midlands aerospace alliance

MIDLANDS AEROSPACE MAGAZINE

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JJ CHURCHILL PROGRESSES IN AM

JJ Churchill at forefront of additive manufacturing - page 2

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LET'S TALK BUSINESS

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Update

A quick fix

JJ CHURCHILL'S NEW PROCESS MELDS TRADITIONAL AND ADDITIVE MANUFACTURING

MAA member company JJ Churchill is at the forefront of this new style of manufacturing focusing its initial effort on applying additive manufacturing to tooling.

In adopting this process, JJ Churchill has already seen a reduction in time to prepare fixtures by 70% in its CMM quality inspection process, and a reduced cost of 50%. The company worked with HK3D to produce the fixtures, which are being used to make parts for an OEM in the the aerospace industry.

JJ Churchill produces bespoke fixtures to hold the complex range of parts being machined on site. These fixtures are precision machined components which comprise many intricate parts. This is often a time-consuming and resource-hungry process, involving many machines and many skilled engineers. Employing additive manufacturing in some aspects of the production process is making these resources work more effectively.

The chosen fixture was needed to hold the components in the most effective orientation for CMM. It needed to deliver repeatable precision loading and ease of use.

Previously, a fixture could only be manufactured once the components had already been machined. This process typically took two weeks.

The fixture would have been manufactured by machining a block of metal. JJ Churchill worked with HK3D to design and deliver the 3D printed fixture in three days.

The new process not only saved time but also reduced costs by half, with much less waste. It also removed a potential bottleneck when introducing new parts. The traditional manufacturing prove-out process follows a linear path:

1. Write the CMM programme
2. Wait for components to be machined
3. Prove out CMM programme
4. Programme CMM for production

The removal of what is often a bottleneck in stages 2 and 3 has made this process more flexible than previous methods of manufacturing as well as reducing cost, time and waste.

Karan Singh, one of JJ Churchill's manufacturing engineers and the company's lead in additive manufacturing, commented on the new process saying: "*The benefits of bringing 3D printing into a traditional manufacturing process are huge. In this project, not only did we achieve significant savings in time and money, but our knowledge and capability has rocketed.*"

"It made us analyse a problem in different ways and pushed our way of thinking. It has also changed the way I think as a design engineer, and I have found it highly fulfilling. This is a great example of additive manufacturing working in synergy to deliver huge savings in time and money."

Managing Director Andrew Churchill said, *"This is another example of JJ Churchill applying emerging technologies to component manufacturing and inspection techniques.*

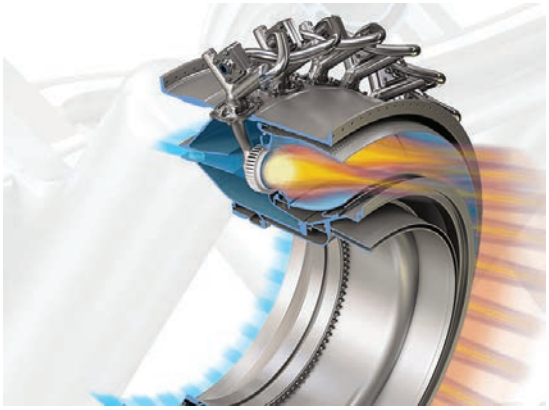
"The adoption of 3D printing and its application to the way JJ Churchill engineers products fundamentally increases our agility as a business to meet our customers' new product introduction timescales, whilst at the time reducing the cost of tooling."

www.jjchurchill.com

For a full report, visit www.midlandsaerospace.org.uk/news

A DRAMA-TIC ENTRANCE

Focused on one of the biggest scientific and industrial experiments of recent decades, the new project DRAMA - Digitised Reconfigurable Additive Manufacturing for Aerospace - is designed to help aerospace suppliers get to the forefront in additive manufacturing (AM, sometimes called 3D printing). AM is the latest disruptive technology breakthrough for aerospace manufacturers, contrasting in almost every respect with its subtractive manufacturing counterpart. AM is dubbed revolutionary as the new process challenges many of the traditional methods of manufacturing relied on by the aerospace industry.



GE is making engine fuel nozzles like these using additive manufacturing. Source: GE

Commencing in November 2017, DRAMA will last three years and has been awarded £14m by Innovate UK. DRAMA is led by the Manufacturing Technology Centre (MTC), which will use part of the resource to provide the equipment for companies to test and explore their potential capabilties in additive manufacturing. A number of other companies and organisations are official partners in DRAMA, including ATS, Autodesk, Granta Design, Renishaw and the University of Birmingham.

DRAMA is aimed squarely at the aerospace supply chain. The MAA is also a partner in the project, with the purpose of ensuring the project meets the needs of typical MAA member companies, many of which are small manufacturers of aerospace parts. The MAA's role will be to assist companies that want to try out aspects of additive manufacturing and expand their manufacturing potential, experimenting to see if this new style of manufacturing can improve their production capabilities without compromising on quality. These breakthrough manufacturing techniques are set to mean a new skill set for all apprentices entering the industry and many current employees, and DRAMA will help aerospace manufacturers understand the implications for recruitment, skills and training.

The MAA's own experienced technology managers will be on hand to assist companies to get involved in DRAMA and identify and learn the new skills. In turn, the project as a whole will give the MAA and all interested members a greater understanding of the aerospace industry's requirements for additive manufacturing in the future as well as what help smaller companies require in order to maximise their capabilities and potential to use the new techniques.

"The involvement of the MAA will provide reassurance smaller manufacturers need not be left behind in the march to additive manufacturing," said MAA Chief Executive Dr Andrew Mair. "Participating companies will be able to optimise their research with discretion, enabling companies to take their own unique adaptive approaches while sharing general lessons." Mair added that MAA member companies will be able to see whether the product families they currently make are compatible with additive manufacturing production techniques, learn from the research results and identify the skills needed to transition their companies to the new way of manufacturing if required.

The DRAMA project is part of a revolutionary experiment in aerospace manufacturing. Such is the current widespread interest, it is clear additive manufacturing is an opportunity worthy of serious exploration and potential exploitation. MAA members are continuously looking for new ideas and ways to minimise waste and expenditure while enhancing their workforces's skills and know-how. By working together through DRAMA, participants should find no wrong answers but only positive results - and possibly a brand new venture in manufacturing.

So, to DRAMA or not to DRAMA? - That is the question.

NEWS ON THE WEB

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

→ **JJ Churchill** is celebrating eighty years in business, by recruiting the highest number of apprentices in its history

→ **Aerospace company Dahler** is now ready to build a new logistics platform, which will largely be automated

→ **TEC Transnational** celebrates 50% growth in student numbers and 40 years of business.

→ **Jonathan Lee** celebrates its 40th anniversary this year, marking the occasion with a number of events throughout 2018

www.midlands aerospace.org.uk/news

Meet the MAA Business

Luke Parker
Director, Acres Engineering

Director of an SME, specialising in providing quality engineering custom products whilst designing for manufacture and assembly

David Fisken
Head of Business Attraction, Marketing Birmingham

20 years+ experience working with international businesses in inward investment

Wendy Stopher
Head of Group Procurement, Rolls-Royce and Chairperson of MAA Business Development Group

Business leader with 20 years+ of procurement, supply chain and sourcing experience in progressive multi-national companies

Rob Holmes
Customer Development Executive, Nasmyth Group

A dedicated team-player at Nasmyth and active member of the MAA

The MAA has a fantastic network of more than fifty industry experts who support the MAA team on our Board or one of our three working groups. The Business Development Group has met four times per year since 2004 -- that's more than 50 meetings and more than 2,000 person hours!

We're here to guide the MAA team and advise the MAA Board on how the MAA can best support our member organisations on all things related to business development and marketing. I've been in the chair since 2016, having replaced David Danger when he stepped up to be MAA Chairman. And I firmly believe, as I know does our Chief Executive Andrew Mair, that group discussions and ideas have played a vital role in ensuring the MAA delivers what our members want, in the excellent detailed execution of our events, and in the MAA's often bold and innovative initiatives.

On the following pages we've set out just some of what the Business Development Group has achieved over the years. That all this is delivered on a regular basis with only 2 full-time-equivalent staff in the MAA office working on business development is due in no small measure to us in industry being fully committed to contributing our time, our ideas and our experience to guide and maximise the impact of the MAA's professional staff.

Brian Mountford
International Trade Advisor, Department of International Trade

Supporting all Midlands SMEs, encouraging expansion of business and job opportunities

Nico Mirhashem
Communications Executive, Midlands Aerospace Alliance

Journalist, with media experience, assisting in optimisation of the MAA's media activities.

Development Group

Neal Hillier

Head of Sales and Marketing, Forward Composites

Experienced in aerospace and other sectors, defining business strategy and managing deal-making

Ashley Beeden

Managing Director of Croft Engineering

Board member with specialities in: vendor selection, audits and development of dynamic supply chains

The group has its own responsibilities, then on big activities like the MAA annual conference, and, starting last autumn, the MAA dinner, the group makes proposals to and advises the MAA board. While every MAA event has always had time for networking built in, recently we've been looking at how we can actively help members network at our events. And our latest proposal is to launch a Midlands aerospace award scheme to publicly recognise the excellence of many of our companies – so you should be hearing about that soon.

The MAA embodies the best of "working together" to achieve what we can't do by ourselves, and I'm delighted to contribute what I can to that. As Head of Group Procurement at Rolls-Royce and MAA Director, I have also been able to call on the active support of my company, when it comes to events like Aero Engine Forum Birmingham 2017, the MAA annual conference, or last year's event "Inside Rolls-Royce Indirect Purchasing with the MAA."

Finally, I am a firm believer that better communication can help us identify more opportunities and solve pressing problems together. We could not do that without the members of the group on these pages. To them, and to the many past members of the group, a warm thank you!

Wendy Stopher

Emma Burgess

Marketing Manager, Midlands Aerospace Alliance

Key organiser of large tradeshows and media producer

Andrew Mair

Chief Executive, Midlands Aerospace Alliance

Responsible for the Midlands Aerospace Alliance as a whole

Mike Beirns

Managing Director of Kinetic Engineering Limited

Experienced player in the aerospace industry with extensive knowledge in: management, marketing, and business

Elizabeth Monk

Military Programme Manager, Global Sustainment, Moog Aircraft Group

20+ years experience in aerospace and an active MAA supporter with engineering knowledge and business understanding.

How the MAA Business Development

The group's work is wide-ranging, covering everything from the MAA's publications to events and activities focused on marketing and business development.

Pictured: MAA stand at Farnborough 2016 ready and waiting for exhibitors and visitors

Trade exhibitions:

The MAA always exhibits at Farnborough and Paris and has also taken members to Turin, Berlin and Singapore. The philosophy is always to give members maximum exposure; 250 big branded "pods" have been built since 2004.

Pictured: Networking at the MAA - Santander virtual trade mission to Poland 2018

Trade missions:

MAA trade missions have ranged from a day for members to meet Safran in Paris to meeting customers at four Italian aerospace clusters. With Santander bank, the MAA is organising missions to Poland and Connecticut in 2018.

Pictured: EACP mission to Boeing and Pacific North West Aerospace Alliance in Seattle, 2017 led by Niedersachsen

Building partnerships:

We have built strong links to sister aerospace clusters, starting with Torino Piemonte Aerospace, to help with trade missions and exhibitions. The MAA joined the European Aerospace Cluster partnership in 2016. Now MAA members can join EACP missions to meet aerospace customers all over the world.

Group helps our members

Pictured: The MAA conference with the government's Export Control Joint Unit in 2017 typified an "all you need to know in one day" event.

In-depth knowledge:

The MAA works with experts to ensure members are aware of the latest regulations and government support.

Pictured: Kevin McCormick, Summit Engineering, meets a potential new customer at AEF Birmingham

B2B meetings with customers:

Members really value opportunities to get in front of new customers. Aero Engine Forum Birmingham 2017 was a new venture for the MAA, partnering with French experts BCI Aerospace. Look out for the 2019 event! Combined with the MAA conference, there were 400 delegates from 250 companies in 12 countries and 3,900 B2B meetings.

Pictured: Participants at "Inside Rolls-Royce Indirect Purchasing with the MAA," 2017

Getting to know customers better:

What does it take to supply a global aerospace company? That question is the premise of the MAA's annual "Inside... with the MAA" events, each hosted on site by a major Midlands aerospace company. The idea was first proposed by MAA director Annette Rothwell, currently Senior Director, Corporate Strategic Sourcing at Esterline, to help small companies understand how big companies think. So far, the events have been held at different business units of Rolls-Royce three times, UTC Aerospace Systems twice, Meggitt and Moog.

MAA Birthday: flying high for 15 years

It has been 15 years of clear skies and high-flying for the Midlands Aerospace Alliance, which has celebrated its 15th Birthday with an elegant black-tie birthday dinner. The jet-setting evening at the Hyatt Regency Hotel in Birmingham was attended by 140 guests and raised £1,470 for the Midlands-based ex-service personnel charity 'Once, we were soldiers'.

The evening commenced with a champagne reception and purchasing tickets for a raffle to win fabulous prizes donated by our generous members. The reception provided a chance to network with key players in the aerospace industry. Guests then took their places in the elegant dining room where they were warmly welcomed by David Danger, MAA Chairman and Managing Director of the UTC company Marston Aerospace and Peter Smith, MAA Vice Chair and Chairman and Chief Executive of the dinner's sponsor Nasmyth Group.

David and Peter highlighted the timeline of achievements the MAA has accomplished and introduced some of the MAA's upcoming and exciting new ventures. Not least among these is a brand new collaboration between the MAA and Santander, announced by Jason Necker, Regional Director, Corporate banking for Santander in the West Midlands. Santander and the MAA will be working closely together on a series of international trade missions for MAA members, beginning in Poland in April 2018.

Following the announcements, the MAA's guests and members were delighted to listen to a riveting speech from the recently elected West Midlands Mayor, Andy Street, who has already visited UTC Aerospace Systems in Wolverhampton and Mettis in Redditch. The Mayor spoke passionately about his vision for the region and the initiatives he intends to focus on for the Midlands.

He highlighted aerospace as a sometimes "hidden gem" manufacturing industry in the region which he plans to promote during his tenure. The Mayor was given an ovation by the assembled MAA members and guests.

After the four-course dinner, MAA champion and ambassador Anthony Barlow, who has been closely associated with the body since 2002, sang his praises of all that has been achieved in 15 years. Anthony was invited to cut a sumptuous birthday cake emblazoned with the famous MAA logo before being presented with a pair of beautiful cufflinks made from genuine Avro Vulcan engine parts in recognition of his many contributions. The dinner finished with the drawing of the raffle, with fingers crossed around the room to see if one of the nine fabulous prizes might be won.

and raising £1500 while soaring.

By common consent, the jewel of the evening, on which many hopes rested, was a giant Lego Star Wars Millennium Falcon. An impressive amount had been raised of £1,470 for the charity 'Once, we were soldiers'. After much anticipation, and to laughter all round, the longed-for Lego set was won by the MAA's Maxine Oatridge, who promised to bequeath it to her daughter (honestly).

To cap off a memorable evening of business networking and celebration, the guests were thoroughly entertained by the anecdotal BBC television presenter Nick Owen. Nick had already generously donated to the raffle a tour of the BBC studios and a chance to see a live recording of a show in production. He naturally took to the stage and gave a compelling and humorous account of his experience in the industry, of the many famous celebrities he had met and his time as Chairman of Luton football club. Nick's comical stories were met with roars of mirth - and the odd cringe at a few "dad jokes".

At the end of the evening, the guests and the MAA team were able to congratulate each other on a few hours very well spent, "a truly classy event" according to one, who was echoed by another's "a fantastic evening".

The MAA would like to say thank you to the following companies who donated raffle prizes: AE Aerospace, Columbia Precision, Esterline, Jonathan Lee Recruitment, Moog, Rolls-Royce -- and Nick Owen. Last but by no means least, the MAA thanks Nasmyth Group for sponsoring the evening's festivities and Santander for supporting the dinner. We look forward to seeing you all to celebrate our Midlands aerospace industry at the 2018 dinner!

Companies interested in attending or sponsoring this year's dinner, please do not hesitate to contact Anne Esterson on 02476430250.






Event supported by

Santander

Event sponsored by

Nasmyth GROUP

In support of

Once We Were Soldiers
Supporting Britain's Homeless Veterans

New director joins MAA board

At the MAA AGM in late 2017, MAA Chairman David Danger announced the names of one newly elected director and two directors returned to the MAA board for two-year terms of office.

The new director is Peter Bruch, Managing Director, AE Aerospace. Dr Alan Duffield, Group Business Development Manager, Winbro Group Technologies Ltd and Steve Cheetham, Managing Director, PK Engineering Ltd, were re-elected. David thanked Christopher Biddle from ATS, Robert Hirst from Assystem, Stephen Molloy from Gobel & Partners and David Whiffin from Gobel & Partners for standing for election to the board.

Pictured: New MAA director Peter Bruch, Managing Director AE Aerospace (centre) with MAA chief Executive Andrew Mair (left), MAA Chairman David Danger

Peter commented "The Midlands Aerospace Alliance is a highly respected and proactive organisation in this sector in our region, and it's an honour to join the board. The aerospace industry is currently experiencing a period of significant growth, and it's important that the supply chain that feeds it is ready to make the most of the opportunities this presents. The MAA helps with this by offering a range of services and support for its members."

David Danger, MAA Chairman, said: "We're delighted the membership has elected someone of Peter's calibre to join our board. We know he will bring the expertise he applies to his own business, AE Aerospace, as well as his wider business back ground."

NATEP

Abrasion by equation

As new mid-range engine programmes roll out, the demand for blisk production has never been higher, and manufacturers are constantly seeking ways to reduce lead time and increase throughput in order to meet customer demand and projected market growth. A major player in this market, MAA member ITP, has found a surprising opportunity by looking more closely at a long-established finishing process.

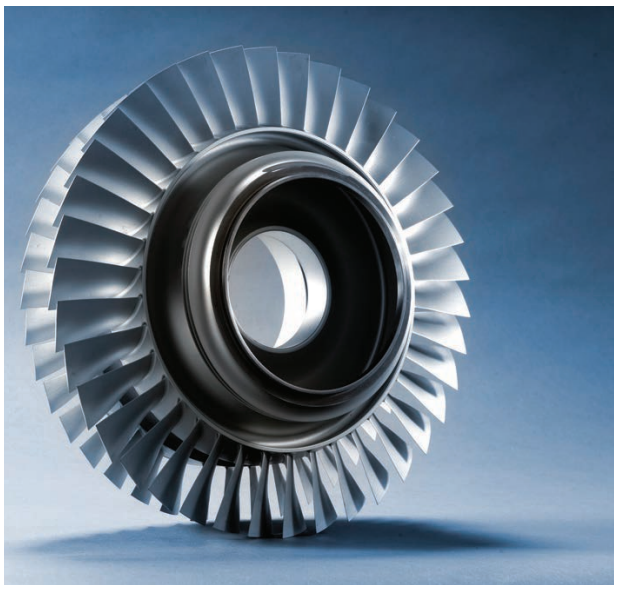
ITP's blisk manufacturing centre of excellence at Lincoln, together with partners Extrude Hone (also an MAA member) and Brunel University, have been getting to grips with the science behind the 50 year old abrasive flow machining process that is used extensively after the machining of metallic parts to improve surface finish. The 2 year project was supported by the National Aerospace Technology Exploitation Programme (NATEP), delivered in the Midlands by the Midlands Aerospace Alliance (MAA).

For many years, ITP have used abrasive flow machining to finish some of their aero-engine blisks. These high value parts are manufactured from aerospace alloy forgings using expensive 5-axis milling machines on which time is always at a premium. Abrasive flow machining was first patented by Extrude Hone Corporation in 1970.

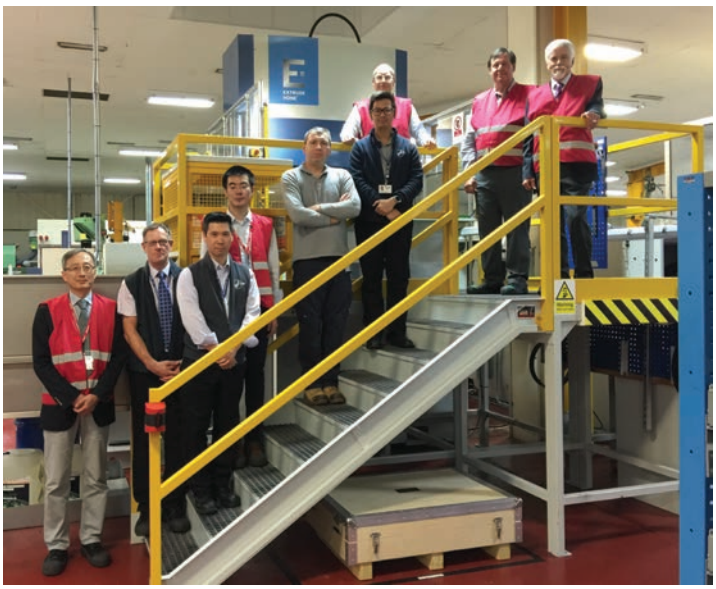
During machine operation a viscous abrasive paste is forced backwards and forwards under pressure across the surfaces of parts to smooth out irregularities like machining marks and burrs.

During the NATEP project Brunel University constructed a mathematical model of the abrasive flow machining process and the team validated this through a series of tests on material coupons and blisk segments carried out by Extrude Hone and ITP.

By modelling the abrasive flow finishing of a rotating part which has numerous complex-shaped features,

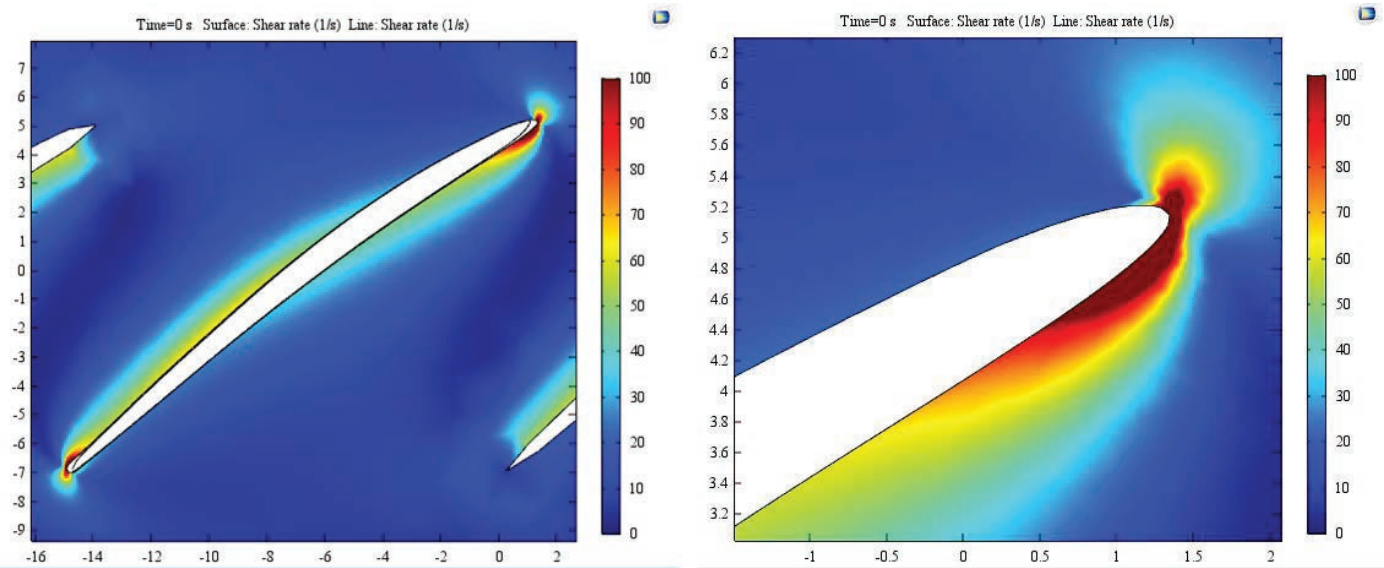


Two stage blisk manufactured by ITP



Project team and the new abrasive flow machine at ITP's Lincoln factory

NATEP



Brunel modelling of abrasive flow machining across aerofoil sections

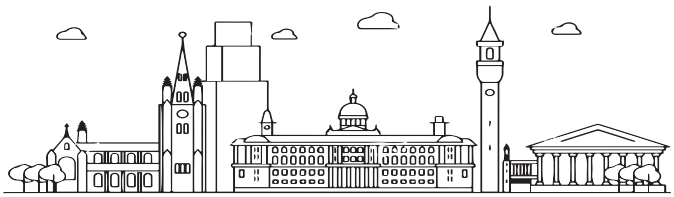
ITP found that it was possible to implement a significant reduction in the total process time. Principal Manufacturing Engineer at ITP, Kevin Ngoe, says; *"The number of variables to consider, expensive trial parts needed and time required to properly optimise this process makes changes difficult to justify. Being able to accurately model the process will make a huge difference".*

For Extrude Hone, Manging Director, Sean Trengove feels that the project opens up exciting new possiblities; *"Although we have built up a good understanding in the application of abrasive flow machining, much of our knowledge is derived empirically over many years in the business. The ability to model the process when applied to a particular part and its associated tooling should assist us in integrating our machines into our customers' production lines. This could also potentially open up new markets across a number of sectors."*

For ITP this project helps underpin an investment strategy which led to the purchase of a large new Extrude Hone abrasive flow machine at their Lincoln facilitiy. Project Manager, Richard Kenny of ITP comments; *"Our factory is continually challenged by an increasingly demanding market and our R&D budget is always struggling to match our aspirations for process improvement. Being able to access NATEP funding together with support by the MAA's Technology Manager, Peter Knight, has been a key aspect to the progress made in this project."*

For the full story see *Aerospace Manufacturing:*

www.aero-mag.com/midlandsaerospace-alliance-maa-bliskproduction-mid-range-engines/



The view from the Midlands

Andy Street, the Mayor of the West Midlands, is determined to strengthen industry in the West Midlands and retain manufacturing in the UK

"I am committed to doing more to promote our region's fantastic aerospace sector."

Our region is seeing a revival of manufacturing and we are the only region in Britain to enjoy a trade surplus with China. In 2016, there were more businesses born in Birmingham than anywhere outside London. But the growth of the economy has not yet spread out far enough across the region: many areas need more attention, more investment and more ambition.

Without a strong economy, it is very difficult to improve living standards, and we have much further to go. A strong economy means better jobs, like the jobs we used to see at the great factories and offices in the West Midlands, stable jobs with long-term career prospects.

I intend to establish the West Midlands as a world-leading centre for advanced manufacturing, technology and the creative industries, life sciences, professional services, low carbon technology and construction. Each of these industries has potential to contribute to a strong West Midlands economy in the twenty-first century and beyond, and we have unique advantages which mean that we can compete with other global cities and regions.

As Mayor, I will focus our industrial strategy on manufacturing in the West Midlands. We have a history of Austin, Rover and MG at Longbridge, and now Jaguar Land Rover in Coventry, Birmingham, Wolverhampton and Solihull. We made Spitfires at Castle Bromwich, and now have Rolls-Royce in Birmingham, UTC Aerospace Systems in Wolverhampton and Meggitt in Coventry. It's in our soul, and we need to make sure that we are ready for the future of manufacturing. We must help our manufacturing companies and workers to form a formidable team to make ourselves the new *"Workshop of the World".*

As Mayor, I intend to

- make sure that there is enough employment land available for manufacturers to expand their sites or open new sites
- lobby for investment from Government in comprehensive energy solutions required to enable the expansion of key employers
- explore ways to bring parts of the automotive supply chain back to the UK from overseas, creating more jobs in the region
- invest in the apprenticeships and skills our manufacturers need to succeed in the West Midlands
- support our manufacturing research and innovation centres (for example the Warwick Manufacturing Group, the Institute of Advanced Manufacturing and Engineering at Coventry University), and the manufacturing supply chain in the West Midlands

Of course, to many the Midlands is synonymous with our world-leading automotive industry. Members of the Midlands Aerospace Alliance will be only too aware that we also need to shine a light on our other leading sectors, and aerospace is sometimes rather a *"hidden gem."*

Since my election, I have already been privileged to visit two of our leading aerospace companies, UTC Aerospace in Wolverhampton and Mettis Aerospace in Redditch. I know these brilliant companies and their employees provide their brilliant Midlands expertise to make components for the world's aircraft industry. I am committed to doing more to promote our region's fantastic aerospace sector and I look forward to working in partnership with you in the years to come.

www.wmca.org.uk

“All technology is interlinked and a discovery in one area may be linked to another that was never thought of.”

The lab man with a practical bent, Dr Alan Duffield is Group Business Development Manager at Winbro Group Technologies. He started as a research scientist before moving to operations and business development

HOW DID YOU GET WHERE YOU ARE TODAY?

I started after my PhD in electro-chemical engineering on power sources. Afterwards having spent a year in the nuclear and defence industry, I went into research with what was then Lucas and then was approached by a small privately owned company that was engaged in non-conventional machining. That is where I produced my first work in aerospace parts, going back to 1988 and from there got my first contract with Rolls-Royce.

WHAT IS THE BEST ADVICE YOU HAVE RECEIVED?

The best advice was: Always be aware of what the competition is doing around you and never think you are the best, always learn from your competition. That is something I always remember from an ex-boss- who has long since retired- in the early 1990s.

WHO HAS INFLUENCED YOUR CAREER?

I have been fortunate to work with some fairly pragmatic people who guided me in the late 1980s and early 1990s. However, I have drawn much inspiration from my early influencer Thomas Alva Edison, when I undertook the work for my PhD and came across his pioneering work on the interlink between materials and technology to be able to get success in battery systems, something Edison gave up on. If Edison had access to the 21st century materials we have now, he would not have given up!

“I've watched large companies, some have grown, others have shrunk their UK manufacturing base and drifted to lower cost economies; what you lose is the old technology, so we need to develop more advanced methods to maintain British manufacturing prowess - but always be aware the others will catch up”

HOW DO YOU STAY COMPETITIVE?

To gain an advantage you have to have something that is unique. If you then have some level of competition, always look to see what it is that is slightly different. You can learn from copying and improving on competitors. It is very easy to dismiss and criticise ideas, you see it too often in British companies, whereas our counterparts in China and Japan take an idea and adopt, adapt or improve to see if it works.

WHAT ADVICE WOULD YOU GIVE TO THOSE STARTING IN THE AEROSPACE INDUSTRY?

You always need to keep abreast of new pieces of technology. Ask yourself “what can I do with that? Is there something different I can do with that?” Always look to see where new technology can lead today.

WHAT IS THE BIGGEST THREAT TO TODAY'S AEROSPACE INDUSTRY?

The biggest threat to the industry would be challenges posed by reducing emissions of CO^2 and NO_x, the drive to reduce noise as well. I keep seeing paradigm shifts in technology, that in relation to my own company, could potentially make the cooling systems we produce obsolete. These paradigm shifts are always the ones to be aware of, and it is often the materials industries that drive those shifts.

WHAT DO YOU BRING TO YOUR ROLE AS AN MAA DIRECTOR?

I am not the only one, but I am a hybrid of my technology and sales/business development backgrounds. While I have empathy with those at the cutting edge of research, I would like to think I have become very practically driven and I bring that to the board.

www.winbrogroup.com

FOR YOUR DIARY

ONLINE: WWW.MIDLANDSAEROSPACE.ORG.UK/EVENTS

CALENDAR

The MAA organises more than 20 events a year

MAA Conference
Rolls-Royce Learning and Development Centre, Derby, 8 Mar
MAA annual conference 2018 explains changes in the business environment for the aerospace industry with impacts on supply chain companies

Poland aerospace trade mission
Aviation Valley, 16 Apr
Work with our key local partners in Aviation Valley Alliance, meet with buyers, suppliers, distributors and key local stakeholders and partners with Santander.

UK aerospace additive manufacturing in the supply chain
AMTC, Ansty Park, 2 May
Save the date!

Farnborough airshow 2018
Farnborough, 16-22 Jul
Exhibit with the MAA at the premier international aerospace event and globally renowned showcase of aerospace equipment and technology.

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.

NEW MEMBERS

The MAA welcomes the following new members

Abbey Forged Products
Sheffield,
Bespoke open dye forgings.

Alliance Procurement Solutions
Derby,
Independent manufacturing indirect material and services procurement specialists.

Assystem
Derby,
Engineering services and solutions provider.

BG Engineering
Chesterfield,
Precision CNC machining suppliers.

Clarendon Specialty Fasteners
Newtown Unthank,
Suppliers of quality seals and fasteners

Enventive Engineering
Aylesbury,
Provides mechanical design and tolerance analysis tools.

Hitex UK Ltd
Coventry,
Provides COTS products.

ICD Europe
Rotherham,
Recycling of a wide range of specialised aerospace super-alloys.

Integral Powertrain Ltd
Milton Keynes,
Undertakes key design, development and production projects.

Impression Technologies
Coventry,
Cost effective, lightweight production of vehicle structures

Longwear Alloys Ltd.
West Bromwich,
manufacturer for aerospace and gas turbine applications.

Mapal
Rugby,
International suppliers of precision tools for the machining of practically all materials.

Ondrives
Chesterfield,
Leading manufacturer of precision gears, gearboxes and mechanical drive components.

SSE Pipefitting
Dudley,
Offers a range of subcontracting machining services

Staubli UK
Telford,
Mechatronics solution provider.

Therser (UK) Ltd
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If you have a query or suggestion that you would like to make, please contact the MAA.

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