INTERNATIONAL CONFERENCE ON ENGINEERING DESIGN
ICED 05 MELBOURNE, AUGUST 15–18, 2005

A12 – ASPECTS OF GLOBAL DESIGN WITH THE NEW 787 BOEING DREAM LINER PROJECT

Tony Carolan**,** General Manager Business Development

Hawker de Havilland

This is a 10+ year story about getting a new structural technology onto a modern commercial aircraft.

To set the background for this journey, we will initially look at some aspects of the aerospace industry including both its operational and commercial environments.

The influence of design concepts such as fail safe versus safe-life, the trade-offs between introducing innovation and high technology into design versus safety and reliability and the continual pressure to reduce costs will be discussed. Innovation is also being applied in production methods with the progressive uptake of approaches from other industries, particularly automotive.

The dramatic improvements in civil aircraft performance reliability and the reduction in airfares will be reviewed, to put into perspective the challenges faced by aerospace designers, how effective they have been and continue to be. The commercial dynamics of launching a new aircraft program will also be analysed – in many instances, these literally bet the company.

Next we will look at new materials being applied to aircraft structures; particularly carbon fibre composite material and what makes these materials so attractive to aircraft designers.

Against this background, Hawker de Havilland's involvement in the Boeing 787 program will be traced back to the early 1990's when the company became a foundation member of the Federal Government's then new Cooperative Research Centre program. The knowledge of the new carbon fibre materials gained through the CRC was then demonstrated to potential customers in a manner that convinced them that a small Australian company had something significant to contribute to a multi billion dollar new product development. However in doing so, Hawker de Havilland needed to ensure protection of its intellectual property in an area where patenting is not a viable option.

Our engineers were put in the potential customers facilities to provide free contributions right from the earliest conceptual considerations of a new product. The breadth of their engineering knowledge certainly came to the for, as did their ability to become marketers as well as engineers.

Hawker de Havilland contended that the technology it had developed over a 10 year R&D program could deliver more cost effective, longer lifed and easier to maintain products than existing carbon fibre designs.

Following the in principle acceptance of new approaches to design and materials application by the customer comes the issue of convincing the certification authorities, ensuring the R&D is effectively productionised, setting up the manufacturing facilities and finally delivering production hardware.

A long and tortuous process, but one which has seen an Australian company play a major role in developing critical components for the new Boeing 787 Dreamliner program.

Contact: Tony Carolan General Manager Business Development
Hawker de Havilland
Phone 61 3 9647 3305
Mobile 61 412 217 365
Email: mailto:tony.carolan@boeing.com
Web: www.hawkerdehavilland.com.au