Industry Forum
Business Excellence Through Inspired People

February 2014

Global Developments in the Aerospace industry

In 2014 the global aerospace manufacturing market is expected to maintain the overall 5% growth rate that has been seen in 2012 and 2013. The growth will be driven by the continued expansion of the civil aviation sector while the military sector is expected to continue its contraction.

Boeing forecast a long-term demand in global civil aviation for 35,280 new aeroplanes between 2013 and 2032, valued at $4.8 trillion. 14,350 of these new aeroplanes will replace older, less efficient aeroplanes. The remaining 20,930 aeroplanes will be for fleet growth, stimulating expansion in emerging markets and innovative airline business models. Approximately 24,670 aeroplanes (70 percent of new deliveries) will be single-aisle aeroplanes, reflecting growth in emerging markets such as China, and the continued expansion of low-cost carriers throughout the world. Widebody share will also increase, from 23 percent of today's fleet to 24 percent in 2032.

With these growth rates there is a possibility that a new major manufacturer may enter the civil aviation market based in one of the emerging economies. The anticipated rate of expansion in civil aviation will pose significant challenges for the supply chain across the global economy including in the UK.

In 2014 the recent rate of revenue contraction for defence contractors of around 2% per annum may well be sustained. European defence equipment manufacturers face particular problems - McKinsey has estimated that European governments could save over 30% by joint procurement of equipment and services. Defence programmes have become extraordinarily expensive and affordability has become a major issue. Next generation technologies must be developed and maintained in service at a much lower cost than hitherto. According to Deloittes, the UK industry has utilised two major business model innovations to help fund new requirements in this challenging environment - public private financing initiatives and performance based logistics - which are making acquisitions more affordable.

Some defence companies have also been anticipating defence budget cuts by reducing staff, cutting overhead costs, and getting lean. Automation is being used to reduce labour costs. Digital product development and computer aided design are creating significant efficiencies in product development. Lean manufacturing and Six Sigma have cut waste in the production process. Such initiatives will almost certainly accelerate in 2014 as companies in the defence sector seek to maintain margins and profitability.

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The UK has the second largest aerospace industry in the world but faces fierce competition from across the world. In a government/industry collaboration which started in 2013, 100 bursaries have been awarded to employees and graduates to study Masters level degrees in aerospace engineering to help the sector develop the high-level skills needed to compete globally. Industry and government have each committed £3 million over three years to help recruit 500 talented people who want to build careers in aerospace, but need financial backing to study at Masters level. The Royal Academy of Engineering and the Royal Aeronautical Society are overseeing the programme.

One aim of this initiative is that a more diverse range of people should reach Chartered Engineer status and to work in the aerospace sector. The scheme supports the up-skilling of current aerospace employees already qualified to graduate level, and BSc students currently studying at university. They will be encouraged to make direct links with aerospace businesses to undertake projects to address the challenges faced by industry and secure opportunities for work experience and future employment. The sponsor companies are BAE Systems, Bombardier Aerospace, EADS/Airbus, Finmeccanica UK, GKN, MBDA Missile Systems, Messier-Bugatti-Dowty, Rolls-Royce and Spirit AeroSystems.

The Headquarters of a new Aerospace Technology Institute (ATI) based at Cranfield Technology is now operational, with a core team of around thirty who are setting the strategy for the ATI-funded research and technology programmes to be carried out across the country by industrial and academic partners. These programmes will be jointly funded with £2 billion over seven years from government and industry to develop the technologies required for the next generation of aircraft.

The ATI will provide better alignment between early research supported by the Engineering and Physical Sciences Research Council and cross-sectoral R&D innovation delivered through the Technology Strategy Board. Larger scale projects are being delivered through the Technology Strategy Board by collaborative groups from industry and academia and some projects will be carried out in the High Value Manufacturing Catapult centres.

Sharing in Growth is another ambitious programme to raise the capability of UK Aerospace and Civil Nuclear suppliers so they can share in the anticipated growth of global markets and win business in other associated high value manufacturing sectors. The programme provides concentrated training and development aimed at driving up competitive capability to tackle barriers to growth, boost exports and grow the number of high value jobs in the UK. Finance is provided via the Regional Growth Fund. Companies will receive a four-year programme of business development and training tailored to the specific needs of their business. This includes shopfloor manufacturing improvement, process improvement, leadership development and specific nuclear sector knowledge. Participating companies need to commit resources of a matching value.

Within the Sharing in Growth programme (SIG), SMMT Industry Forum's expertise and experience in supply chain development has secured the prestigious position of 'First Provider' for Supplier Development Leaders and 'Sole Provider' for employee engagement in Business Improvement Techniques. The SIG programme is sponsored by

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Rolls-Royce plc and there are a number of other providers in addition to SMMT Industry Forum.

In co-operation with the other selected delivery partners, SMMT Industry Forum will be involved in programmes with up to 55 UK suppliers. In each programme SMMT Industry Forum will support them through in improving their competitiveness via a structured programme with three main stages:

1. Engage - A comprehensive business diagnostic leading to a robust 4 year business case.

2. Develop - Tailored, high intensity training for Management and Staff including:

- Leadership
- Business Improvement Techniques
- Lean production
- Modern manufacturing
- Sub-tier management
- Cost management

3. Sustain - Ongoing support to ensure that the business case is realised and improvements sustained.

A range of effective programmes will be needed in the UK if it is to maintain its leading position in the aerospace sector. Several emerging economies are funding ambitious programmes through organisations such as the Indian Space Research Organisation, RKA in Russia , SUPARCO in Pakistan, the Iranian Space Agency and the Korea Aerospace Research Institute .

China is the world's second largest national air travel market and around 200 new passenger jets are bought every year, about one-eighth the world's total demand. This constitutes a huge domestic market for an emerging civil aviation manufacturing sector to build on. The A320 final assembly line in Tianjin began operations during September 2008 as a joint venture between Airbus and a Chinese consortium of Tianjin Free Trade Zone (TJFTZ) and China Aviation Industry Corporation (AVIC). It has delivered more than 125 aircraft as of mid-2013. AVIC has a high-level research network including 33 research institutes.

In a discussion paper published by the Royal Aeronautical Society in 2013, the head of research, Professor Keith Hayward concluded that China has several important deficiencies in key aerospace technologies which are major impediments in mounting a global challenge in the civil sector although these might be mitigated through collaboration. Haywood suggests that some Western companies may also be reluctant to invest so heavily in China in case of unleashing a competitor.

Nonetheless, building up the aerospace sector remains a major goal for China. Several Chinese firms, in various sectors, have a strong record in absorbing and applying technologies developed elsewhere to become global majors. The strategic programmes being developed in the UK represent a sensible investment in the face of this and other potential competitive threats.

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