IMechE Aerospace North West

Meeting Minutes

A meeting of the IMechE Aerospace North West committee was held on **Monday 23rd January 2017** at David Lloyd Club, Chorley. The meeting commenced at 18:30 till 20:00.

<table>
<thead>
<tr>
<th>Chairman</th>
<th>Paul Gardner</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vice Chairman</td>
<td>Arreyhon Alemi</td>
</tr>
<tr>
<td>Immediate Past Chairman</td>
<td>Euan Mason</td>
</tr>
<tr>
<td>Hon Secretary</td>
<td>Rebecca Donald-Lopez</td>
</tr>
<tr>
<td>Hon Treasurer</td>
<td>Manuel Donald-Lopez</td>
</tr>
<tr>
<td>Committee members</td>
<td>Martin Baxter</td>
</tr>
<tr>
<td></td>
<td>Ivan Dean</td>
</tr>
<tr>
<td></td>
<td>Emma Guy</td>
</tr>
<tr>
<td></td>
<td>Martin Hyman</td>
</tr>
<tr>
<td></td>
<td>Andrew Medd</td>
</tr>
<tr>
<td></td>
<td>Iain Minton</td>
</tr>
<tr>
<td></td>
<td>Thurai Rahulan</td>
</tr>
<tr>
<td></td>
<td>Clive Winby</td>
</tr>
</tbody>
</table>

1  **ANW ATTENDEES**

Martin Baxter  BAE SYSTEMS
Ivan Dean       Past Chairman IMechE ANW
Rebecca Donald-Lopez BAE SYSTEMS / Hon Secretary IMechE ANW
Paul Gardner    Safran Nacelles / Chairman IMechE ANW
Martin Hyman    Business Consultant
Andrew Medd     Education Advisory Group
Thurai Rahulan  University of Salford / Royal Aeronautical Society

2  **APOLOGIES WERE RECEIVED FROM**

Arreyhon Alemi  Vice Chairman IMechE ANW
Clive Winby     SILCOMS Ltd.
Manuel Donald-Lopez BAE SYSTEMS / Hon Treasurer IMechE ANW

3  **MINUTES FROM THE LAST MEETING**

The minutes from the last meeting (5 December 2016) were agreed to be the true and accurate record.
4  REVIEW OF ACTIONS FROM LAST MEETING

4.1 Paul Gardner to confirm date (ideally late January) for visit to Velocity Composites asap.

Paul reported that Velocity Composites did agree to an event in January but it would have been too short notice. A date was then proposed between 10th and 24th Feb, however this would have clashed with the Kaman visit. The event is agreed in principal and just needs to be worked into our calendar. **Action carried over.**

4.2 Paul Gardner to confirm date for visit to Safran Nacelles – Carried over from previous meeting.

Paul reported that he couldn’t get a confirmed date for the Safran Nacelles Visit at the moment, however that we could get the event in the diary at short notice, a month before.

4.3 Martin Hyman to fix a date for a visit to Kaman Tooling in last week in February (20th to 24th).

Action completed. Martin Hyman has fixed a date for this event on 24th February 2017.

4.4 Ivan Dean to go back to Mike Wallace and fix a date for a visit to Rolls Royce Barnoldswick in late March (20 to 31st).

Ivan reported that he’s not heard back from Mike Wallace yet. Ivan reported that the max number of attendees would be 8 people. **Action carried over.**

4.5 Martin Baxter to fix a date for a visit to Fleetwood Helicopter Rig in late April (18th to 28th).

Martin has not heard back via email so will try phoning them. **Action carried over.**

4.6 Martin Hyman to get Speaker to commit to a date for Reaction Engines lecture in late May (22nd to 26th).

Action completed. Martin Hyman has fixed a date for this event on 23rd May 2017.

4.7 Clive Winby to determine if previous EasyJet speaker would be willing to do a follow up lecture joint with the Met Office and or FAAM.

NA. See section 8.6.
4.8 Martin Hyman to check with Met Office and see if they would be willing to do a joint event with Easy Jet / FAAM. Also mention proposed date June/July/Sept 2017.

Martin Hyman reported that the MET Office are happy to go ahead with a joint lecture with both Easy Jet & FAAM. See section 8.6.

4.9 Thurai Rahulan to contact Guy Gratton and ask if/when the aircraft will be back in Manchester and if we can have a tour and lecture. If the aircraft is not available TR will ask if Guy will present a lecture. Also ask if a joint lecture with Met Office & Easy Jet would be a problem.

Thurai Rahulan reported that Guy Gratton from FAAM has agreed to either a visit to the aircraft in Cranfield or a lecture (from one or more of the senior people) on FAAM anywhere in the UK, or both. However they can’t bring the aircraft up north and they are not willing to present a joint lecture with EasyJet.

4.10 Paul Gardner to fix a date for ‘UAS Challenge’ for October.

NA. See 4.11.

4.11 Thurai Rahulan to find out if Rashid Ali is still involved with ‘UAS Challenge’ and if he would be willing to give a talk. The proposed date for this event was early October.

Thurai Rahulan reported that Rashid Ali is still involved with the ‘UAS Challenge’ as academic and Finance lead and is willing to present a lecture in the Lancashire region in Oct 2017 on a Tuesday. See 8.8.

4.12 Rebecca Donald-Lopez to compile the meeting dates for 2017 and circulate.

Action completed.

4.13 Rebecca Donald-Lopez to get a contact for AM for the new Training Facility at BAE Samlesbury for EYF.

Action completed. The facility will be open for external bookings in May 2017. Contact details have been passed to Andrew Medd.

5 TREASURERS REPORT

Manuel Donald-Lopez reported the current financial status and that he had submitted the year end finances to HQ.

The year-end balance for 2016 was £3077.88, see appendix 2.
This was higher than expected due to a payment of £1500 towards the end of November. Manuel originally thought that this was the 2017 grant being paid early.

http://nearyou.imeche.org/near-you/UK/North-Western/Aerospace-North-West
However he received an email from Richard Guy on 20\textsuperscript{th} Jan stating that the 2017 Budget for ANW has been agreed at £2260. This is the amount that Manuel had put in as the budget request in September 2016. So to that end he is not sure what the £1500 payment is as the grant for 2016 was £2000 and that was paid in full eventually in May 2016. Balance of the account as of 23 Jan 2017 is £3077.88.  

\textbf{Action: Manuel to make enquiries regarding the £1500 as it may be an error.}

The question of whether we should pay for a table at the North West Dinner was discussed. It was decided that we would pay for a table for committee member and their partners to attend.  

\textbf{Action: Rebecca Donald-Lopez to send an email to the committee asking who would like to attend.}

6 \hspace{1cm} \textbf{FEEDBACK FROM REGIONAL/ HQ MEETING}

The next Aerospace Division meeting will take place in March.

7 \hspace{1cm} \textbf{MEMBER ENGAGEMENT}

It was asked if we have a full list of all members contact details or at least new members details, and do we contact them? Paul Gardner reported that yes can have access to this information from HQ. Ivan Dean reported that in the past we did contact all new members. Rebecca reported that when we used to list our meetings as events on the website that we used to get more people interested in joining our committee.  

\textbf{Action: Paul Gardner to update the wording on the front page of the ANW website.}

\textbf{Action: Rebecca Donald-Lopez to add all our meetings to the web site as events, in order to encourage new committee members.}

Social media was discussed, in particular the use of Twitter. It was decided that it’s an excellent way to reach more people, but that it would need managing.  

\textbf{Action: Paul Gardner and Martin Hyman to tweet our future events then review in a month.}

Paul Gardner and Martin Hyman took this action as they were the only committee members present that use twitter.

8 \hspace{1cm} \textbf{EVENTS & ACTIVITIES PROGRAMME - 2016/ 2017}

It was decided that the preferred day for events to be held is a Tuesday.

8.1 Hybrid Air Vehicles

Andrew Med informed the committee that Lancs. Area would like us to joint badge their ‘Hybrid Air Vehicles Event’ event at Samlesbury on 15 February 2017.

\url{http://nearyou.imeche.org/near-you/UK/North-Western/Aerospace-North-West}
Action: Rebecca Donald-Lopez to add it to the ANW calendar and the website.

8.2 Kaman Tooling Burnley
Date: Friday 24 February 2017
Venue: Kaman Tooling LTD Burnley
Time: 10:00 for 12:30
Organiser: Martin Hyman

A visit to Kaman’s Tooling site in Burnley has been offered. Martin Hyman has completed the event information for sending to the region and adding to the website as well as creating a poster. **Action – Martin Hyman send the details to Rebecca. Rebecca to add to the website and send to the region.**

8.3 Rolls Royce Barnoldswick
See action 4.4.
**Action - Ivan Dean to go back to Mike Wallace and fix a date for the tour in late March (20 to 31st March).**

8.4 Helicopter Rig Fleetwood
Proposed visit to Fleetwood Offshore Survival Centre (FOSC), which is a leading provider of safety, survival and fire training to both the Merchant Navy and the Offshore Oil & Gas Industries. The centre has a Helicopter Underwater Escape Training (HUET) simulator at the facility.

See action 4.5.
**Action - Martin Baxter to fix a date for the visit in late April 2017 (18th to 28th).**

8.5 Reaction Engines
(SABRE - Synergetic Air Breathing Rocket Engine)

Date: Tuesday 23 May 2017
Venue: MMU
Time: 18:00 for 18:30

Martin Hyman has fixed a date for this event on 23rd May 2017. Reaction Engines would like to know what we want them to present. It was decided that we would like to know:
- What’s the most recent technology that they can share with us?
- History, current and future of the engines, from HOTOL (Horizontal Take-Off and Landing) to Skylon.
- What mistakes have been made and how they overcame them?

http://nearyou.imeche.org/nearyou/UK/North-Western/Aerospace-North-West
It was decided that we would hold the event at MMU.

**Action - Martin Hyman to contact Dr Sravanthi Sashikumar, Head of mechanical Engineering at MMU.**

### 8.6 Met Office Lecture / Easy Jet / FAAM

Martin Hyman reported that the MET Office are happy to go ahead with a joint lecture with both Easy Jet & FAAM. However Thurai reported that FAAM are not willing to present a joint lecture with Easy Jet. Ian Davies at Easy Jet is happy to present an update on the ash cloud project, the use of drones and other technology in aircraft maintenance or green technology (taxiing without using engines). It was decided we would like an update on the ash cloud.

It was decided therefore that:

- Easy Jet Lecture would go ahead separately in June, with the ash cloud update. A title for the event was suggested: Ash to Ash, Dust to Dust.
- FAAM lecture would go ahead separately in November.
- MET Office lecture would be re-scheduled to 2018.

**Action - Clive Winby & Thurai Rahulan to check availability of Ian Davies and Guy Gratton on Tuesday’s in June and November 2017 respectively.**

**Action - Martin Hyman to inform the Met Office that we would like to re-schedule the event for 2018.**

### 8.7 Velocity Composites

- **Date:** TBC
- **Venue:** Velocity Composites, AMS Technology Park, Billington Road, Burnley, BB11 5UB
- **Time:** Friday Afternoon

The event is agreed in principal and just needs to be worked into our calendar. See action 4.1.

### 8.8 UAS Challenge

Thurai Rahulan reported that Rashid Ali has agreed to present a lecture in Oct 2017 on a Tuesday.

It was asked if we can focus on showing the members what the institution is doing.

A discussion took place regarding whether we wanted an event for the students taking part of for the institution members.

**Action: It was decided that Thurai should ask Rashid if he could split his talk into two parts: rules & regulation and emerging technology.**

http://nearyou.imeche.org/near-you/UK/North-Western/Aerospace-North-West
Thurai also check Rashid’s availability for Tuesday 3\textsuperscript{rd} & 10\textsuperscript{th} October 2017.

8.9 Other ideas
For a list of other ideas see appendix 3

9 \hspace{0.5cm} ANY OTHER BUSINESS

9.1 Bloodhound SSC
Gordon Slater has asked if we can publicise the IET Bloodhound SSC talk at Samlesbury on Wed 25 January.

9.2 Events to be discussed at the next meeting:
Martin Hyman tabled 3 suggestions for future events that will be discussed further at the next meeting:

- Clean Sky 2 - compound helicopter
- Rolls Royce Engine Lecture
- Aero Gearbox International

10 \hspace{0.5cm} DATE OF NEXT MEETING

Next meeting: \textbf{Monday 6\textsuperscript{th} March 2017–} at David Lloyd Club, Whittle le Woods, Chorley at \textbf{18:00 for 18:30}.

11 \hspace{0.5cm} DATE OF PROPOSED IMECHE COMMITTEE MEETINGS 2017

- Monday 23 January 2017
- Monday 6 March 2017
- Monday 24 April 2017
- Monday 22 May 2017
- Monday 26 June 2017
- Monday 4 September 2017
- Monday 23 October 2017
- Monday 4 December 2017

\textbf{Minutes taken by:}
Rebecca Donald-Lopez
Hon Secretary IMechE Aerospace North West
23\textsuperscript{rd} January 2017

http://nearyou.imeche.org/near-you/UK/North-Western/Aerospace-North-West
Appendix 1

**IMechE ANW 2017 Programme**

* TUESDAY is the preferred day for events to be held

<table>
<thead>
<tr>
<th>DATE</th>
<th>TIME</th>
<th>VENUE</th>
<th>TITLE</th>
<th>LECTURER</th>
<th>ORGANISER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wednesday 15 February 2017</td>
<td>18:00 for 18:30</td>
<td>Canberra Club, BAE Systems Samlesbury</td>
<td>Hybrid Air Vehicles</td>
<td>Tom Grundy Operations Director at HAV</td>
<td>Lancashire Area</td>
</tr>
<tr>
<td>Friday 24 February 2017</td>
<td>10:00 – 12:30</td>
<td>Kaman Tooling Burnley BB10 2FT (SAT Nav: BB10 2TP)</td>
<td>Visit to Kaman Tooling Burnley</td>
<td>NA</td>
<td>Martin Hyman</td>
</tr>
<tr>
<td>Friday 31 March 2017</td>
<td></td>
<td>Hilton Hotel Manchester</td>
<td>North West Region Annual Dinner</td>
<td>NA</td>
<td>Region</td>
</tr>
<tr>
<td><strong>TBD</strong> Late March 2017</td>
<td></td>
<td>Rolls Royce Barnoldswick</td>
<td>Visit to Rolls Royce Barnoldswick</td>
<td>NA</td>
<td>Ivan Dean</td>
</tr>
<tr>
<td><strong>TBD</strong> Late April 2017</td>
<td></td>
<td>FOSC Fleetwood FY7 8JZ</td>
<td>Visit to Fleetwood Offshore Survival Centre (FOSC)</td>
<td>NA</td>
<td>Martin Baxter</td>
</tr>
<tr>
<td>Tuesday 23 May 2017</td>
<td>18:00 for 18:30</td>
<td>MMU</td>
<td>Reaction Engines</td>
<td>Mark Wood CEO or New Marketing Manager</td>
<td>Martin Hyman</td>
</tr>
<tr>
<td><strong>TBD</strong> June 2017</td>
<td>18:00 for 18:30</td>
<td></td>
<td>Ash to Ash, Dust to Dust</td>
<td>Ian Davies Easy Jet</td>
<td>Clive Winby</td>
</tr>
<tr>
<td><strong>TBD</strong> Oct 2017</td>
<td>18:00 for 18:30</td>
<td></td>
<td>UAS Challenge Talk</td>
<td>Paul Gardner / Thurai Rahulan</td>
<td></td>
</tr>
<tr>
<td><strong>TBD</strong> Nov 2017</td>
<td>18:00 for 18:30</td>
<td></td>
<td>FAAM</td>
<td>Guy Gratton FAAM</td>
<td>Thurai Rahulan</td>
</tr>
<tr>
<td><strong>TBD</strong> 2017</td>
<td>Friday afternoon</td>
<td>Velocity Composites, Billington Rd Burnley</td>
<td>Visit to Velocity Composites</td>
<td>NA</td>
<td>Paul Gardner</td>
</tr>
</tbody>
</table>
# Appendix 2

## ANW Finances

Projected Expenditure for period January 2016 to December 2016

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
<th>Expense Description</th>
<th>Credit (£)</th>
<th>Debit Predicted (£)</th>
<th>Balance Predicted (£)</th>
<th>Debit Actual (£)</th>
<th>Balance Actual (£)</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dec-15</td>
<td>End Balance from 2015</td>
<td></td>
<td></td>
<td>1002.46</td>
<td>1002.46</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jan-16</td>
<td>Committee Meeting</td>
<td>Venue Hire and Catering</td>
<td>100.00</td>
<td>952.46</td>
<td>104.00</td>
<td>368.46</td>
<td></td>
<td>Higher than last year average meeting cost</td>
</tr>
<tr>
<td>Jan-16</td>
<td>AAPI Lecture</td>
<td>Catering and Speaker Expenses</td>
<td>230.00</td>
<td>742.46</td>
<td>206.00</td>
<td>779.83</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10-Feb-16</td>
<td>Refund for Yorkshire Air Museum Transport</td>
<td>Refund</td>
<td>10.00</td>
<td>792.46</td>
<td>15.00</td>
<td>788.63</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mar-16</td>
<td>Committee Meeting</td>
<td>Venue Hire and Catering</td>
<td>87.00</td>
<td>845.46</td>
<td>81.50</td>
<td>868.23</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mar-16</td>
<td>MEDA Visit</td>
<td>N/A</td>
<td>0.00</td>
<td>845.46</td>
<td>0.00</td>
<td>868.23</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Apr-16</td>
<td>Committee Meeting</td>
<td>Venue Hire and Catering</td>
<td>100.00</td>
<td>545.46</td>
<td>33.50</td>
<td>664.73</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Apr-16</td>
<td>Kamran Visit</td>
<td>N/A</td>
<td>0.00</td>
<td>545.46</td>
<td>0.00</td>
<td>664.73</td>
<td></td>
<td></td>
</tr>
<tr>
<td>May-16</td>
<td>Refund for Yorkshire Air Museum Transport</td>
<td>Refund</td>
<td>10.00</td>
<td>535.46</td>
<td>10.00</td>
<td>584.73</td>
<td></td>
<td></td>
</tr>
<tr>
<td>May-16</td>
<td>Grant Payment</td>
<td>Grant from HQ</td>
<td>2000</td>
<td>0</td>
<td>2555.46</td>
<td>0.00</td>
<td>2594.79</td>
<td></td>
</tr>
<tr>
<td>May-16</td>
<td>Committee Meeting</td>
<td>Venue Hire and Catering</td>
<td>100.00</td>
<td>2435.46</td>
<td>86.50</td>
<td>2527.93</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jun-16</td>
<td>Committee Meeting</td>
<td>Venue Hire and Catering</td>
<td>100.00</td>
<td>2325.46</td>
<td>104.00</td>
<td>2423.92</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jun-16</td>
<td>Committee Meeting</td>
<td>Venue Hire and Catering</td>
<td>100.00</td>
<td>2225.46</td>
<td>104.00</td>
<td>2319.92</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sep-16</td>
<td>Autogryco Lecture</td>
<td>Venue Hire and Catering</td>
<td>424.50</td>
<td>1810.50</td>
<td>357.50</td>
<td>1902.50</td>
<td></td>
<td>424.50 was based on 60 attendees. 30 attendees reduced the catering bill</td>
</tr>
<tr>
<td>Sep-16</td>
<td>Gifts for Speakers</td>
<td>Gifts for Speakers</td>
<td>200.00</td>
<td>1610.50</td>
<td>151.00</td>
<td>1800.50</td>
<td></td>
<td>Buying direct from supplier saved costs</td>
</tr>
<tr>
<td>Oct-16</td>
<td>Committee Meeting</td>
<td>Venue Hire and Catering</td>
<td>100.00</td>
<td>1510.50</td>
<td>0.00</td>
<td>1800.50</td>
<td>Meeting Cancelled</td>
<td></td>
</tr>
<tr>
<td>Dec-16</td>
<td>Grant Payment</td>
<td>Grant from HQ</td>
<td>1500</td>
<td>0</td>
<td>3010.50</td>
<td>0.00</td>
<td>3300.50</td>
<td>2017 Grant Payment</td>
</tr>
<tr>
<td>Dec-16</td>
<td>Committee Meeting</td>
<td>Venue Hire and Catering</td>
<td>179.53</td>
<td>2021.41</td>
<td>222.53</td>
<td>2077.88</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2021.41</td>
<td>3077.88</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2021.41</td>
<td>2077.88</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2021.41</td>
<td>2077.88</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Total Expenses Costs | 574.50 | 566.23 |
| Total Equipment Costs | 0.00   | 161.60 |
| Total Expenditure for Year | 1541.05 | 1514.58 |
| Your End Balance | 2021.41 | 3077.88 |
## Nat West Account Ledger

<table>
<thead>
<tr>
<th>Description</th>
<th>Credit</th>
<th>Debit</th>
<th>Running Balance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opening Balance</td>
<td></td>
<td></td>
<td>£1,092.46</td>
</tr>
<tr>
<td>January Committee Meeting</td>
<td>£104.00</td>
<td></td>
<td>£988.46</td>
</tr>
<tr>
<td>AAI Lecture</td>
<td>£208.63</td>
<td></td>
<td>£779.83</td>
</tr>
<tr>
<td>Refund for Yorkshire Air Museum Transport</td>
<td>£10.00</td>
<td></td>
<td>£769.83</td>
</tr>
<tr>
<td>March Committee Meeting</td>
<td>£81.50</td>
<td></td>
<td>£688.33</td>
</tr>
<tr>
<td>April Committee Meeting</td>
<td>£83.50</td>
<td></td>
<td>£604.73</td>
</tr>
<tr>
<td>Refund for Yorkshire Air Museum Transport</td>
<td>£10.00</td>
<td></td>
<td>£594.73</td>
</tr>
<tr>
<td>May Committee Meeting</td>
<td>£66.80</td>
<td></td>
<td>£527.93</td>
</tr>
<tr>
<td>Grant Payment</td>
<td>£2,000.00</td>
<td></td>
<td>£2,527.83</td>
</tr>
<tr>
<td>June Committee Meeting</td>
<td>£104.00</td>
<td></td>
<td>£2,423.90</td>
</tr>
<tr>
<td>Gifts for Speakers</td>
<td>£151.80</td>
<td></td>
<td>£2,262.13</td>
</tr>
<tr>
<td>Autogyro Lecture</td>
<td>£357.50</td>
<td></td>
<td>£1,904.53</td>
</tr>
<tr>
<td>September Committee Meeting</td>
<td>£104.00</td>
<td></td>
<td>£1,800.53</td>
</tr>
<tr>
<td>Grant Payment</td>
<td>£1,500.00</td>
<td></td>
<td>£3,300.53</td>
</tr>
<tr>
<td>December Committee Meeting</td>
<td>£222.65</td>
<td></td>
<td>£3,077.88</td>
</tr>
</tbody>
</table>

**TOTAL**

|                                          |        |       | £3,077.88    |

---

Manuel Donald-Lopez  
Hon Treasurer  
I Mech E Aerospace North West
Appendix 3

Wish List of Future Events

- Wind Turbine Blades - Siemens have recently opened a factory in Hull.
- Manchester Airport Black Museum Visit – Clive Winby WIP
- Concorde & Son of Concorde – Next generation supersonic aircraft & Concorde Visit
- Subsidized visit to Concorde only – Aviation viewing park
- Nimrod replacement talk & visit – Aviation viewing park
- Helicopters – accidents in the North Sea (RAeS to cover in February)
- Model Aircraft
- UAV’s
- Maintenance
- Aircraft ducting
- Aircraft de-icing
- Aerodynamics
- Warton Wind Tunnel Tour
- Hawk hook on AC carriers
- Hawk systems into a new airframe
- F35 Aircraft Carrier operations
- Hot Air Balloon lecture possibly combined with Balloon Festival
- Hand Glider Material
- Woodford Flight Simulator – Oxford Aviation