit" at Farnborough.

As *Midlands Aerospace* went to press, just nine pods were still available, most of those already booked having been taken by returning exhibitors.

Farnborough 2016 opens on 11 July for seven days, the first five of which are trade-only days.

■ For more information, please contact Emma at emma.burgess@midlandsaerospace.org.uk

DERBY-MADE CASINGS IN ORBIT ABOARD ISS



Derby-based MAA member Pentaxia has a personal interest in the space mission of UK astronaut Tim Peake.

Peake took two precision components made by Pentaxia to the International Space Station (ISS) in December and is using them to conduct experiments during his six-month tour.

Pentaxia produced the space-grade aluminium casings for two augmented Raspberry Pi computers (called Astro Pis) that Peake will use for experiments designed by students. The computers are expected to remain aboard the ISS for 15 years.

Tim Ollier, the company's development director, said the casings are a complex design that was difficult to machine, especially on a very tight time scale. "There's no convection cooling in space," he said, "so the casings had to be made with a very large surface area to allow cooling by radiation only."

He said Pentaxia, which produces tooling for composites and components for aircraft including the Lockheed Martin F-35 Joint Strike Fighter, supports projects like the Astro Pi that help promote careers in science and technology.




Pentaxia-made casing protects Astro Pi aboard the ISS.



www.astro-pi.org/about/mission
www.pentaxia.co.uk



WITH THE FIRST NATEP PROJECTS NOW PRODUCING RESULTS, THE PROGRAMME IS MOVING INTO A NEW PHASE – PUBLICISING THE SUCCESSES AND PROMOTING THE INNOVATIONS.

 The next two years will be an important time for NATEP as the projects funded under the programme's groundbreaking format move into the important dissemination stage. "It's an exciting stage," said NATEP deputy director Bridget Day. "This is where the projects get the platform they need to publicise their results. "If we get new funding, this would be the ongoing pattern."

Companies have an opportunity to learn about innovative applications of additive layer manufacturing (ALM) at a workshop on 25 February. The keynote speakers for the event at the Manufacturing Technology Centre (MTC) in Coventry will be Paul Evans, Manufacturing Engineering site representative at the Airbus Filton facility, and David Eatock, Airbus senior research engineer.

Participants will hear about two completed ALM projects funded by the NATEP programme, and learn about others currently under way.

Other NATEP events around the country are expected to generate interest. Day said it was hoped a showcase event could be staged at Manchester's Salford Quays where the adjacent canal would provide a safe area to fly unmanned aerial vehicles (UAVs).

She said results dissemination events are designed to help NATEP participants find customers other than the end-user involved in their project. "We're also seeing the beginnings of a NATEP community as participating companies meet and form new business relationships through shared experience from

NATEP projects. It's all good for business."

WINDOW ON SUCCESS

The first NATEP Showcase gave the entire aerospace sector an opportunity to review progress on 19 innovative projects – one-sixth of the total – and speak to the 50 companies working on them.

The projects covered the entire aircraft product lifecycle: engineering new aircraft, designing better parts, improving manufacturing productivity and the safer in-service use of aircraft by airlines.

Among about 200 attendees at the event in Coventry were representatives of big companies including Airbus, Rolls-Royce, GKN and UTC Aerospace Systems, aerospace supply chain companies, universities and government bodies.

Rolls-Royce's Paul Snelling, head of Supply Chain Collaboration, said NATEP is fuelling a series of smaller innovations complementary to big Rolls-Royce research projects. Rolls-Royce is one of 80 companies providing mentors to various NATEP projects for which it is a potential customer.

Tom Cook, head of A350 Wing Architecture and Integration at Airbus, identified the 20 NATEP projects that various divisions of Airbus are already supporting as proof of the value Airbus attaches to the programme.

Robin Hill, Engineering Fellow - High Integrity Electronics at Rolls-Royce's Controls and Data Services subsidiary, explained how



two of the projects his company is supporting will help it overcome technical barriers.

MAA chief executive Dr Andrew Mair commented: "NATEP seems to work better than other schemes because it is organised by industry for industry and fits the way aerospace businesses think and work."

Looking further afield, the showcase provided visiting experts from overseas offices of UK Trade and Investment (UKTI) with valuable insights which will help them promote the capabilities of the UK aerospace supply chain in markets across the globe.

WHERE ARE THEY NOW?

Showcase attendees heard reports of tangible success from two supply chain technology projects that were part of NATEP's predecessor support programme, ATEP, which supported 11 projects in the Midlands from 2006-2012.

Megan Anderson, quality manager at G&O Springs, said the company, through ATEP, had successfully added design expertise to its traditional make-to-print manufacturing capability. The result is that G&O is winning business with four new customers and is growing rapidly.

Steve Ashworth, technical director at Aeromet International, explained how its ATEP project to develop a new aluminium alloy, A20X, had opened up new aircraft parts markets and had kicked off the company's first technology roadmap, allowing it to participate in a series of follow-on R&D projects.



www.natep.org.uk

FOUR IDEAS IN ACTION

Lightweight pipe end-fittings

Partners: Sigma Precision Components, 3T RPD

The objective of this 12-month project, led by Sigma Precision Components, was to reduce aircraft weight by developing a new process to design and manufacture lightweight pipe end-fittings using metal additive layer manufacturing (ALM).

The £143,000 NATEP grant enabled the partners to redesign and build a selection of typical large, complex end-fittings – including T and Y pieces, instrumentation fittings, flanged fittings and elbows – which were subjected to rigorous analysis and testing to validate materials and processes.

The results show the new end-fittings are at least 50% lighter than current designs and, in some cases, more efficient due to improved flow characteristics.



Additive aero valve optimisation

Partners: Meggitt Aerospace, Ashton & Moore
End-user: GE Aviation

Meggitt Control Systems in Coventry has been leading a 15-month, £285,000 NATEP project to develop a fully-optimised bleed air valve.

Working with GE, the project partners set out to reduce noise, decrease weight, improve reliability and advance the group's understanding of emerging additive layer manufacturing (ALM) technology.

Bleed compressor valves prevent stalls by controlling engine pressure. Air under high pressure passing through the valve causes the high-pitched scream heard on landing. Future engines will require lighter, smaller valves with increased performance and reduced noise pollution.

ALM enables a radical rethink of every aspect of the valve's design and materials.

Graphene composites evaluated in lightning strike (GraCELS)

Partners: Haydale Composite Solutions, SHD Composite Materials, Cobham Technical Services
End-users: Airbus UK, BAE Systems

The project partners, led by Haydale Composite Solutions, are developing and evaluating a composite material that will improve aircraft lightning-strike performance and reduce weight by replacing the metallic mesh conductor currently used for this purpose.

The 18-month, £300,000 NATEP project is enabling them to develop a way of improving the electrical conductivity of composites used in fuselage and wing surfaces by incorporating functionalised graphene nanoparticles into the epoxy resin.

Midway through the project, researchers are on track to engineering the required conductivity level in the resin without detriment to other key mechanical and physical properties of the material.

SPARCS rotary engine

Partners: Advanced Innovative Engineering, Vortex Exhaust Technology
End-user: Aero Composites Innovations

In this 18-month, £207,000 project, the partners are seeking to develop a high-performance compact propulsion system for a new generation of commercial unmanned aerial vehicles (UAVs). Their objective is to deliver a lightweight rotary engine, based on AIE's proprietary design, that gives better thermal control, gas sealing and exhaust cleanliness than competing engines.

The 5hp, 40cc engine is designed to power a small rhomboid-wing UAV, itself under development by the project end user. Engine integration is scheduled to begin at the end of 2016.

The new engine is expected to offer range and endurance advantages in a market dominated by electrical motors.



MP CITES BRIDGET DAY IN COMMONS DEBATE

 NATEP deputy director Bridget Day's comments about women in industry have entered *Hansard*, thanks to Drew Hendry MP.

Hendry quoted her during a Parliamentary debate following a meeting at the Aerospace All-Party Parliamentary Group (APPG).

"When it comes to encouraging young girls and women into engineering, there are clear systemic problems in our culture that must be tackled," said Hendry.

"I was delighted to meet Bridget Day yesterday," he said. "I would like to read something she sent to me, at my request."

Bridget's note, read into the record, outlined her 40-year career in engineering, decried the lack of progress in recruiting women into the industry, and observed that current opportunities make it "a great time to become an engineer".

Bridget told *Midlands Aerospace* she was "surprised" that Hendry had read out her full note but pleased to contribute to the debate.

■ For a transcript of the debate, go to www.theyworkforyou.com/debates/

INVALUABLE DAY AT MOOG

MAA MEMBERS GIVE A THUMBS-UP TO THE LATEST SITE TOUR AND BRIEFING.

➔ A full complement of 50 delegates took up the invitation to visit Moog Aircraft Group at Wolverhampton's i54 site, and came away full of enthusiasm and praise for the event. In the latest of a series of site visits, Moog teamed up with the MAA to present a one-day event designed to give members – suppliers or potential suppliers – the knowledge to meet the requirements of global competitors in the aerospace world, such as Moog Aircraft Group.

Delegates were advised that the day was not primarily a 'meet the buyer' event; rather it was an opportunity to assess their companies' fit with the requirements of Moog, a world leader in flight control systems and critical control applications.

"These are excellent events," said one member who said he had attended them all. "This was equally good, both in understanding the company and in accessing many key personnel. The session with the purchasing group... was particularly valuable. I was most impressed with their detailed knowledge of the operational issues and with their exceptional candidness."

Adam Cooper, vice-president, supply chain operations at Pattonair, said the event was "extremely valuable" and gave great insight into the past, present and future of Moog. The host company was "very much walking the talk" by heavily investing in its own processes, facilities and people. "With more integrated systems come more opportunities for the supply chain. It was a really beneficial event."




Delegates were briefed on Moog systems in the factory (top) and heard about supply chain opportunities in the lecture theatre (above).

Other delegates said they were "very impressed" with a "well organised day".

"Very professionally delivered," said another. "Please relay my thanks to Stuart (Stuart Mclachlan, Moog vice-president and general manager) and his team."

MAA chief executive Dr Andrew Mair said: "We believe events like this are invaluable for aerospace suppliers. Our industry leaders like Moog's Stuart Mclachlan who serve as directors on the board of the MAA willingly sponsor the events."

 www.moog.co.uk

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THE MAA
CONFERENCE 2016
17 MARCH, 08.00-16.00
AMTC, ANSTY PARK,
COVENTRY

NEW DIRECTIONS FOR OUR INDUSTRY...



Geoff Hunt, Vice-President Engineering at UTC Aerospace Systems, speaking at the 2015 MAA Annual Conference. Inset, NATEP results and opportunities will be highlighted for delegates at this year's conference.

...HOW DO WE GROW THE SUPPLY CHAIN?

➔ The fourth MAA Annual Conference builds on the success of its predecessors by posing more searching questions vital to the future of our industry and the individual companies that make it one of the UK's industrial powerhouses.

During the course of the day on 17 March, delegates to the conference will hear updates and insights from UK aerospace industry leaders, with key data about growth prospects, valuable opportunities and useful initiatives for their organisations.

The conference's keynote speakers (see next page for details) will tackle a range of big questions in their presentations. Among them are:

- How do industry leaders from the big aerospace primes and Tier 1s, companies like Airbus, GE, GKN, Rolls-Royce and UTC, see the UK sector evolving in future years?
- What are the short-term and long-term growth trends?
- Are today's record full aircraft order books at companies like Airbus and Boeing secure – or is there an orders bubble that might pop?

(Continued on next page)

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NEW DIRECTIONS FOR OUR INDUSTRY? WHAT ABOUT THE SUPPLY CHAIN?

(Continued from previous page)

Of equal importance is how we grow the UK aerospace supply chain – identifying the barriers, investing in solutions.

On the face of it, the UK aerospace industry seems to be healthy and to be benefiting from the continuing growth of airline fleets across the world. But there is anecdotal and statistical evidence that despite the current growth, competitor nations are doing better – and the UK may be slipping back relatively.

Can we grow our supply chain fast enough to retain our share of world markets, or are we at risk of 'hollowing out' with the big companies increasingly procuring abroad, as happened to the car industry?

What are the main factors holding back growth?

- Lack of ambition, capability, innovation or finance in supply chain companies?
- Procurement strategies and behaviours at the big companies – which are keeping supplier confidence in the future low?
- Shortages of skills in the labour market?
- The level of government support (R&D, launch aid etc) for the supply chain compared to the big primes and Tier 1s?

What do you think? And what should we do about them?

We look forward to seeing you on 17 March.

When you come to an MAA conference you will meet the best of the aerospace industry. This year is no different. It's all about getting to the podium a wealth of experience.



David Bailey,
Professor of
Industrial Strategy,
Aston Business School



Marcus Bryson,
Chairman, Aerospace
Growth Partnership and
Chairman for Aerospace
UKTI-BIS



David Danger,
Managing Director,
UTC Aerospace Systems -
Marston Aerospace
and Director, MAA

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*Expect to hear the latest updates and insights from leaders of the UK's
industry. Your keynote speakers (below) at the 2016 MAA Conference bring
experience and insights gained at the cutting edge of industry.*



Jim Godman,
Head of Global
Engineering Integration,
GKN Aerospace



Paul Kahn,
President,
Airbus Group UK,
and President, ADS



Jeegar Kakkad,
Chief Economist &
Director of Policy, ADS



Rosie Toogood,
Executive Vice-President
Compressor Components,
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CONFERENCE

THE FUTURE OF UK AEROSPACE



THE MAA ANNUAL CONFERENCE
A REVIEW

2013: MAA members packed Rolls-Royce's Learning and Career Development Centre in Derby to hear industry experts plot the future of the aerospace industry and independent analysts share their latest forecasts. The 160 participants in attendance made the first MAA conference also our biggest event up to that time.

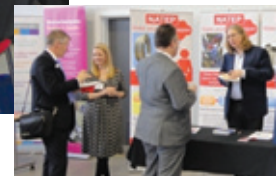


2014: 'Survive and prosper' was the theme of the second MAA conference, which provided an opportunity for leading figures in UK civil and defence aerospace to scrutinise the future of the aerospace supply chain, especially small manufacturers. Six industry and government keynote speakers presented an array of stimulating views, complemented by perspectives from small companies.

Delegates enthused about the event: "Good balance of speakers with different views and perspectives", "Very positive atmosphere", "Presentations were at a very high level", "Great speakers, programme content and networking opportunities".



2015: An audience of 160 heard five industry experts present an array of thought-provoking forecasts and views around the theme 'How to succeed in global aerospace', complemented by perspectives from SMEs, the MAA team and a local cluster. The accompanying exhibition offered good networking opportunities.



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THE VIEW FROM WHITEHALL

“Ultimately it will be industry that makes its own running.”

Marcus Bryson, former head of GKN Aerospace, considers the challenges ahead in his new role with the Department of Business, Innovation and Skills (BIS).

It was an honour to be asked by the government to chair BIS's new Aerospace Hub – and also an opportunity too good to miss.

I've had the privilege, as industry chair of the Aerospace Growth Partnership (AGP), of working alongside people who share my passion for our industry and take pride in its contribution to UK plc. We're proud that UK aerospace ranks No 1 in Europe and No 2 in the world and happy to do what we can, as a board, to make sure not only that it stays there but improves its performance.

As I get into my new role, I recognise that a lot of people in government and the civil service are working very hard to help aerospace succeed. We don't always acknowledge their efforts, in the same way we don't always recognise the importance of initiatives taken by the previous and current administrations – setting up the AGP, for example, and just recently for increasing support for the Aerospace Technology Institute (ATI).

The AGP has been a tremendous success. Not only has it led to improved relationships and new collaborations in business, but also it's transformed the

“We can do a lot of things... but we can't do it for you. You have to get involved.”



way industry works with government. Even our international competitors tell us they've noticed a difference.

That may be so, but it should serve to remind us that nobody should take their market share for granted. So as part of my new role, I'll be working to build on what's already been done to increase exports and inward investment.

One of the things I'm going to try to do is link up the interfaces between government and business and UKTI to see how we can improve our coordination and effectiveness in exploiting those opportunities. I'll be looking at the bigger picture, to use my commercial experience to see what we can do for UK plc around aerospace and make sure the government is effective in its contribution. My role is helping make sure we're all heading in the right direction and doing the right things.

Of course there's only so much organisations like the AGP, or the BIS for

“One of the things I'm going to try to do is link up the interfaces between government and business and the UKTI to see how we can improve our coordination and effectiveness in exploiting those opportunities.”

that matter, can do. Ultimately it will be industry that makes its own running.

Recently I sat down with the heads of the regional aerospace alliances to discuss what more we can be doing to help give UK companies of all sizes exposure to the opportunities that are out there.

What came through is this: we can do a lot of things, open doors, bring to bear a great deal of commercial experience and market knowledge, but we can't do it for you. You have to get involved.

To paraphrase JFK, it's not about what we can do for you, it's about what you can do for yourself. All we can do is create the environment, give you some infrastructure and things you can tap into. After that, it's your call – are you in or out?




www.gov.uk/government/organisations/department-for-business-innovation-skills



Heavy fabrication remains a core skill at Nasmyth Technologies, one of the area's most successful aerospace groups.

THE BEST-KEPT SECRET ABOUT COVENTRY AND WARWICKSHIRE IS NO SECRET AT ALL TO THE AVIATION SECTOR – IT HAS A DYNAMIC AND EXPANDING AEROSPACE INDUSTRY WITH SUPPORT FACILITIES THAT ARE THE ENVY OF MANY OTHERS.

 Coventry and Warwickshire is making a name for itself as one of the best places in the UK for an aerospace business.

It's the home of about 50 MAA members, ranging from consultants to component manufacturers, making it one of the alliance's key local clusters.

Peter Everitt, managing director of PowerKut, can't imagine being based anywhere else. Neither can Arrowsmith Engineering's Jason Aldridge. Why? "Where do you start?" says Aldridge.

"We have outstanding facilities within Coventry and Warwickshire. We have two Catapult centres, two excellent universities for engineering, the most abundant workforce of machinists, inspectors and engineers in the country – and many of the big UK primes within 30 miles.

"Plus we have the MAA in Coventry. It's a strength having your regional association based nearby," adds Aldridge, who also chairs the Coventry and Warwickshire Aerospace Forum (CWAFA).



Growth Hub's Rachael Delich (left) and Natasha Lee with Jon Freedman of CFS Aero.

Everitt, managing director of PowerKut, is from Coventry, as are most of his workforce of 34. His company has deep roots in the region's engineering heritage, going back to the 1930s – and so too do many of his employees.

Some traditional skills in instrumentation and gauge-making are "unique to the area", he says, and helped spread Coventry-made finite measuring equipment around the world.

PowerKut maintains that tradition, developing and manufacturing ultra-high accuracy precision measuring equipment. He describes a current project to develop an instrument that would enable primes and Tier 1 companies to produce their own certifiable measurements as "very disruptive technology".

As Everitt sees it, the local value proposition goes beyond the ability to produce goods to a better quality than might be available from a developing economy. "We tend to get involved with customers," he says. "We become part of their design development team rather than just component manufacturers."

It appears to be a winning proposition: business negotiations currently under way would treble the size of the company and boost PowerKut's workforce to about 80 engineers.

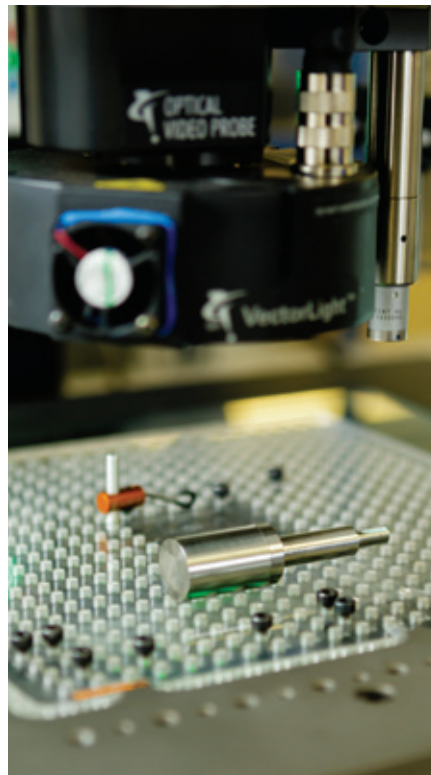
CHALLENGES TO GROWTH

Skills, access to finance and access to land are the three greatest challenges to growth. That's the observation of Craig Humphrey, chief executive of the Coventry and Warwickshire Growth Hub. Humphrey says the Growth Hub – the "cornerstone" of the area's Local Enterprise Partnership (LEP) deal – works with SMEs across sectors including aerospace to break down such challenges.

One of the Growth Hub's strengths, he says, is not being "product driven" as some agencies in the past have been, but rather being a facilitator.

"We're driven by the customer. We try to find solutions that meet their needs. We've had a lot of encouragement from business," he said.

MAA member CFS Aero benefited from Growth Hub activity. The Coventry firm, bought out of liquidation in 2012, has been able to expand into turbine engine remanufacturing thanks to funding from the Advanced Manufacturing Supply Chain Initiative (AMSCI) and help from the Growth Hub.



Precision machining and innovation has helped Coventry companies such as Arrowsmith Engineering make a name for themselves while enhancing the reputation of the local aerospace cluster.

Humphrey says CFS Aero was precisely the type of firm the hub was designed to support. "Whether it's helping to access grant money or sourcing the next generation of staff, we are delighted to have helped what is a truly unique Coventry business."

MODEL FOR SUCCESSFUL COOPERATION

The region is a hive of innovation. Aerospace is a focus of much of the work undertaken in Coventry at WMG, one of Coventry's two High Value Manufacturing Catapults. WMG is "always looking out for opportunities to innovate" across the full technology readiness level (TRL) spectrum, says associate professor Dr Greg Gibbons.

Based at the University of Warwick, WMG (formerly the Warwick Manufacturing Group) describes itself as an international role model for successful cooperation between universities and business. "Rather than us try and push something to them, we like them to come to us with a requirement and need," says Dr Gibbons.

WMG's work in lightweighting and battery development are just two areas of

its research of particular interest to the aerospace sector.

Dr Gibbons is working on the Accelerated Cladding and Integrated Machining (ACCLAIM) project to define additive layer manufacturing (ALM) processes to directly manufacture large primary load-bearing structures such as wing spars. Industry partners include BAE Systems, Bombardier and a number of SMEs.

Across the city, the Manufacturing Technology Centre (MTC) – the area's other Catapult – is at the heart of a growing campus that now includes the Aerospace Research Centre (ARC), Advanced Manufacturing Training Centre (AMTC), and the National Centre for Additive Manufacturing (NCAM), with the High Temperature Research Centre (HTRC) – a collaboration between the University of Birmingham and Rolls-Royce – due to open this year.

The MTC has far exceeded expectations. Chief executive Clive Hickman says its "incredible growth" from a standing start in 2010 was "based on work generated by our growing membership." As well as strong aerospace expertise, the MTC is active across several sectors.

FOCUS ON EDUCATION

The region's skills base is the focus of renewed effort in education at all levels. North Warwickshire & Hinckley College is among establishments offering programmes pitched to industry's requirement. Its apprenticeships are designed with industry partners to make sure students get the best of both worlds.

Career advancement courses are aimed at people 24 and over looking to develop current skills or change career direction. "We have a very strong understanding of what employers need," says the college.

DYNAMIC CLUSTER

Coventry and Warwickshire is one of the dynamic local clusters that are foundations of the Midlands aerospace sector, according to Dr Andrew Mair, chief executive of the MAA.

"With important Meggitt facilities also in the area, and a strong local manufacturing tradition including automotive, aerospace is well supported locally and has a bright future."



www.midlandsaerospace.org.uk

PROFILE

VIEW FROM THE MAA BOARDROOM

“We need to be smart with investment to have the right ideas explored now so they’re available tomorrow.”

Professor Hervé Morvan, director of Nottingham University’s Institute for Aerospace Technology (IAT), sees value in a good industry-academia interface.

HOW DID YOU GET WHERE YOU ARE TODAY?

In 1995, I had the opportunity to do an MSc in the UK in Glasgow through my French engineering school – I came and, except for 22 months of military service, I never left! I completed a PhD in Computational Fluid Dynamics (CFD) in 2001 and joined AEA Technology (now part of ANSYS).

In 2003, Nottingham approached me to apply for a lectureship and in 2007 I started working for the Rolls-Royce University Technology Centre (UTC) in Gas Turbine Transmission Systems. I’d always been an ‘aero geek’ and, given this fantastic opportunity to work directly with Rolls-Royce, I took it – and haven’t looked back. Three years ago when the university was launching the IAT, I was offered the role of director of research. I was promoted to director in August 2014.

WHY DID YOU CHOOSE A CAREER IN ACADEMIA?

I’m not sure I’m a typical academic. I work at the interface between academia and industry. I feel at ease in both worlds, doing research for and with industry and government, developing and exploiting academic lines of research and ideas to address industrial issues.

HAS THE RELATIONSHIP BETWEEN INDUSTRY AND UNIVERSITIES NARROWED THE FOCUS OF RESEARCH?

I don’t think so, though it can indeed be a concern – one needs to be able to articulate what ‘real world’ problem a new research project will solve. There has to be a balance between being relevant and supporting UK plc, and having enough freedom to remain a leading ‘thinking’ institution and nation. We [the UK] need to be smart with our investment to have the



“I feel at ease in both worlds, doing research for and with industry and government, developing and exploiting academic lines of research and ideas to address industrial issues”

right ideas being explored now so they’re available tomorrow.

WHAT DIFFERENCES HAVE YOU SEEN BETWEEN WORKING IN INDUSTRY AND ACADEMIA?

In an industry environment, which is where I started, I liked the corporate management structure, and I do miss this a bit in academia where discussions tend to be more protracted. On the other hand, it’s also the nature of the environment – research attracts and needs focused individuals. The challenge for universities such as ours is to put a ‘management’

structure in place that best serves and exploits these traits.

HOW CAN SMES DEVELOP A WORKING RELATIONSHIP WITH AN INSTITUTE SUCH AS THE IAT?

The IAT can be a portal to R&T and R&D, across a range of scales. It can also be a portal to funding and collaborating with others, including OEMs. We have a team of research and business development staff that work to connect SMEs with academic and research staff across a range of technology areas. I’ve been advocating the need to include the supply chain in the research carried out in my own research group; it is clear that a full system or sub-system performance needs to include all the parts.

WHAT DO YOU SEE AS YOUR ROLE ON THE MAA BOARD?

First of all this is a role I enjoy. As the director of the IAT, I’m involved with national and European R&T and R&D activities. I hope I can bring visibility of these activities to the board. It’s also clear that the supply chain ought to be better integrated into the R&T and R&D landscape – I’d like the IAT to play a solid role here, working with the MAA.

WHAT ABOUT SWIMSUITS?

During the 2008 Olympic campaign, I was approached by Speedo to support the Aqualab, their competition laboratory, from which emerged the LZR Racer swimsuit. It was a breakthrough in swimsuits, very much driven by aerospace design. It’s the one piece of my work which my mother told me she could understand...



www.nottingham.ac.uk/aerospace

FOR YOUR DIARY

ONLINE: WWW.MIDLANDSAEROSPACE.ORG.UK/EVENTS

CALENDAR

NATEP ADDITIVE LAYER MANUFACTURING (ALM) WORKSHOP

MTC, Coventry, 25 February

Innovative ALM in the aerospace supply chain, with an aerospace customer's view of ALM from representatives of Airbus.

MASTERCLASS FOR EXHIBITORS

MAA offices, Coventry, 10 March

Learn how to promote your company effectively at a trade show. This workshop will show you how to make the most of your time and opportunities.

FARNBOROUGH AIRSHOW 2016

Farnborough, 11-17 July

Exhibit with the MAA at Farnborough, the UK's premier industry event and a globally renowned showcase of aerospace equipment, technology and innovation.

HOW TO MAKE THE NEW APPRENTICE LEVY WORK FOR YOU

MAA offices, Coventry, 3 March

A workshop focusing on how the government apprentice levy scheme will work for your business. Aimed at manufacturing and technology companies.

THE MAA ANNUAL CONFERENCE

AMTC, Coventry, 17 March

Join your aerospace peers at the fourth MAA Annual Conference to hear representatives of some of the UK's top aerospace organisations share their vision of the industry's future.



For further information and to book your place at an MAA event, please scan the QR code or visit www.midlandsaerospace.org.uk/events



ABOUT THE MAA...

The Midlands Aerospace Alliance (MAA) is the voice of companies in the British Midlands supplying global aerospace. Its 300 member organisations range from global aerospace players to SMEs. The MAA board comprises senior managers from Meggitt, Moog Aircraft Group, Rolls-Royce and UTAS Actuation Systems, elected



supply chain representatives and key regional partner bodies.

For additional copies of *Midlands Aerospace*, or to add your colleagues to the distribution database, please contact the MAA by any of the means below.

If you have a query or suggestion that you would like to make, please contact the MAA.

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NEW MEMBERS

The MAA welcomes the following new members

ACTIVE INTEGRATED SUPPLY

Stoke on Trent, Staffordshire
Machine tools parts, consumables and PPE integration.

ADAMSON JONES IP

Nottingham
IP, patent and trade mark attorneys.

APPERLEY HONING MACHINES

Worcester
Subcontracting honing bores.

BARNES AEROSPACE

Derby
Critical engine and airframe parts for OEMs.

CN ALLOYS

Seaton, Rutland
Supply of aluminium, titanium, nickel alloys and steel.

FBC MANBY BOWDLER

Wolverhampton
Legal advice on IP, dispute resolution, planning, employment and HR etc.

FORWARD COMPOSITES

Huntingdon, Cambridgeshire
Composite manufacturing.

FRAZER-NASH CONSULTANCY

Burton on Trent, Staffordshire
Engineering consultancy.

HAIDEN TECHNOLOGY

Chesterfield, Derbyshire
Instrumentation for data logging and control.

HARALD PIHL

Bushbury, Wolverhampton
Alloy, copper and steel supply.

HELLER MACHINE TOOLS

Redditch, Worcestershire
Machine tool manufacture.

INVESTX

Stratford-upon-Avon
Private equity specialising in aerospace.

ITI INTERNATIONAL TECHNEGROUP

Swavesey, Cambridgeshire
Engineering product data solutions.

KG WASHFORD

Redditch, Worcestershire
Test and control rigs for aircraft fuel system components.

ROTASTAT

Cheltenham, Gloucestershire
Manufacture of stators, rotors, motors and generators.

TAYLOR ENGINEERING

Burton on Trent, Staffordshire
Precision machining and grinding of exotic materials.

TEBIS UK

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Nuneaton, Warwickshire
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