



midlands aerospace alliance

MIDLANDS

# AEROSPACE

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MAGAZINE

## MIDLANDS ENGINE ASSEMBLY



**AERO ENGINE FORUM COMES  
TO BIRMINGHAM – PAGE 5**

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### VALUE FOR MONEY IN EXHIBITIONS

MAA members reflect on  
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### NEW ECONOMIC REALITIES

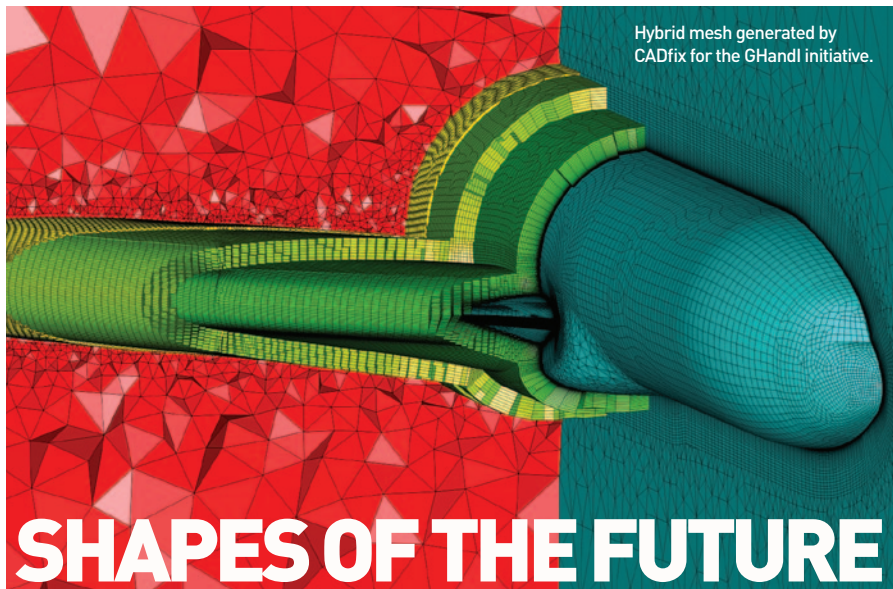
What might Brexit mean  
for your business – page 6



### BIG IDEAS IN ACTION THROUGH NATEP

Innovation from within the ranks  
of the supply chain – pages 12-13





RESEARCHERS HAVE DEVELOPED NEW SIMULATION AND ANALYSIS TOOLS WHICH HAVE IMPLICATIONS FOR FUTURE AEROSPACE PROGRAMMES.



One of the most fundamental properties affecting the aerodynamic performance of an aircraft's body is its shape.

With demand increasing for improved performance and optimisation of airframe shape simulation and analysis, the partners in a UK government-funded research initiative into geometry handling and integration (GHandl) are optimistic their findings will have applications in future aerospace programmes.

New capabilities resulting from this project included enabling the automatic generation of a high-quality mesh for computational fluid dynamics (CFD) simulation of the airflow around an aircraft.

Among the GHandl partners was MAA member International TechneGroup (ITI), whose leading CADfix software offers reliable interoperability, validation and migration solutions for product data and related systems.

A key challenge in the aerospace industry is creating geometry for complex high-quality mesh. This is often a costly, time-consuming and manual process. The GHandl project was established to address a range of complex geometry handling and integration challenges that are key to the UK's future competitiveness in aerodynamic design.

ITI's CADfix team worked with GHandl programme partners, including Airbus

and MBDA, to develop new capabilities for extracting information from geometry and adapting it for use elsewhere in the aerodynamic simulation process.

CADfix made three key contributions:

- Advances in the unique CADfix medial object technology.
- Automatic domain sub-division of the air close to the aircraft skin into connected partitions.
- Development of a framework for integrating best-in-class meshing technologies and external components to orchestrate the creation of a high-quality hybrid CFD mesh.

The results demonstrate the potential for application in future aerospace programmes, and extend to improving geometry handling for internal airflow simulation in aero engines, hypersonic simulation of missiles, and other advanced aircraft simulations.

"Improving aerodynamic modelling techniques are becoming increasingly important," said GHandl project lead Robin Addison of MBDA. "The results from the GHandl project and the advanced geometry handling and meshing technology developed give us the critical building blocks needed to innovate the next generation of aircraft."



[www.iti-global.com](http://www.iti-global.com)



## AGM, MEMBERS MEETING PUTS BREXIT IN A MIDLANDS CONTEXT



The potential impact of Brexit on the aerospace industry in the Midlands is the theme of the MAA members meeting, combined with our AGM, on 1 November in Derby.

Member companies of all sizes will find the discussion of the myriad possible implications of the UK's evolving relationship with the EU and the rest of the world valuable for their own business planning.

Factors such as export tariffs, border controls, customs, R&D finance and the single market are expected to come under the scrutiny of guest speakers.

The AGM will include MAA annual reports and election to the board.

The meeting venue is the Derby Conference Centre which is set in a historic railway building dating from 1938.

The meeting starts with networking and refreshments at 16.00 and concludes at 20.00 after a networking buffet supper. Visit the MAA website to reserve your place.

■ See also 'Navigating uncharted economic waters', page 6-7



# NEWS

## ON THE WEB

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

- The acquisition of German start-up Apodius augments **Hexagon Manufacturing Intelligence's** expertise in the measurement of composite materials.
- MAA member **Alloy Wire International** celebrates the milestone of signing its 250th customer in the spring manufacturing sector.

→ Midlands-based **Sigma Components** is investing in a second facility in China to create additional capacity for manufacturing rigid pipe.

→ PCB manufacturing specialist **Amphenol Innotec** has commissioned a new automated X-ray drilling and routing system for its facility in Tamworth.



[www.midlandsaerospace.org.uk/news](http://www.midlandsaerospace.org.uk/news)



Members exhibiting with the MAA at Paris 2015 reported a good level of interest from visitors and plenty of activity at the stand.

# PREPARING FOR PARIS

↘ The Paris airshow, which opens at Le Bourget on 19 June 2017, promises to be another excellent opportunity to meet and network with important players in the global aerospace industry.

The MAA returns to the show with its popular and effective members' stand. "We have again secured an excellent position for our stand within the UK Pavilion alongside ADS and the other regional aerospace alliances," said marketing manager Emma Burgess.

"We have already received a high level of interest."

The first four days of the show are trade-only, followed by three public days.

Paris remains the largest aerospace event in the world: at the last show in 2015, 2,300 exhibitor companies from 48 countries greeted 150,000 trade visitors. Orders worth £100 billion were announced at the show.

MAA chief executive Andrew Mair said the Paris show "is a special tradeshow. Exhibiting here means participating in a truly global event, and the most fascinating gathering for the industry and all its players, manufacturers and users."

One exhibitor said: "We planned many meetings with existing and new customers – and unexpected meetings with GE Aviation and MAN Diesel and Turbo made our efforts even more worthwhile."

Another added: "We recorded 30 enquiries from passing visitors to our stand."

■ For more information contact [emma.burgess@midlandsaerospace.org.uk](mailto:emma.burgess@midlandsaerospace.org.uk)

■ Finding the value for money in airshows – page 4

# MTC TARGETS SMES WITH 'PRODUCTIVITY CLUB'

↘ A new SME Productivity Club has been launched by the Coventry-based Manufacturing Technology Centre (MTC).

It will offer a range of benefits, including attendance at industry-specific workshops and an opportunity to network with like-minded businesses.

Andrew Mayfield, director

of the MTC Business Launch Centre, said: "The SME club is a further evolution of our SME activity, building on our success to date in providing services to help manufacturers compete locally and on the global stage."

The SME Productivity Club is designed to complement existing and targeted MTC assistance to manufacturers which includes:

- Improved manufacturing operational efficiency (quality, cost, delivery).
- Help with the latest manufacturing technologies and roadmaps leveraging the facilities in MTC's extensive workshop.
- De-risking and accelerating the time to market for new products, using the production

capabilities in MTC's Business Launch Centre.

The MTC also offers the potential of up to 50 per cent match-funded support to assist SMEs in technology/productivity improvement under the SME Reach programme.


■ For more information contact [manufacturing.ops@the-mtc.org](mailto:manufacturing.ops@the-mtc.org)





A good mixture of pre-arranged meetings, queries and impromptu discussions kept exhibitors on the MAA stand at Farnborough 2016 busy throughout the show.

## IF VALUE FOR MONEY CAN BE A DIFFICULT EQUATION IN A COMPANY'S DAY-TO-DAY BUSINESS, HOW MUCH MORE DIFFICULT IS IT IN THE CONTEXT OF AN EXHIBITION?

 MAA members have given the thumbs up to Farnborough 2016, assessing it as a success for themselves and the alliance.

At least 55 aerospace companies with operations in the Midlands exhibited at the show, 23 of them as part of the MAA stand – again one of the biggest among regions at the show.

Many of this year's exhibitors are regulars with the MAA at both the Farnborough and Paris airshows, finding the arrangement a cost-effective way to have a presence at such important international gatherings.

But exhibiting, whether independently or under the umbrella of the MAA, is an expense unlike a business as usual transaction. The return on investment can take time, although there are exceptions.

Spincraft's Steve Ireland said the value for money of exhibiting is "a difficult one to assess"; some shows produce little business. However, the outcome of being at Farnborough 2016 is shaping up into work potentially worth millions of pounds.

"We had a fantastic visit from a Tier 1 company," he said. "We followed through with visits and technical reviews. We met their chief of engineering. We wouldn't have had that if we hadn't been at the show. It was worth it just for that."

He credits the MAA's "great location" in Hall 1 for at least part of this success. "It was perfectly situated. There was a lot of traffic through the hall," he said.

Spincraft, a first-time exhibitor at Paris 2015, had considered exhibiting on its own but the company's experience as part of the MAA stand has convinced directors it is the right option for them.

Farnborough 2016 was "the best ever" for Alloy Wire International (AWI), whose sales director Angus Hogarth said: "Being part of the Midlands Aerospace Alliance's pavilion definitely resulted in an increase in footfall." AWI received more than 150 visitors at the show, a mix of clients and new customers.

AWI had eight technical experts on hand to field enquiries; specific interest came from, among others, fastener firms supplying the aerospace sector and companies involved in space exploration.

A spokesman for exhibitor CW Fletcher rated the company's Farnborough experience as a great success, with the MAA stand providing "a great networking environment" that helped draw in a wide range of customers.

IPI Solutions values trade shows, with seven on its 2016 exhibition calendar in the UK and the USA. At the midway point in this year's campaign, a company representative

said Farnborough "so far is one of the highlights in terms of leads generated and updating customers on our roadmap ahead."

Comments by other companies exhibiting with the MAA suggest that convenience and accessibility are factors in their assessment of value for money. Among their observations:


- A well-organised, professional yet comfortable stand which enabled our company to 'reach' the show easily and support client visits onto our own section of the stand.
- A fantastic opportunity to network with companies from around the globe.
- We found this year to be even better for us than 2014; it was good to catch up with our customers and to hear about the projects they have up and coming which we hope to help them with in the future.
- We had some very constructive meetings as a result of having a presence at the show and received some interesting enquiries.

Commenting on the recurring themes expressed by exhibitors, MAA chief executive Andrew Mair said: "Yet again, our Midlands aerospace stand was busy with meetings for all four trade days, and that's good news for our companies and our cluster."



# A TIME FOR BUSINESS

MAJOR AERO ENGINE FORUM COMES TO BIRMINGHAM IN APRIL 2017

 Aero Engine Forum (AEF) Birmingham is a three day supply chain event, running 18-20 April at the International Convention Centre (ICC), that brings together engine makers and Tier 1 systems makers with the entire supply chain.

The event is being organised by the Midlands Aerospace Alliance and BCI Aerospace, which runs the big Aeromart Toulouse and Aeromart Montreal and similar events across the world. In Birmingham it is being supported by Rolls-Royce, Moog and UTC Aerospace Systems.

As part of AEF Birmingham, the annual MAA Conference will become a major summit held on the first day of the event.



AEF Birmingham promises good opportunities for networking, a hallmark of BCI Aerospace events around the world.

At Rolls-Royce our suppliers make a vital contribution to our performance. We encourage them to work openly and collaboratively with us to deliver operational excellence, innovation and competitiveness. Rolls-Royce will continue to support boosting UK aerospace capability through the Aerospace Growth Partnership and the Aerospace Technology Institute (ATI), as well as Sharing in Growth and the National Aerospace Technology Exploitation Programme (NATEP). We are delighted to be part of the Birmingham Aero Engine Forum and we hope to see many of our suppliers and partners, both existing and new, there.

Colin Smith  
Group President  
Rolls-Royce plc



Linking up with AEF Birmingham turns the annual MAA Conference, now in its fifth year, into a major industry summit.

The summit programme will feature prominent industry executives and experts presenting their views on the state of the aerospace sector, the technologies on which it depends now and into the future, and the capabilities that suppliers need to develop so they can take advantage of the projected increase in business, particularly in the civil aerospace market.

Days 2 and 3 of AEF Birmingham will feature pre-arranged one-on-one meetings between engineering, procurement, supply chain, manufacturing, commodity teams, suppliers and service providers.

All participants will be able to sign up, identify and request meetings with relevant contacts prior to the event.

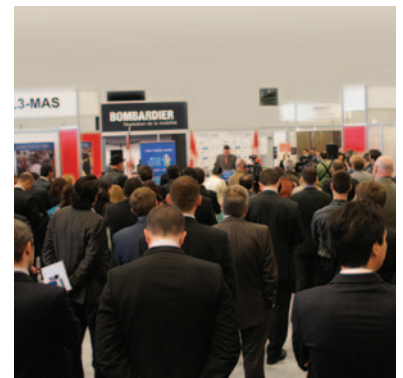
The one-to-one meetings will be held at the same venue.

MAA chief executive Dr Andrew Mair commented: "I am honoured to join Rolls-Royce, Moog, UTC Aerospace Systems, BCI Aerospace and all of our aerospace suppliers in hosting this outstanding event in the Midlands."

■ For more information please visit [www.midlandsaerospace.org.uk/events/](http://www.midlandsaerospace.org.uk/events/)

Moog are delighted to have the opportunity to support this event which will enable us to engage with high quality suppliers to the Aero Engine marketplace.

Stuart Melachlan,  
Group Vice President &  
General Manager Aircraft  
Control Components Sector  
Moog Aircraft Group




Top speakers attract good attendance at BCI events.



# NAVIGATING UNCHARTED ECONOMIC WATERS

MOST COMMENTATORS BELIEVE THE VOTE ON 23 JUNE TO LEAVE THE EU WILL HAVE AN IMPACT ON UK BUSINESS, BUT IN THE ABSENCE OF ANY SOLID INFORMATION, THEY ARE LEFT TO SPECULATE AROUND NUMEROUS SCENARIOS THAT WILL SHAPE A NEW ECONOMIC REALITY.

 Nature hates a vacuum, we are told, and so apparently do economists and business advisors of every stripe and dimension. No one denies there will be changes following the Brexit vote, but it seems nobody is any the wiser what the new economic reality will be and how it will impact important industries such as aerospace.

The one constant among the speculation and opinion, including views from senior MAA members (see panel opposite) is that uncertainty is bad for business.

Farnborough provided a handy forum to canvas opinion. Jeegar Kakkad, ADS chief

economist and director of policy, found the near-unanimous opinion around the exhibition halls and chalets at Farnborough was that the outcome was not what most companies – big or small – wanted. But he reported in *ADS Advance* that there was “a clear mood of rolling up our sleeves and getting on with the job of Brexit.”

The worst immediate effect of the vote was a gradual erosion of the UK’s global competitiveness caused by the uncertainty, both economic and political, he said.

“Many smaller companies said they were being cautious until they knew how their UK

prime customers were likely to react.

“Overall, there was a sense that the UK had to over-compensate for any loss in competitiveness that Brexit uncertainty had caused.”

Among primes, Rolls-Royce set the tone of caution. The company expected to feel no immediate impact itself from the referendum because, as a global company, “two-thirds of our revenue and three-quarters of our order book is generated outside the European Union,” it said in a statement.

“The medium and long-term effect will depend upon the relationships that are

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The revised map of the European Union.

established between the UK, the EU and the rest of the world over the coming years.”

But where does that leave the supply chain?

Paul Sefton, managing director of MAA member IngPro, a consultancy specialising in business development in Central and Eastern Europe, said that as business people, “we need to make working with us as easy as possible for our customers.”

“Fundamental for all of us is to revise our business strategy and try to evaluate potential future scenarios and their effects,” he said. “We need multiple plans, so an appropriate path can be rolled out depending on which scenarios develop.”

The last word goes to Tom Enders, Airbus Group chief executive, who told Reuters: “The world will not stand still, nor will Europe. I hope the divorce will proceed with a view to minimising economic damage to all impacted by Brexit. Britain will suffer but I’m sure it will focus even more now on the competitiveness of its economy vis-a-vis the EU and the world at large.”

*“Fundamental for all of us is to revise our business strategy and try to evaluate potential future scenarios and their effects.”*

## ‘STAY CLOSE’ TO YOUR CLIENTS AND BE READY

WHAT DO FELLOW MEMBERS OF THE MAA THINK ABOUT THE NEW ECONOMIC CLIMATE, AND HOW DO THEY PREPARE THEMSELVES FOR THE FUTURE? TWO SHARED THEIR THOUGHTS ON CONDITION OF ANONYMITY.



The best – and possibly only – action that companies can take immediately is to “stay close” to the thinking of their major customers – their views and concerns – and read any research papers from relevant organisations such as *Financial Times*, *Economists* for Brexit and the like.

That’s the opinion of a spokesman for an MAA member company with a global operation.

“There’s nothing we can do until we know some of the answers,” she said. “Is there going to be a customs zone? Will we have access to the single market? Will I have to change my IT system to support a customs zone? What about foreign exchange?”

For her own executive team briefing, the spokesman carried out extensive internet research, looking at what the main players in the aerospace and defence industries were saying about factors including export tariffs, border controls, customs, R&D finance, the single market and so on. She also asked consultants she had used for their views.

What she found was “lots of contradictory information – much like the pre-vote campaign”.

Even basic things like contracts could be affected as British legal authorities reconsider the inclusion of European conditions. “That’s why some are saying this may be a 10-year divorce period,” said the spokesman. “But not everything needs to be unravelled.”

Her best advice to fellow MAA members

was to pay close attention to “what starts to happen” and be agile.

Another member, the managing director of a Swiss company’s UK operation, agreed. “The biggest challenge for everyone is the uncertainty,” he said, adding that the attitude in the aerospace industry appears to be ‘business as usual’.

Supply chain companies normally work to the schedule stated in their material requirements planning (MRP) signal from an OEM, which gives them a “view of the world that typically goes out six months”, he said.

“I’ve seen no indication that the MRP signal has changed as a result of Brexit.”

The bigger the entity, the longer the business projection horizon. “Going forward, I expect there to be more questions asked by corporate headquarters about the security of the business when I ask for a sizeable investment.

“We don’t anticipate any Brexit effect on business for 18-24 months. It’s on the horizon, but I don’t think that will make me change any decisions to invest in equipment and people.”

He finds it useful to monitor Rolls-Royce’s announcements, since the engine prime has big investments both at home and overseas, and has been “shrewd” in its partnerships.

“Eighty per cent of their gas turbine engines are made in the supply chain. It’s strategically important for us to keep an eye on what they’re doing.”


*“The biggest challenge for everyone is the uncertainty.”*

# SUPPLY CHAIN

CAN WE KEEP UP WITH GROWTH?

# AT RISK OF LOSING OUT?

A NEW STUDY UNDERLINES THE RISKS FACING THE AEROSPACE SUPPLY CHAIN IF IT FAILS TO KEEP UP WITH THE GLOBAL COMPETITION – YET BUSINESS IS BOOMING IN THE MIDLANDS.

 Worrying signs of weakness in the UK aerospace supply chain have emerged in a major report released at Farnborough.

It suggests that the UK may not be keeping pace with growth elsewhere in the global aerospace industry, putting at risk its ability to gain its share of the forecast £5 trillion spend on new aircraft up to 2034 – and ultimately threatening the UK’s position as the world’s second-largest player in aerospace.

Yet new data from the 2016 MAA member survey suggests that rapid growth is

continuing in the Midlands, closely following aircraft production volumes at Airbus and Boeing. Which study is right?


The UK Aerospace Supply Chain Study, published by the former government in July as BIS Research Paper No 294, was compiled from surveys and interviews with companies at all levels of the supply chain carried out between November 2015 and April 2016.

The study was commissioned by BIS to identify what the industry sees as the supply chain’s strengths, weaknesses, opportunities

and threats. Its findings are summarised in seven key points:

- The UK aerospace industry is growing more slowly than its global competitors.
- Advanced manufacturing and technology skills are in short supply in the UK.
- The UK may not be best positioned for the opportunities presented by new aircraft programmes and technologies.
- Our global competitiveness is weakened by a lack of advanced manufacturing and lean supply chain management.

## IS THE MIDLANDS BUCKING THE NATIONAL TREND?

 The UK Aerospace Supply Chain Study is important, says MAA chief executive Dr Andrew Mair. “It sets out divergent views on the competitiveness of the UK aerospace supply chain from our primes and Tier 1s, on the one hand, and our suppliers, on the other.”

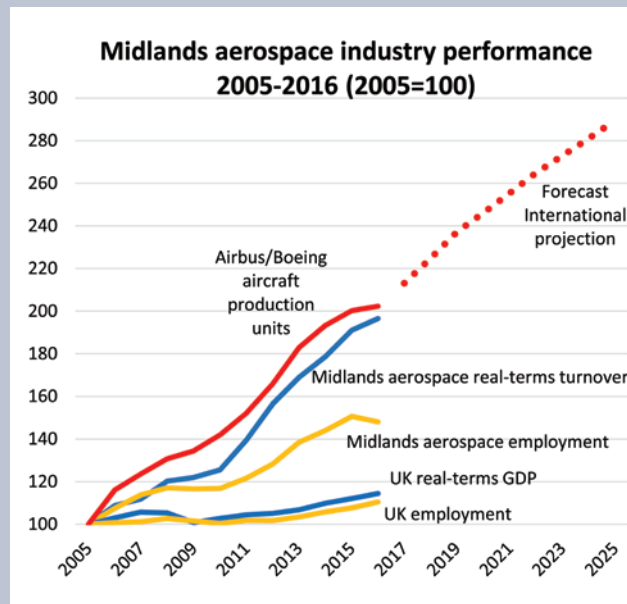
The MAA has surveyed member companies every year since 2005. The results of the 2016 survey make for an interesting comparison.

The Midlands aerospace cluster appears to be continuing the trend of rapid growth that started a decade ago. Real-terms turnover has nearly doubled since 2005.

Growth closely mirrors Airbus and Boeing aircraft production. That would suggest the global market share of the Midlands is being retained.

Productivity and gross value added (GVA) have also continued to rise, which may be an indicator of strong management and skills in the industry. Productivity in the Midlands aerospace cluster has grown at more than three per cent a year for a decade.

The MAA has also monitored a panel of 20 typical aerospace suppliers since 2009 – the kinds of companies under the microscope in the government study. Their average business turnover growth per year has been a high 12 per cent.

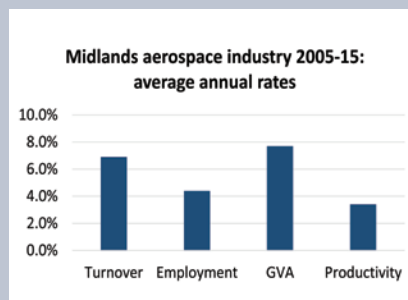


Employment growth has been four per cent. This suggests higher productivity growth in the lower tiers of the industry in the Midlands than in the upper tiers.

On the face of it, the Midlands data seems to present a more optimistic prognosis than the the government study. Mair says further research may be needed. “Our regional cluster, which is dominated by civil aerospace, benefits

‘naturally’ from growth at Airbus and Boeing compared to clusters more dependent on defence aerospace.

“At the same time, the productivity numbers suggest that our supply chain companies are working very hard – and successfully – to maintain their competitiveness. It’s interesting to note that improving productivity is the objective of 60 per cent of the NATEP aerospace supplier R&D projects.”





# SUPPLY CHAIN

## CAN WE KEEP UP WITH GROWTH?

- Lower-tier companies may lack the management structure and processes to grow.
- Prime contractors and lower tier suppliers have different views on the barriers to growth in the global market.
- Stronger support is needed for late-stage technology development.

“For the UK to secure a major stake in future aircraft programmes, the aerospace supply chain must continue to offer high quality products whilst being globally competitive,” the report said. Current trends, however, were said to show that UK content on new aircraft is declining.

The study found that the UK’s core aeronautical engineering skills, while strong, are in danger of being diluted by the twin problems of fewer new entrants into the field and demand for the same skills from other sectors, including automotive and nuclear.

Survey respondents identified surface treatment, titanium machining, specialist wire and carbon fibre as areas where the UK supply chain is weak.

Such skill shortages undermine the UK

*“Demanding contractual terms and conditions and payment structures were also highlighted as problematic.”*

supply chain’s ability to benefit from a major stake in any new aircraft programmes, says the report. Some smaller suppliers were said to lack the capabilities to access these opportunities through export markets.

In the area of advanced manufacturing and supply chain management, the study highlights one of the disconnects between different parts of the industry. “Smaller businesses... had a more positive view of their own manufacturing and supply chain skills,” it says, whereas larger customer companies were more critical of supply chain capabilities.

There was also disagreement between upper and lower tiers of the supply chain on the barriers to growth in the global market.

The procurement behaviour of major companies emerged as a major weakness from the perspective of the supply chain.

“Demanding contractual terms and conditions and payment structures were highlighted as problematic,” says the report.

However, interviewees from higher tier companies “recognised the impact of their complex procurement processes, but did not see them changing in the near term.” They instead identified the issues of skills and training as the main barriers to growth within the lower tiers.

In short, the report says there is “a clear difference of opinion” between what prime contractors and major Tier 1 suppliers think the UK supply chain needs to access the major growth opportunities, and the apparent capabilities and plans of the lower tier suppliers.

The study raises concerns that higher tier UK companies are buying more from abroad than from the UK supply chain.

“This is contributing to a reducing UK share of the global aerospace supply chain market in the face of lower costs and higher productivity in many emerging and advanced economies, and a strong willingness for some overseas governments to invest in this area.” the report concludes.

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# CALLING ALL AERO ENGINEERS

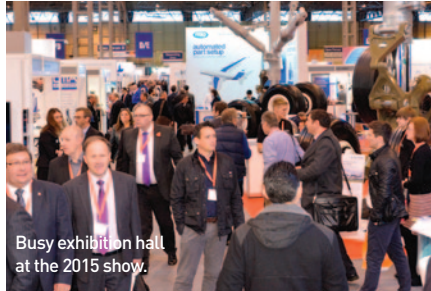
ADVANCED ENGINEERING BRINGS TOGETHER OEMS AND TIER 1 MANUFACTURERS TO MEET AND DO BUSINESS WITH ALL LEVELS OF THE ENGINEERING SUPPLY CHAIN.

Those working within the aero engineering industry will have plenty to see at Advanced Engineering, the UK's largest annual meeting place for engineering professionals, which returns to Birmingham's NEC on 2-3 November.

Entry to Advanced Engineering is free for those who pre-register.

The show spans key industry sectors, including aerospace, automotive, motorsport, marine, civil engineering, performance metals and composite materials. It features four 'shows within a show' including Aero Engineering 2016.

The UK aerospace industry employs nearly 130,000 people and has grown by 39 per cent since 2010, boasting a turnover of £31 billion. It has been tasked with delivering new technologies to help bring in cleaner,



Busy exhibition hall at the 2015 show.

quieter and more efficient civil aircraft.

Addressing those challenges, Aero Engineering will feature a plethora of key industry suppliers and research institutes, many of which are committed to finding new developments and innovations within the aerospace industry. They include Airbus, ADS, Aerospace Technology Institute (ATI),

National Aerospace Technology Exploitation Programme (NATEP), National Physical Laboratory, North West Aerospace Alliance (NWAA), the Rubber and Plastics Research Association (RAPRA) and many more.

More than just a conference, the show is on target to have its largest-ever exhibitor base with more than 700 organisations on board. Many will be using the show to launch new products and services to the wider engineering market.

Major exhibitors include Aero Consultants, Axson UK, PPG Aerospace, Moravian Aerospace Cluster, Senior Aerospace and Westwind Air Bearings.

For further information about Advanced Engineering 2016, please visit [www.advancedengineeringuk.com](http://www.advancedengineeringuk.com)



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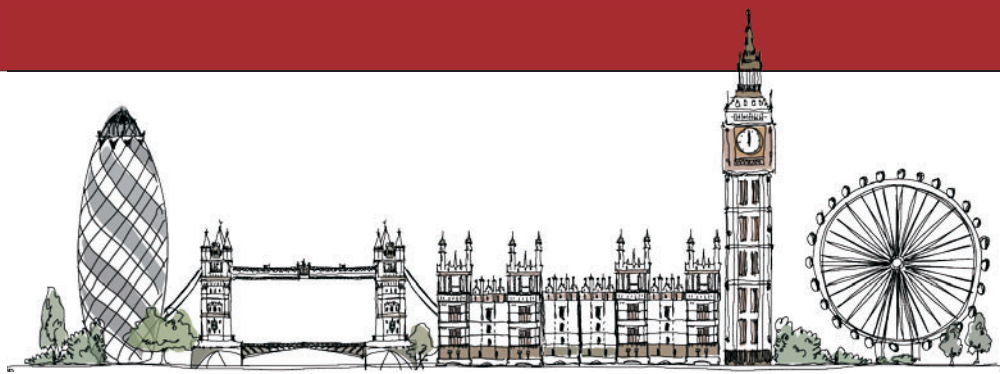
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## VIEW FROM THE WESTMINSTER LOBBY

# *“Industrial strategy clearly needs to act in partnership with businesses”*

*Terry Scuoler, chief executive of EEF, the manufacturer's organisation, calls for clarity on what a UK industrial strategy will look like in practice.*

 The UK economy faces a range of challenges, from sub-par productivity growth and an expanding current account deficit, to historical under-investment and imbalanced growth stemming from a reliance on consumer spending.

While some of these issues were exacerbated by the financial crisis, it is the lack of progress on addressing them over the past six years which remains an ongoing problem for the UK.

The uncertainty stemming from the UK's decision to leave the European Union adds an additional layer of complexity in dealing with these economic challenges. It also means that action – particularly through focused government policy action – has become more urgent.

Even before the referendum, manufacturers were expressing a degree of frustration at the government seemingly downgrading the importance of the need for a clear industrial strategy.

With the selection of a new prime minister and the changes to the machinery of government that followed, it seems this has now been recognised with the welcome creation of a new government department for Business, Energy and Industrial Strategy (BEIS).

The focus must now shift from making the case for an industrial strategy, to offering clarity on how it will look in practice. The starting point must be a clear sense of the goals, which include a rebalanced model of growth delivering greater productivity and



*“It is important that the new business department demonstrates some early wins to cement this new approach and provide confidence.”*

prosperity for the UK. This should be based on more investment, innovation, exporting prowess and the focus on building future competitiveness.

Manufacturing, due to its investment, export and innovation-intensive nature, will make a disproportionate contribution to delivering these overarching economic objectives.

However, industrial strategy clearly needs to act in partnership with businesses to support these objectives by removing barriers and supporting the pursuit of new technological and market opportunities.

This will in turn create a positive spiral of further investment.

There are of course some lessons to be learned from the previous coalition government's approach, but weaknesses were also inherent in the lack of an overall and integrated government approach. This must now be rectified and it is a positive step that the prime minister will herself chair the cabinet sub-committee on industrial strategy.

EEF's approach to industrial strategy covers four key pillars, beneath which are specific and measurable actions that the government can take now. Firstly, it needs to support industry's efforts to deliver a more skilled and adaptable workforce. Secondly, there is a need for investment in more reliable and resilient infrastructure. Thirdly, it should provide better support for growing businesses and entrepreneurs, and finally, it should reduce the cost of doing business in the UK, helping to make the business environment as competitive as possible for home-grown and overseas investors.

Having committed to developing an industrial strategy, it is important that the new business department demonstrates some early wins to cement this new approach and provide confidence that the approach will become embedded across government.

In this spirit, let us also look forward to a dynamic and supportive set of fiscal stimuli in the Chancellor's Autumn Statement.




[www.eef.org.uk](http://www.eef.org.uk)



MAA members and others share results from their NATEP additive manufacturing (AM) projects with an audience including Airbus and Leonardo.

# SHOWCASING NEW TECHNOLOGIES

DR ANDREW MAIR REFLECTS ON THE ACHIEVEMENTS OF NATEP AND THE BENEFITS IT HAS BROUGHT TO AEROSPACE SUPPLIERS BY OPENING UP NEW TECHNOLOGY OPPORTUNITIES.

 At NATEP showcase events around the country, we are learning about brilliant work to develop new technologies for the aerospace industry.

What is exciting is that this work is being undertaken not by the big prime contractors and Tier 1s, but by companies at the heart of the Midlands and UK aerospace supply chains.

Companies are identifying hitherto unexploited know-how, developing new technologies closer to market, and moving up the value chain to improve global competitiveness.

This technology development work will improve the performance of the aircraft of the future, and across the whole product lifecycle – leading to better quality, design, weight, fuel consumption, safety, productivity and cost for aircraft makers, airlines and passengers alike.

There has always been great innovation potential deep within our regional supply chain clusters. This potential is now being realised, and we are sharing a whole suite of super new ideas with the wider aerospace world through the showcase events.

NATEP is the UK's National Aerospace Technology Exploitation Programme. More than 250 companies are working on more than 100 projects supported by NATEP.

The shared objectives of this NATEP family are clear. We are delivering more than 100 new technologies. We are going to get a good proportion of these deployed on global aerospace platforms over the next 10 years. And we are strengthening capabilities to develop further new technologies – in short to do R&D.

In unlocking the innovation potential of hundreds of supply chain companies, NATEP seems able – to adapt a favourite advertisement from the past – to refresh the

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*“There has always been great potential to do such valuable work deep within our regional supply chain clusters. This potential is being realised.”*

parts of the supply chain other support programmes and institutions do not reach. It is starting to give the UK a better balance of technology investment across primes, Tier 1s and SMEs in a UK aerospace funding system historically dominated by the largest companies at the top of the tree.

And because the success of NATEP is based on lessons from the Aerospace Technology Exploitation Programme (ATEP) projects pioneered by Midlands Aerospace Alliance members between 2006 and 2012, the MAA is leading in helping our fellow regional aerospace alliances implement it in their regions.

As the programme architect and designer of NATEP back in 2012, I am so pleased to see so many exciting new technologies coming through. The question now is whether all this good work will continue, at the right scale the supply chain needs to help it transform itself, when the current funding runs out next year.

■ See page 15 for a calendar of upcoming NATEP showcase events.



# MORE IDEAS IN ACTION

MIDLANDS AEROSPACE TAKES A LOOK AT FOUR FUNDED NATEP PROJECTS IN WHICH SUPPLY CHAIN COMPANIES ARE PUTTING GOOD IDEAS INTO PRACTICE WITH THEIR CUSTOMERS.

## 3D Moulded Circuits

**Partners:** Laser Optical Engineering, Moulded Circuits, MBDA UK

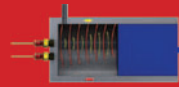
The objective of this 18-month project is to develop a new way of writing fully functional copper circuitry directly onto a three-dimensional part. This will enhance current production methods by allowing more design freedom, leading to inclusion of more circuitry on functional parts that will reduce size, weight and cost.

The NATEP support has enabled the partners to refine the laser processing, using a 5-axis machine, to accurately create the circuit tracks on a 3D object made of commercially suitable plastics.

Midway into the project, the team is on track to proving the concept by developing the energy spectrum parameters for the laser beam while it moves in three dimensions to eliminate damage to the parts while allowing fast and repeatable processing.

## Piezoelectricity enabled aero controls

**Partners:** Ionix Advanced Technologies, Linwave Technology, Rolls-Royce



Ionix Advanced Technologies leads a NATEP project to integrate novel piezoelectric materials into gas turbine engine components to improve the control of parts operating in extreme environments.

The partners have developed an innovative way to encapsulate piezoelectric crystals in glass 'coupons' which are fitted to titanium pistons for a smaller, lighter and cost-effective alternative to the current fly-by-wire engine monitoring systems.

With active support from the end-user, Rolls-Royce's Controls and Data Services, the partners have prototypes running in the hostile conditions of an engine. There is strong potential for commercialisation of the research within a year of the project's end date, spring 2017.

## Hands-Free Inspection Interface

**Partners:** Muretex, Coventry University, Cranfield Aerospace, Tier 1 supplier

In this project led by Muretex, the partners developed an optical head-mounted display system to allow 'hands-free' aerospace inspections without reference to printed materials.

The grant enabled the partners to develop the infrastructure and processes to serve up work instructions in a readily assimilated manner, reducing operator workload and improving efficiency, accuracy and traceability. Trials at Coventry University were commissioned to demonstrate the benefits of using a head-mounted display system over the use of traditional work instructions.

Preliminary results are promising and could lead to commercialisation with a major aerospace Tier 1 in six to 18 months. The partners are keen to talk to potential end-users.



## Machine Connectivity and Manufacturing Intelligence

**Partners:** ATS, Hitex UK, Arrowsmith Engineering

Bringing the 'digital factory' within reach of SMEs is the objective of this NATEP project. Partners ATS and Hitex UK are developing a cost-effective machine connectivity module (MCM) to monitor manufacturing processes, using embedded sensors, wireless communications and Android-based data processing and display platforms.

So-called credit card technology will enable them to install low-cost sensors on manufacturing machinery which will communicate via wifi with a server in tablet format, potentially leading to integration with a manufacturing intelligence network which will then enable process improvement programmes to maintain competitiveness.

Programming of the prototype hardware is expected to lead to trials by the end of the year and, if successful, full factory installation of the trial system at Arrowsmith Engineering beginning in 2017.

## PROFILE

VIEW FROM THE MAA BOARDROOM

“The private sector needs to lead, with the public sector supporting.”

*Jay Patel, head of Economic Development in Wolverhampton, takes a pro-business approach in his work, especially with SMEs, to help them achieve their aspirations and goals.*

### HOW DID YOU GET TO YOUR CURRENT POSITION?

I graduated from Cardiff University and became an auditor with BDO Binder Hamlyn. I moved into industry with the Reinforce Earth Company which was taken over by the Freyssinet Group when I became finance director and company secretary. We provided civil engineering solutions with patented products such as the reinforced earth structures of overpasses. Part of my role was to help find technologies and apply them to client solutions.

Then I moved to the public sector, first in Manchester, then Wolverhampton local authority. I wanted to work with SMEs, particularly in manufacturing, where I felt my experience could be useful in helping them find the means to develop products and services.

### WHO WAS YOUR GREATEST INFLUENCE?

Without a doubt, my boss at Freyssinet, Roger Warwick. He taught me to think out of the box. One time we were with the MoD looking at rocket launchers from the Falklands War and saw how we could convert them into soil nailing machines to stabilise earthworks. That's the kind of thinking we did.

### HOW DO YOU DEAL WITH POLITICALLY-DRIVEN CHANGES THAT AFFECT YOUR WORK?

It's not a problem. When central government makes decisions, we don't have much choice. We have to put in the infrastructure, then work out how to deliver. When the Regional Development Agencies (RDAs) were disbanded, we had to organise ourselves with Local Enterprise Partnerships (LEPs). We've always worked with the private sector so this wasn't an issue, plus our four local authorities were quick off the mark with a



*“Some people assume if the money dries up, so does the relationship. We deal with that by looking at other ways of supporting organisations, such as providing services for them.”*

board, governance and agreed priorities. It's all incremental. The private sector needs to lead, with the public sector supporting.

### HOW DO YOU DEAL WITH FUNDING CUTS?

Some people assume if the money dries up, so does the relationship. We deal with that by looking at other ways of supporting organisations, such as providing services for them. We try to work with organisations to get something different going.

### WHAT ACHIEVEMENTS IN YOUR ROLE AT WOLVERHAMPTON ARE YOU MOST PROUD OF?

There are several. One that stands out is

being part of a team when, five or six years ago, we decided to target India for inward investment. We went to the Bangalore airshow and visited various cities. That was the spark that led to getting the £500 million JLR investment in Wolverhampton that has made the city a great inward investment success.

### WHAT DO YOU CONTRIBUTE AS A DIRECTOR OF THE MAA?

A pro-business approach. I've brought LEPS around the table, hosted meetings, supply chain events – and of course the MAA annual conference. Aerospace is important to Wolverhampton with three big companies – Moog, UTC and HS Marston – located here. We were the first local authority to go to Farnborough eight years ago with the MAA. That helps us keep tabs on what's happening in the industry and how we might help 'make it happen'.

### WHAT ADVICE DO YOU OFFER TO YOUNG PEOPLE TODAY?

Get a good education in your area of interest. Look closely at what a career involves. Engineering, for example, isn't the typical shop floor environment of years ago. Today it involves working with computerised CNC machines and technology. Get good advice, make a smart career choice and take advantage of opportunities.

### IF YOU HADN'T FOLLOWED YOUR CAREER PATH, WHAT MIGHT YOU BE DOING NOW?

I'm a massive cricket fan and would have loved to become involved in the game. I played for Staffordshire at the county and district levels. Now I coach kids of 11 up to 15.



[www.wolverhampton.gov.uk](http://www.wolverhampton.gov.uk)



# FOR YOUR DIARY

ONLINE: [WWW.MIDLANDSAEROSPACE.ORG.UK/EVENTS](http://WWW.MIDLANDSAEROSPACE.ORG.UK/EVENTS)

## CALENDAR

### BREXIT AND AERO-SPACE: MAA MEMBERS MEETING AND AGM

Derby Conference Centre,  
1 November  
Hear valuable insights into the possible impact of Brexit at this year's combined members meeting and AGM.

### NATEP SHOWCASES

- MTC, Coventry, 15 November  
- Rolls-Royce, Derby, 18 January 2017

Adding value through manufacturing technology; celebrating success to date; presenting new ideas to aerospace customers and industry stakeholders.

### PARIS AIRSHOW

Le Bourget, Paris,  
19-25 June 2017  
Exhibit with the MAA at Paris 2017 and experience first-hand the benefits of having a presence at one of the world's top international meetings of aerospace buyers and sellers.

### ADVANCED ENGINEERING & AERO ENGINEERING

NEC, Birmingham,  
2-3 November  
Visit us at Stand M1 at the UK's largest dedicated engineering event and learn about business opportunities at all levels of the supply chain.

### MAA CONFERENCE & AERO ENGINE FORUM

ICC, Birmingham,  
18-20 April 2017  
The annual MAA Conference is the headline event at next year's Aero Engine Forum, taking place on the first day of this important supply chain event.



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

## NEW MEMBERS

The MAA welcomes the following new members

### COACHING FOR CHANGE

*Chesterfield, Derbyshire*  
Consultancy providing services and products that reduce cost and improve performance.

### DATUM ENGINEERING

*Nuneaton, Warwickshire*  
Manufacture of components, precision CNC surface, hot forged and threaded bolts.

### DONCASTERS AEROSPACE

*Shrewsbury*  
Fabrications and machined components, including turbine blades and vanes for aero-derived gas turbines.

### LANCASTER ALLOYS

*Worcester*  
Manufacture and supply of premium quality weld wire filler materials.

### SHEEN SPARK

*Birmingham*  
Subcontract EDM services specialising in a combination of CNC wire erosion and CNC spark erosion.

### SOLIHULL COLLEGE & UNIVERSITY CENTRE

*Solihull*  
College with an aerospace and aviation academy offering professional and vocational courses.

### SUMMIT ENGINEERING (BIRMINGHAM)

*Solihull*  
High quality, tight tolerance, precision turned, milled, ground, drilled, assembled and kitted machined components.

### TEC TRANSNATIONAL

*Sutton Coldfield, West Midlands*  
Implementation of modern and effective manufacturing and quality systems, training and coaching of system operators.

### WBD

*Halesowen, West Midlands*  
Specialist balancing of rotating equipment to aerospace and general engineers worldwide.

Become a member of the MAA and join the 300+ other companies and organisations that are already enjoying the benefits of belonging to one of Europe's largest aerospace industry trade groups. It costs your company only £495 per year if you are in the Midlands or £690 if not.

For information about membership in the MAA, go to [midlandsaerospace.org.uk/join-the-maa](http://midlandsaerospace.org.uk/join-the-maa) or contact the MAA office.



[www.midlandsaerospace.org.uk/join-the-maa](http://www.midlandsaerospace.org.uk/join-the-maa)

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

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midlands aerospace alliance



# Aero Engine Forum BIRMINGHAM

## APRIL 18-20, 2017



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### International Business-to-Business Forum and Conference for Aero-Engines and the Aerospace Supply Chain



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