

Editorial

MANCHESTER 2009 CONFERENCE: A KEY MILESTONE

The second CEAS Air & Space Conference will take place in Manchester, UK from 26 to 29 October 2009, hosted by the Royal Aeronautical Society (RAeS). This is a key milestone. There are five reasons for this.

FIRST REASON

This event will be the second major opportunity to give CEAS a decisive impulse since the conversion of our previous Confederation into a Council on 1st January 2007. The first CEAS Air & Space Conference hosted by Germany in Berlin from 10 to 13 September 2007 was very successful. And concerning the Manchester Conference, the project plan which has been established by the organisers allows to expect again a large European and even a significant international participation. Dr Michael F. Steeden (Mike Steeden), President-Elect of the RAeS and Chair of the Organising Committee, is particularly keen for all member Societies to provide their utmost support in encouraging members of their national communities to attend, to contribute papers and in the case of companies and organisations to consider offering financial sponsorship (contact lorraine.reese@aerosociety.com).

SECOND REASON

The conference theme “New beginnings-challenges for aerospace innovation” is particularly attractive, aiming at conducting deep reflections about the numerous innovations necessary to take up the dramatic challenges of the coming decades in civil aviation, military systems and space.

THIRD REASON

The CEAS Conference will play host to the RAeS “Air Travel - Greener by Design Conference”. Environmental issues and sustainability constitute a major and now well established challenge to our industry and to our profession. The Manchester Conference agenda will therefore provide a valuable opportunity to address options for managing air travel’s environmental impact and to consider the relevance of space applications across a wide European and partner nation audience.

FOURTH REASON

The organisers are planning a very timely initiative to take advantage of the event to launch a European Young Aerospace Professionals Forum. This is crucial, at a time when Europe is experiencing a significant and continuing down-turn in the number of best qualified young professionals choosing to enter and remain in the Air and Space sectors.

FIFTH REASON

The magnificent facilities of Manchester Central International Complex will surely be attractive.

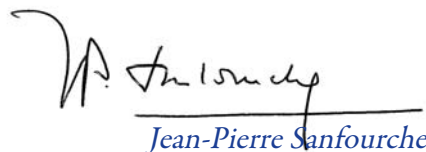
For all these reasons, I wish to assure Mike Steeden and the members of the organising committee that, in my position as Editor-in-Chief of the CEAS Quarterly Bulletin, I am determined to deliver my best possible contribution to the success of the Manchester Conference.



Jean-Pierre Sanfourche
Editor-in-Chief
of the CEAS Bulletin

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Jean-Pierre Sanfourche

About the 7TH CEAS Board Meeting

The 7th CEAS Board meeting was held on 5 September in Cologne - Linder Höhe - in the reception hall of the German Aerospace Centre (DLR : Deutsches Zentrum für Luft-und Raumfahrt). The president and the members of the CEAS Board wish to express here their thanks to the DGLR (Deutsche Gesellschaft für Luft - und Raumfahrt) for the perfect way in which the meeting was hosted, for the visits of the European Astronaut Centre of ESA and of the European Transonic Wind-tunnel which were especially organised for them, as well as for the excellent dinner offered on 4 September evening at the Brauhaus Früh of Cologne, close to the famous cathedral.



The CEAS board members during the dinner on 4 September evening at the Brauhaus Früh, Am Hof 12-18, Cologne.

THE MEETING

– **Participants** : Georges Bridel, President of the CEAS – Jean-Marc Garot, 3AF – Antonio Martin-Carrillo Dominguez, Leandro B. Fernandez Sainz, AIAE – Franco Persiani, AIDAA – Joachim Szodruch, Peter Brandt, DGLR – Markku Roschier, FSAE – Ulf Olsson, FTF – Triantafillos Tsitinidis, HAES – Michael Steeden, Keith Mans, RAeS – Constantinos Stavrinidis, Wilhelm Kordulla, ESA – Alain Garcia, Jean-Pierre Sanfourche, CEAS.

– **Apologies** : Michel Scheller (3AF), Christophe Hermans (NVvL), Jürg Wildi (SFFW).

• At 8:30, the President Georges Bridel delivered the **welcome message**.

• 2nd CEAS European Air & Space Conference: **New Beginnings – challenges for aerospace innovation**.

The meeting commenced with a detailed presentation by Dr Michael F. Steeden, President Elect of the RAeS, of the

second CEAS Air & Space Conference which will take place in Manchester Central, UK, from 26 to 29 October 2009: see the abstract of this presentation in pages 4 and 5. Georges Bridel and Mike .F. Steeden strongly stressed the fact that a full success of this event is absolutely fundamental for the development of the CEAS. Full success which will require the active participation of all Member Societies and Technical Committees. The importance of the European Young Aerospace Professionals Forum that will be launched on the occasion of the Conference was also highlighted.

• The **CEAS general status report and finance report** were presented successively by Leandro Fernandez, Director General, and Antonio Martin-Carrillo, VP Finance.

• E-CAERO (**Collaborative dissemination on AERONAUTICS**).

The action conducted in May-June, together with five other partners – among which ECCOMAS, EUROMECH..., – with the intention to get from the European Commission a financial support within the framework of the contract “E-CAERO”, was presented by Jean-Marc Garot. This Project has been selected by the EC.

• **Aeronautics Branch Status Report**.

Mr Alain Garcia presented a detailed reporting on the Technical Committees membership and functioning. If most of the TCs are now generally well populated, their functioning is not up to the mark yet. The necessary corrective actions are being impulsed with a view to rapidly reaching a reasonable level of efficiency.

To get the complete directory of the TCs, you may contact Mr Alain Garcia: alain.garcia@airbus.com

• **Publications**

(i) **Scientific Aeronautical Journal**: the agreement between DLR, ESA and ONERA on one hand and CEAS on the other hand is in the process of being signed by all parties. Only one signature is missing. This will be the basis of both scientific Journals, for Aeronautics and for Space.

Aeronautics: Details of the arrangement between the parties and also the discussions with a suitable publisher are well on the way.

(ii) **CEAS Space Journal**: the creation of this publication, under the leadership of ESA, will be undertaken in early 2009.

(iii) The chairman of the Aeronautics Branch presented his proposal, viz, to create a publication the title of which will be: **Aviation Technology Europe**. The intention is to publish a Technical Review, aerospace engineers oriented,



The European Transonic Windtunnel (ETW) plant:an impressive facility! The ETW was designed,erected and is operated by four nations: France, Germany, Great Britain,and the Netherlands. It delivers aerodynamic test data of the highest quality at actual flight Reynolds numbers of the full-scale aircraft-a huge advantage over conventional windtunnels. It is based on the use of a very cold nitrogen flow and additional pressure increase.

with articles covering design, engineering, system studies, manufacturing, testing, air transport systems, flight management, airports...

To launch the process,the Royal Aeronautical Society offers its support.

The RAeS issuing every year special issues of their publication "The Aeronautical Journal" is ready to use two of them to host the CEAS publications at the RAeS costs.

Both publication titles will appear on the front page (half page each).

Based upon the terms of this offer, Mr Alain Garcia is going to actively manage the creation process of **Aviation Technology Europe**.

(iv) During the whole year 2009, the **CEAS Quarterly Bulletin** will remain such as it is presently: 16 pages.

● **Recruitment of new CEAS Member Societies.**

All engaged actions are being pursued in particular: Poland, Czech Republic.

● **Memorandums Of Understanding:** discussions are being continued concerning Russia, India and Korea.

● **Next CEAS Meetings:**

- 4 December 2008, Paris, Presentation of the Gold Medal to Mr Jean-Paul Béchat, and dinner;
- 5 December 2008, Paris, CEAS General Assembly and 8th Board Meeting;
- 24 April 2009, Spain (Madrid or Seville), 9th Board Meeting – Dinner on 23 April evening.

● **TWO VERY INTERESTING VISITS**

In the afternoon of 5 september, the CEAS Board members had the privilege to visit two important facilities installed within the DLR's area:the European Astronaut Centre (EAC) of ESA, the European Transonic Windtunnel (ETW): see illustrations.



The EAC (European Astronaut Centre) is a department of the European Space Agency (ESA). It was established in 1990 to reinforce the European commitment to human space programmes. Since 1998, European astronauts have been organised into a single European Astronaut Corps. The EAC team is made up of more than 90 professionals.Current plans call for a European astronaut to fly on an International Space Station (ISS) increment every two years up to 2015-2020: an efficient way to prepare for the human exploration of the Moon and Mars.

CEAS 2009: The second CEAS European Air&Space Conference, Manchester Central, UK

CEAS 2009 will be the second CEAS European Air&Space Conference following the very successful hosting of CEAS 2007 by Germany in Berlin during September 2007 (www.CEAS2007.org). The latter launched the current concept of a series of major biennial technical conferences to bring together the European and partner nation professional technical aerospace communities.

The Royal Aeronautical Society will be hosting CEAS 2009 on behalf of the CEAS community.

THE THEME

The conference theme is “**New beginnings – challenges for aerospace innovation**” and is intended to orient technical contributions towards work aimed at providing exciting and innovative solutions for the technical, industrial and environmental challenges of the second century of flight and new horizons in space. It is hoped that there will be up to 1000 attendees and that 400-500 papers will be presented on subjects including innovative configurations, technologies and techniques, fuels, propulsion, materials, the European aerospace research and development, infrastructure and air traffic management technologies as well as new challenges such as commercial space exploration, military systems and emergent industries and markets.

THE 2009 RAES AIR TRAVEL - GREENER BY DESIGN CONFERENCE

It is hoped that the event will play host to the **RAeS Air Travel – Greener by Design Conference** and other Specialist Group activities of interest to the wider European and partner nation aerospace professional community. It is, in particular, intended that the conference should feature a **European Young Aerospace Professionals Event** aimed at launching a European Young Aerospace Professionals Forum to feature in future CEAS conferences and to aid networking and dissemination of ideas among younger members of the aerospace community.

A MAJOR EVENT

CEAS 2009 will be the major event in the European aerospace calendar during 2009. It will be addressed by senior political, industry and academic figures with a common interest in the continuing success of the European and global aerospace enterprise.



- ★ **2nd CEAS European**
- ✈ **Air and Space Conference**
- 📶 new beginnings:
- 💡 challenges for aerospace innovation

It will attract aerospace professionals, companies and organisations not only from across the European Union but also from other major global aerospace nations. It will offer CEAS partner nations, companies, and research and academic institutions a unique opportunity to showcase their brands, products and technologies by direct sponsorship; presentation of technical papers, posters or stands; the offer of speakers and panel members; and a range of other forms of engagement, building on the success of CEAS 2007 in promoting European aerospace and establishing links and technical networks across Europe and further afield.

SPONSORSHIP

Enquiries concerning sponsorship or other forms of participation should be made in the first instance to Lorraine Reese at: <lorraine.reese@aerosociety.com>, or by telephone to +44(0)207 670 4307.

WEBSITE

The Conference website is currently under development and is going to be launched in early October.

CALL FOR PAPERS

A formal Call for Papers will issue very soon with the expected deadline for receipt of abstracts falling on 12 January 2009 online at www.ceas2009.org

Selection will be made on the abstract content and applicability to the final published programme. Final written papers, fully cleared for publication and presentation at an open conference will be submitted online by 17 August 2009.

KEY DATES & DEADLINES

Abstracts submitted by:	12 January 2009
Notification to authors by:	27 February 2009
Programme issued:	30 March 2009
Papers submitted by:	17 August 2009
Conference:	26-29 October 2009

VENUE AND PROGRAMME

Competing with Birmingham or Edimburgh for the title of “the UK’s second city”, Manchester, home to Manchester United Football Club and at the centre of the one of Europe’s leading aerospace industrial clusters, is an ideal venue for CEAS 2009. The event will take place in the award winning Manchester Central international convention complex, which is capable of hosting up to 13 parallel sessions in its main auditorium. Charter suite (5 rooms) and Exchange rooms (7 rooms) taken together. The 1900 sq m Manchester Central Exchange Hall will be the CEAS 2009 catering and exhibition suite.

Manchester Central is only some 20 km north of Manchester Airport and is readily accessible by bus, train and taxi. The complex is well served by major international standard hotels close nearby. Further details will be made available when on-line Registration opens in early Spring 2009.

The programme

The conference programme will feature a number of key events as follows:

Day 1: Formal opening, press conference.

Sponsors and Exhibitors Welcome Reception.

Day 2: Opening plenary and keynote. Palace Hotel Civic Reception and Networking Event (to be hosted in the Grand Room of Manchester’s landmark Palace

Hotel, a magnificent terracotte Grade II listed building, originally home to the Refuge. Assurance Company and highly evocative of Manchester’s industrial and commercial heritage).

Day 3: Gala dinner, Manchester Airport Aviation Viewing Park Concorde Suite (the Manchester Airport Aviation Viewing Park is situated some 20 minutes by coach or car from Manchester Central. Transport by coach will be provided. The Gala Dinner itself will be held in the Concorde G-BOAC hangar/restaurant complex in the area next to the aircraft itself. Guided tours around the aircraft will be on offer and if weather permits delegates will be free to view the airport runway from the adjacent viewing mound).

Day 4: Closing plenary.

Day 5: Possible tours, local visits. Opportunities are likely to include Manchester Cathedral, Town Hall, Museum of Science & Industry (including the separately-housed Air & Space Gallery) and Manchester University. All are within easy walking distance of Manchester Central. The Arndale Shopping Centre is also nearby. The Imperial War Museum North is some 15 minutes away by tram. Manchester United’s Old Trafford stadium is situated to the south. Site visit to local firms are being considered.

Dr Michael F. Steeden
President-Elect of the RAeS

ALAIN GARCIA RECEIVED THE AIAA REED AERONAUTICS AWARD

The Reed Aeronautics Award is the highest honour AIAA bestows for notable achievements in the field of aeronautical science and engineering. The award is named after Dr Sylvanus A. Reed, aeronautical engineer, designer, and founding member of the Institute for Aeronautical Sciences in 1932. It consists of a certificate, engraved medal, and a rosette pin. For 2008, Alain Garcia was selected to receive it. The citation for the award reads: “For outstanding and visionary contributions to aeronautical

engineering through the establishment of Engineering Centres for Innovations in the four Airbus corresponding nations”.

14 MAY 2008: THE PRESENTATION CEREMONY, WASHINGTON D.C.

The Award was presented to Alain Garcia at the Aerospace Spotlight Awards Gala at the Ronald Reagan Building and International Trade Center, Washington D.C. in the evening of 14 May 2008.

THE ALAIN GARCIA RESPONSE SPEECH

« Dear honourable guests, ladies and gentlemen,
 good evening,

First of all I want to let you know how much I feel honoured by your selection, not only for myself but as well for my colleagues and the company I worked for during my 41 years long career. They have put their trust on me to integrate the whole AIRBUS single Company Engineering capabilities coming from the historical AIRBUS founding members, from four nations. And this, while developing the A 380!

At my retirement party, last summer, all thanked me for the two achievements. This why, for them and me I am pleased to accept this prestigious Reed Aeronautics Award.

Indeed you should know that I grew up progressively from specialist engineer, in powerplant integration, to Engineering Vice-President in charge of one of the biggest Aeronautical Engineering Centres in the World: a position I could not even dream of at the start of my career when I was 23.

Creativity, knowledge sharing, commitment to deliver and internationalism were always my mottos.

Now I want to let you know that during my first half of career, dealing with engines, your community brought me a lot. I was visiting your country every two months, about,

from the East coast to the West one. During these opportunities to my intellectual-theoretical training I added progressively your pragmatism, realism, and commitment to deliver to specifications. I met very highly talented American engineers, and at their demanding contacts I made a lot of progress, which prepared me for my future multinational responsibilities.

Without giving their names, because I would forget some, I want, here, to pay a tribute to each of them.

To end my thanks I want to stress how much our aeronautical communities, American and European, are close to each other by bringing knowledge and solutions in both directions. They are, as well, sharing the same values to the benefit of our World.

Now I want to express the wish that the AVIATION COMMUNITY brings progressively new solutions to the growing demand for air transportation while further minimising the Earth warming effect and finding solutions to the envisaged shortage of oil. It is almost certain that new flying concepts and new customers habits would have to be developed in the future.

The recent agreement signed between AIRBUS and BOEING is full of promises in that respect.

And now, the AIAA, I cannot leave today without congratulating you for your internationalism and cooperation undertakings.

I thank you again, and wish all of you, an excellent evening. »



The ceremony of presentation of the AIAA Reed Aeronautics Award to Alain Garcia, Washington D.C., 14 May 2008 - From left to right: George K. Muellner, President of the AIAA, delivering his speech – G.P. "Bud" Peterson, Chair, AIAA Honors and Awards Committee, presenting the Gold Medal – Alain Garcia.



EUCOMAS

On 26 and 27 May 2008, the first European Conference on Materials and Structures in Aerospace – EUCOMAS – took place under guidance of the DLR, in Berlin. Initiator and leader of the from the Association of German Engineers (VDI) held conference was the German Aerospace Centre (DLR). The EUCOMAS was held under the patronage of Michael Glos, Federal Minister for Economics and Technology, Dr Thomas Enders, CEO Airbus, and Prof. Dr Joachim Szodrich, DLR board member and president of the German Society for Aerospace (DGLR).

A SUCCESSFUL CONGRESS

After nearly four years of preparation time with partners from the DLR, the associations DGLR, CEAS (Council of European Aerospace Societies), VDI, BDLI (Federal Association of German Aerospace Industry) and from the aerospace industry, such as MTU Aero Engines, Airbus, Rolls-Royce, Leistritz, EADS and Lufthansa, the organisers can look back on a successful congress. Out of more than hundred submitted papers on current topics on materials and structural technology almost thirty were taken for the conference programme. With more than 220 participants the focused goal was beaten.



EUROPEAN CONFERENCE ON MATERIALS AND STRUCTURES IN AEROSPACE

EUCOMAS

BDLI

DLR

CEAS

In conjunction with ILA

www.eucomas.eu

On the 26 and 27 May 2008, the first European Conference on Materials and Structures in Aerospace (EUCOMAS) took place in Berlin. Credit EUCOMAS.



From left to right: Prof. Dr Heinz Voggenreiter, Director of the DLR Institute of Materials Research and Institute of Structure and Design; Jochen Homan, State Secretary at the Federal Ministry of Economics and Technology; Evert Dudok, CEO Astrium Satellites. Credit VDI.

WHAT AIM?

Due to the high demand from industry for a communication platform that fits the needs of experts in terms of materials and structure technology inside the aerospace sector, the EUCOMAS was launched. The aim is to develop the conference together with European partners to the key scientific and technology platform in Europe for materials and structural technology in aerospace, and thus to strengthen the network between science and industry.

In addition to the technical conference, with lectures on latest technology trends, workshops on important technological and political issues represented the creative elements of the event. These workshops provide crucial impulses for the active continuation of topics discussed in the expert working groups and advisory councils of the community.

THE THEMES OF THE WORKSHOPS

The themes of the technology workshops of this year's EUCOMAS were "Safe composites maintenance practice" and "Mechanical and computational materials engineering". A third workshop gave experts of the new European Union member states the opportunity to network the community. A special element of the EUCOMAS was the inclusion of engineering recruits. With guidance of the DGLR, students intensely discussed the subject "Superalloys – A truly globalized supply chain" and had afterwards the chance to present their findings to the auditorium.

By Prof. Dr Heinz Voggenreiter
Director of the DLR Institute of Materials Research
and Institute of Structure and Design.

European Defence Agency Adopts Capability Development Plan

• 26 EU Member States (All except Denmark) of the EDA (European Defence Agency) endorsed on 8 July 2008 the first Capability Development Plan - CDP - defining the future military needs and priorities of the European Security and Defence Policy - ESDP - and agreed to use it to guide future national defence investment decisions. They also agreed to seek opportunities to collaborate so as to address their short and longer-term military requirements coherently.

TWELVE PRIORITIES

Member States contributed to a database of the national programmes and priorities, which has initially revealed a large number of different areas where more than one country was working on similar ideas.

The Steering Board agreed on 12 topics for specific action and asked the Agency to prepare a detailed way forward for

each set of priorities. The twelve priorities are:

1. Counter man portable air defence systems.
2. Computer network operations.
3. Mine counter-measures in littoral sea areas.
4. Comprehensive approach - military implications.
5. Military human intelligence and cultural-language training.
6. Intelligence, surveillance, target acquisition and reconnaissance architecture.
7. Medical support.
8. Chemical, biological, radiological and nuclear defence.
9. Third-party logistic support.
10. Counter-improvised explosive devices.
11. Increased availability of helicopters.
12. Network enabled capability.

The CDP background note is available at:
www.europolitics.info > Search > 230298

JPS-Text composed from information data
 published in the EDA Bulletin July 2008.

The European Defence Agency and the New R&T Programme on Emerging Technologies

European Governments have agreed to establish a new Joint Investment Programme - JIP - for research into Innovative Concepts and Emerging Technologies - ICET -. This new two-year programme, which will be built on the experience from the 1st JIP launched in 2006, focusing on the protection of armed forces, will initially involve 11 European countries which will contribute to a common budget of ? 15.5 million. ICET programme aims at basic research with an identified potential to generate new and improved capabilities.

THE EDA APPROACH TO R&T COLLABORATION: A CHOICE OF TOOLS

– CATEGORY “A” PROJECTS

These projects are created based on a proposal from the EDA and are open to all EDA participating Member States, which decide individually whether to contribute and participate or to opt out.

– THE EDA FUNDS A CONTRACT DIRECTLY FROM THE OPERATIONAL BUDGET

Example: “DISCOTECH”

What is it?: **DIS**ruptive **COTS** **TECHNOLOGIES** in the Information Technologies (IT)-area.

Almost all military equipment depends on semiconductors. These are typical dual-use products and often available commercially “off the shelf” - COTS -, but exceptions still exist where the military user has exclusive military requirements. These may, for example, concern performance and reliability issues, the need for low power consumption or a secure future supply.

The civil semiconductor market has a € 163 billion annual turnover. Two thirds of this is produced in Asia. Intel alone spent \$ 5.76 billion (€ 3.7 billion) on R&T in 2007. Our investment in this field must therefore be highly targeted to relate the potential of this enormous civil market to the particular needs of the defence customer. “DISCOTECH” seeks to forecast likely technical developments in electronic components over a 10-20 year perspective. The study will help military users decide where to invest R&T funds to ensure European availability of critical components. A consortium led by THALES is undertaking it, involving the majority of European suppliers and the defence system companies which are the main industrial users of such components.

– CATEGORY “B” PROJECTS

Here, the initiative and management mainly lie in the hands of a restricted group of participating Member States.

Example: “SOCUMOD”

What is it?: SOcial and CULTural MODelling of the Operational Environment and of Headquarters.

This first “Human Factors” category “B” project will study how socio-cultural distinctions, and awareness, can impact on the effectiveness of EU Force HQs, both internally and in their understanding of and responses to the external operating environment. It will develop models that can be used in future training of HQ staff.

From the EDA’s R&T Directorate article published in EDA Bulletin July 2008.

THE EDA

The European Defence Agency is an Agency of the EU and therefore under the direction and authority of the Council, which issues guidelines to and receive reports from High Representative Javier Solana as Head of the Agency. Detailed control and guidance, however, is the job of the Steering Board.

High Representative Javier Solana chairs the Steering Board, the principal decision-making body of the EDA, made up of Defence Ministers from 26 participating Member States - all EU Members except Denmark - and a member of the European Commission.

In addition to ministerial meetings at least twice a year, the Steering Board also meets at the level of national armament directors, national research directors, national capability planners and policy directors.

The Steering Board is composed as follows:

- Chair: Javier Solana
- Chief Executive: Alexander Weis
- Deputy Chief Executive for Strategy: Carlo Magrassi
- Deputy Chief Executive for Operations: Adam Sowa
- Media & Communication Unit: Malgorzata Alterman
- Planning & Policy Unit: Dick Zandee
- Capability Directorate: Jonathan Mullin
- Armaments Directorate: Jukka Juusti
- R&T Directorate: Christian Bréant
- Industry & Market Directorate: Ulf Hammarström
- Corporate Services Directorate: Franco Baldi

www.eda.europa.eu

The AIRBUS A350 XWB : A Family Concept with all the Extras – XWB : eXtra Wide Body –



The A350 XWB was given its industrial launch in December 2006, following the Family’s commercial launch in December 2004, which subsequently achieved a strong market base including: Spain’s Air Europa with 10 commitments; Kuwaiti leasing company Alafco with 12; American leasing companies CIT, GECAS and ILFC with commitments for 5, 10 and 16 aircraft respectively, India’s Kingfisher Airlines with 5; Qatar Airways with 60; Brazil’s TAL with 10; America’s US Airways with 20; Eurofly with 3; TAP with 10; Finnair with 9; Bangkok Airways with 6; and 6 for Yemen Airways.

THREE BASIC PASSENGER VERSIONS

Conceived as a comprehensive medium-capacity aircraft Family with an extra-wide fuselage cross-section, the A350 XWB will be available in three passenger versions—all with cruise speeds of Mach 0.85.

- The **A350-800** can fly 270 passengers up to 8,500 nautical miles (15750 km).
- The **A350-900** can fly 314 passengers up to 8,400 nautical miles (15540 km).



Airbus A350-800

- The **A350-1000** can fly 350 passengers up to 8,300 nautical miles (15400 km).
- The operating reach of the **A350-900R** version will provide ultra long-range performance.
- The **A350-900F**, a freighter configuration, will complement the passenger models.

– COMFORT AND LOWER OPERATING COSTS

Featuring a cross section of 232 inches (5,9m), the aircraft will benefit from the widest fuselage in its category, offering high levels of comfort in this market segment. It will also provide the lowest operating costs and lowest seat mile cost of



*Airbus
A350-900*

any aircraft in the category. The family is also designed to confront the challenges of high fuel prices, rising passenger expectations as well as environmental concerns in its market segment. It is also designed to give exemplary reliability in service with longer maintenance intervals and customised maintenance schedules to help provide airlines with higher operating productivity.

BENEFITING FROM THE LATEST 21st CENTURY TECHNOLOGIES

– NEW MATERIALS



Comfort to the next level

The A350 XWB has been designed with passenger well-being at the forefront.

Technology & Innovation

The A350 XWB brings together the very latest in aerodynamics, design and advanced technologies.

Specifications

A family sized to generate cost reductions and provide unprecedented operating flexibility for airlines.

Xperience...

Visit the A350 XWB mini-site for more on its Xclusive, Xtended, Xcellent, Xpert and Xciting features.

A350 XWB: the world's most advanced medium capacity long range airline

With an airframe made of more than 60% new materials, chosen for their superior weight and strength properties, the A350 XWB has the most efficient structure in terms of design concept. In particular, the use of all-new Carbon Fibre Reinforced Plastic - CFRP - panelled fuselage skins cater for much easier maintenance and reparability. This design also allows weight saving via optimum fibre lay-up and skin thickness tailored to the requirements of the location. The all-new composite wing design lifts the aircraft cruise speed to Mach 0.85.

– GREATER FUEL ECONOMY

Excellent aerodynamics, together with advanced high lift devices and advanced systems contribute to greater fuel economy in all flight regimes and on the ground. Moreover, the new Rolls-Royce Trent XWB engine, producing up to 92,000 lb of thrust, will draw on the latest manufacturing, materials and thermodynamic expertise to deliver lower fuel burn and lower maintenance costs while minimising the noise "footprint" around airports and reducing environmental impact.

– FLY-BY-WIRE

The fly-by-wire A350 XWB Family is a significant addition to the Airbus product range.

– MODERN FUNCTIONS



A modern Avionics

Building on the A380 interactive cockpit and systems, the XWB Family will feature modern functions such as an airport navigation system and the brake to vacate, a system designed for passenger comfort and better runway usage.

Available from 2013, the A350 XWB (eXtra Wide-Body) represents an entirely new, uncompromised, 21st Century solution.

JPS-From information data provided by
EADS/Airbus.

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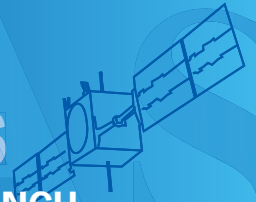
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ABOUT THE INTERNATIONAL SPACE STATION WITH COLUMBUS, EUROPE IN SPACE

By Thomas Reiter



Thomas Reiter is DLR Executive Board Member and Member of the Board of the DGLR.

He was born on 23 May 1958 in Frankfurt am Main. He graduated in aviation and space engineering from the Federal Armed-Forces University in Neubiberg.

In 1992, he joined the European astronaut team at ESA. In March 1995, he was named on-board engineer for the "EURO-

MIR 95" mission. During this mission which lasted 174 days (3 September 1995-29 February 1996), he performed two ExtraVehicular Activities (EVA).

From September 2001 to September 2004, he worked with the Columbus project team.

From July to December 2004, he participated in the "Astrolab" mission, the first European long-term mission on-board the International Space Station (ISS). He carried out another EVA as part of it. Thomas Reiter is a holder of the German Federal Service Cross.

After many delays and a period of uncertainty as to what fate might befall "Columbus", the European research module for the ISS, it was finally launched on its way on 7 February 2008, over three years behind schedule, in the cargo bay of the American space shuttle Atlantis. The headline in one American daily newspaper mentioned, "Columbus sails again", and thus summed up very well the mood on this very emotional day for the thousands of Europeans workers from industry, the national space organisations and the European Space Agency, ESA, who were involved in the project.

The Columbus Control Centre

Since then, not only "our" research module, but also the Columbus Control Centre, or "ColCC", managed by DLR (German Aerospace Centre) in Oberpfaffenhofen, have proved themselves magnificently. Commissioning proceeded without any major problems and it has already been possible to carry out the first experiments. These have demonstrated that it is fundamentally important to have good interaction between the crew on board the ISS and the specialists in Oberpfaffenhofen in order to make effective use of this research facility, and also that the presence of astronauts "on-site" to operate the various modules of the station and perform the research tasks is absolutely vital.

The Automated Transfer Vehicle

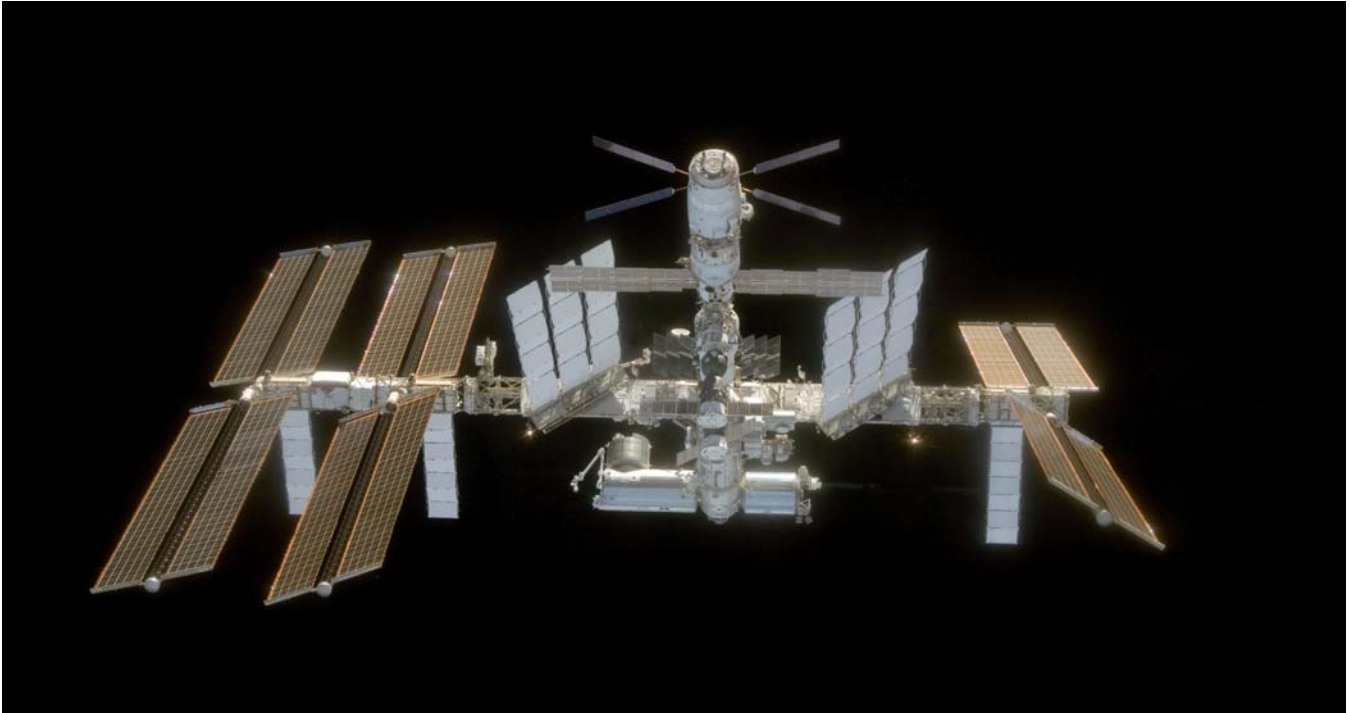
Barely a month later, on 9 March 2008, the Automated Transfer Vehicle (ATV) lifted off from Kourou on board an Ariane 5. With a weight of almost 20 tonnes, this represents the heaviest payload ever taken into orbit by a European carrier rocket. A further four launches of this supply spacecraft are planned up to 2014, which will provide the ISS with 7.5 tonnes of consumables such as fuel, drinking water and oxygen, as well as scientific equipment and spare parts. These missions will represent the European contribution to the ISS operating costs resulting from the Columbus programme.

Columbus and science

The use of Columbus for scientific purposes will be the centre of interest for the European manned spaceflight programme over the coming years. The first experiments using the Fluid Science Lab and the Biolab were set in action by my German colleague, Hans Schlegel, and were completed by his French counterpart, Léopold Eyharts, during his two-month stay on board the ISS. Another ESA astronaut is presently undergoing training for the next European mission in 2009, at which time the number of crew on the ISS will be raised from 3 to 6 members, resulting in a massive increase in the capacity for carrying out scientific work alongside operational tasks. A further major challenge will be also to carry out industrial research on the ISS, since the uses for the systems that have been installed there are not restricted to purely academic applications.

The ISS, a test platform for technologies

In addition to dealing with scientific subjects, in future the ISS is expected to serve to an increasing degree as a test platform for technologies that have the potential to play a role in the further manned exploration of space. In particular, the station offers outstanding possibilities for research in the field of regenerative life-supports systems. One of the aims of this work is to massively reduce the amount of air and water that currently has to be supplied to the station by the American shuttle, the Russian cargo spacecraft Progress, and the European ATV. Moreover, it needs to be decided if we want to go to the expense of installing our own communication system in Columbus, in order to fully exploit the opportunities for "telescience" that Columbus offers. This system would also be necessary to meet the demands for secure



*The ISS Configuration after the STS-124 Space Shuttle mission-Columbus and the ATV are attached to the ISS.
Credit NASA.*

transmission of proprietary data that would arise from conducting industrial research, at the same time creating a redundant transmission channel to complement the American communication system.

The future of manned spaceflight

In terms of the future of manned spaceflight, there are two important questions that come up, and only one of which we can answer ourselves:

- firstly, how long can we continue to use Columbus?
- secondly, what role will Europe take in the field of manned space exploration in the post-ISS era?

The number of years over which the ISS will continue to be operated is not yet clearly defined. NASA has initially budge-

ted for operation up to 2016, however this does not necessarily mean that funds will not also be made available beyond this time for the continued running of the ISS. This date does not represent any kind of limit from a technical point of view, as was already impressively demonstrated by the Russian Mir station during its fifteen years of operation. The German and European side has clearly stated a desire to operate Columbus - and therefore also the ISS - for at least 10 years.

Regardless of what else happens, further manned exploration towards the moon will be undertaken in parallel to operating the ISS, provisionally starting in the second half of the coming decade. The Constellation programme in the USA has already set a clear new course in this direction.

Hopefully the conference of the ESA Council at Ministerial level scheduled for this Autumn will not only provide a definitive answer to this question, but also set out an equally clear course for Europe. I am certain that these developments will also be followed with great interest here at DGLR.



The research module COLUMBUS.

VEGA is Being Preparing For Its Maiden Flight in November 2009

The development of Vega passed major milestones in 2007 and 2008, providing essential results in terms of test data and design consolidation, that will lead to the Qualification Flight from Kourou at the end of 2009. This new launcher will widen the range of launch services by providing a more adapted response for a wide range of space missions.

THE VEGA AND VERTA PROGRAMMES

Vega is a four-stage launch vehicle designed to cover a wide range of small satellite missions in Low Earth Orbit (LEO):

- reference: 1500 kg in polar circular 700 km orbit;
- mission range: inclination 5° to sun-synchronous orbit, LEO and small-to-medium payload mass range, from micro and mini-satellites up to 2.5 tonne satellites.

The Vega programme is composed of three ESA optional programmes – the Small Launcher programme, the P80 demonstrator programme, and an additional slice decided at the end of 2007 – . The Vega launch system vehicle includes also the launcher infrastructure at CSG and the worldwide ground station network.

In order to prepare the exploitation phase, the VERTA programme – VERTA: VEGA Research and Technology Accompaniment – was decided in 2005, with the objective to enlarge the qualification domain.

FUNDING

Vega and VERTA are funded by seven states: Belgium, France, Italy, The Netherlands, Switzerland, Spain, Sweden.

THE VEGA LAUNCHER

It is a single-body vehicle composed:

- three solid-rocket motors stages – P80, Zefiro-23, Zefiro-9 –;
- a liquid-propulsion upper stage – Attitude Vernier Upper Module, AVUM –;
- a fairing.

At lift-off, Vega is 30.2 m high and weighs 139 tonnes.

In a single launch configuration, the minimum volume allocated to the payload consists of a cylindrical volume of 2.35 m diameter and 3.5 m height plus a frustum volume of 2.8 m height.

THE QUALIFICATION FLIGHT

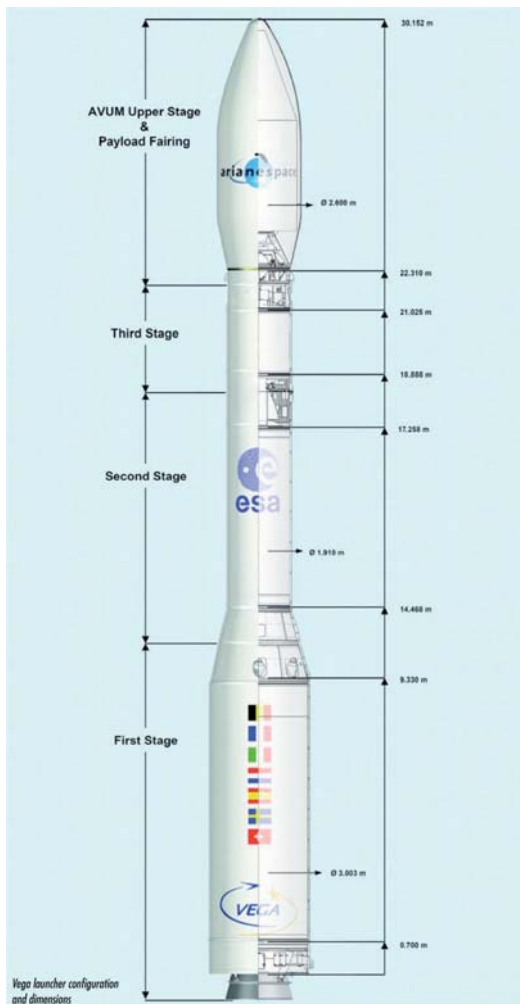
The main passenger will be the “LARES” experiment developed by ASI: this is a LASER Ranging Experiment System aiming at measuring the dragging of inertial frame due to Earth’s angular momentum and at performing high precision test of Earth’s gravitomagnetic field. The secondary payloads will be educational microsatellites.

FROM DEVELOPMENT TO EXPLOITATION

For a smooth transition between development and exploitation, the VERTA programme will undertake five flexibility demonstration flights. The first one is scheduled six months after the maiden flight.

ORGANISATION

The programme is managed by an integrated team composed of staff of ESA, ASI (Italy), CNES (France), based at ESRIN (Frascati, Italy), for the launch vehicle and ground segment, and at CNES (Evry) for the P80 demonstrator. The industrial organisation is based on a prime-contractor for each project: ELV(I) for the launch vehicle, AVIO(I) with delegation to Europropulsion (I/F) for the P80 demonstrator, Vitrocet(I) for the ground segment.



Vega launcher configuration and dimensions.

J.-P. S.

Abstract written from the article published in ESA
bulletin 135, August 2008.

GOCE Explorer Satellite: a very ambitious mission

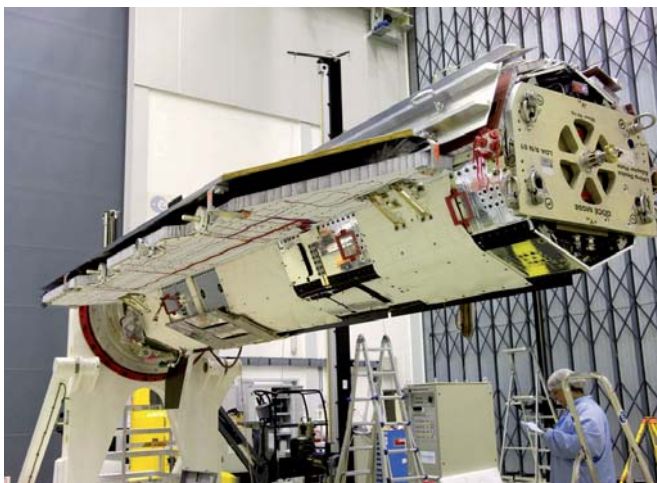
In the coming days, ESA will launch from Plesetsk Cosmodrom (Russia), GOCE, the most sophisticated mission ever to investigate the Earth's gravitational field and to map the reference shape of our planet - the geoid - with unprecedented resolution and accuracy, bringing Europe to the forefront of Earth sciences.

IN BRIEF

- GOCE: Gravity field and steady – Ocean Circulation Explorer
- Launcher: Rockot, by Eurockot Launch Services GmbH
- Launch: October 2008 (date still t. b. d.), Plesetsk Cosmodrom, Russia
- Mission control: ESOC, Darmstadt
- Data download: to Kiruna (Sweden) and Svalbard (Norway) ground stations
- Processing & archiving: ESRIN (ESA Centre, Italy)
- Number of instruments: 3
- Nominal life: 20 months
- Orbit: 260 km altitude, polar, Sun-synchronous
- Mass: 1100 kg
- Size: 5.3 long, about 1 m body diameter
- Propulsion tank: 40 kg of xenon
- Geoid accuracy: 1-2 cm vertically with 100 km spatial resolution
- Planning and construction of the spacecraft involved 45 European companies led by Thales Alenia Space, Satellite Prime Contractor- Project Manager Andrea Allasio –.

LOOKING INTO THE FORCES THAT SHAPE THE EARTH

As Earth is not a perfect sphere and its interior has layers and zones of different density, gravity varies around it. Gravity and its variations in space are fundamental for every dynamic pro-



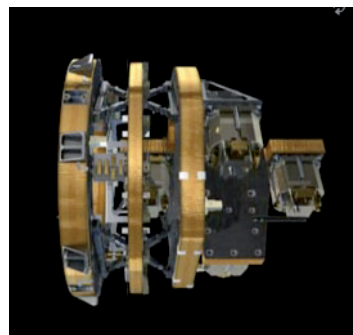
A view of the GOCE satellite.

cess on Earth's surface and its interior. Improving our knowledge of how gravity affects the interaction between these processes has practical benefits in today's changing world. An accurate gravity map - the geoid - is also crucial for geodesy applications and for defining a sea surface height reference model with which to accurately survey ocean circulation patterns and sea-level changes.

THE SATELLITE

The satellite, octagonal, 1100 kg, 1 m² only cross-section, is configured to keep aerodynamic drag and torque to an absolute minimum. It is symmetrical about its flight direction and two winglets provide additional aerodynamic stability. In orbit, the same side of the satellite always faces the Sun. This side carries four body-mounted and two wing-mounted solar panels which provide the necessary power for the satellite. At times when the solar array is not illuminated by the Sun, a lithium-ion battery delivers the power required. An S-band communication antenna is mounted on each wing.

THE PAYLOAD



A view of the GOCE gradiometer.

– GOCE's main instrument is the Electrostatic Gravity Radiometer, a set of six 3-axis accelerometers mounted in a diamond configuration in an ultra-stable structure. This gradiometer, 100 times more sensitive than any sensor of the same type previously

flown in space, will for the first time measure gravity gradients in all directions.

– GOCE also carries a GPS receiver to be used as a Satellite-to-Satellite Tracking Instrument to supplement the gradiometer measurements.

– GOCE has beside a Laser Retroreflector to allow its precise orbit to be tracked by a global network of ground stations through the Satellite Laser ranging Service.

With its unique design, GOCE demonstrates Europe's excellence in both engineering and science.

J.-P.S.
From information data provided by ESA
Media Relations Office

The Council of European Aerospace Societies - CEAS -

The CEAS: an International Non-Profit Association

Located: Belgium - Rue du trône 98 - 1050 Brussels

www.ceas.org

The CEAS aims to develop a framework within which the major aerospace societies in Europe can work more closely together. The Member Societies: AAFA (France), AIAE (Spain), AIDAA (Italy), DGLR (Germany), FSAE (Finland), FTF (Sweden), HAES (Greece), NVvL (Netherlands), RAeS (United Kingdom), SVFW (Switzerland). Following its establishment as a legal entity conferred under Belgium Law, this new organisation began its operations on 1st January 2007.

The basic mission of the Association is to add value at a European level to the wide range of services provided by the constituent Member Societies, allowing for greater dialogue between the latter and the European institutions, industry, governments and academia. The Council is governed by a Board of Trustees, with representatives of each of the Member Societies.

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Among the Main Coming Events

2008

- **13-17 October:** 6th Aerothermodynamics Symposium for Space Vehicle Design. ONERA, Chalais-Meudon (France).
- **14-15 October:** Bonn (Germany) - International Symposium on Precision Approach and Performance Based Navigation (ISPA 2008). www.dgon.de
- **14-16 October:** Liverpool (UK) Conference: Designing the next Generation of Civil Aircraft Structures (CEAS/Str.&Mat. Group) conference@aerosociety.com – www.aerosociety.com/conference



- **15-18 October:** AIDAA – 3rd International Workshop on Systems & Current Engineering for Space Applications – SECESA 2008 – Univ. of Rome “La Sapienza” – www.congrex.nl/08c34
- **21-22 October:** RAeS-Towards Commercial Exploitation of Unmanned Aircraft-UAV Group Conference – www.aerosociety.com/conference
- **22-24 October:** Hamburg (Germany). International Meeting, Aviation Product Support – geschaefsstelle@dglr.de – www.imapp2008.org
- **27-28 October:** London, UK, CEAS/Aerodynamics Group Conference: The Aerodynamics of Novel Configurations – conference@aerosociety.com – www.aerosociety.com/conference
- **4-6 November:** RAeS – Liverpool (UK)-Rotorcraft Handling Qualities- www.aerosociety.com/conference
- **11-13 November:** NLR, Amsterdam (NL): SETP/SFTE Flight Test Safety Workshop Europe. “Defining the Edge”. www.setp.org/HTML/NewsRoom/news.html?nid=165
- **12-13 November:** London, RAeS conference@raes.org.uk www.aerosociety.com/conference – November UAV Conference London, RAeS – conference@aerosociety.com – www.aerosociety.com/conference
- **24-26 November:** 3AF- Avignon (F) – Conference “On-Board energy – Micropropulsion”. lisa.gabaldi@aaaf.asso.fr

- **4 December:** Paris- Presentation of the CEAS Award to Mr Jean-Paul Béchat – lisa.gabaldi@aaaf.asso.fr
- **5 December:** Paris- CEAS General Assembly and 8th CEAS Board Meeting.

2009

- **3-4 February:** RAeS – Surtech 2009: “the Changing World of Surveillance”. www.aerosociety.com/conference
- **21-23 April:** RAeS Annual Conference & Exhibition Aerospace 2009 – London, RAeS “Facing up to the Future” – conference@aerosociety.com – www.aerosociety.com/conference
- **25-29 May:** Rotterdam, on board “SS Rotterdam”: Symposium organised by the International Committee on Aeronautical Fatigue (ICAF) www.icafe2009.nl
- **29 June-3 July:** Milan – 20th Nal Congress of AIDAA
- **8-10 September:** Aachen (Germany) – German National Aeronautics and Astronautics Congress- www.dlrk2009.dglr.de
- **22-24 September:** Hamburg (Germany). 35th Rotorcraft Forum – geschaefsstelle@dglr.de
- **28 September-2 October:** NVvL-Amsterdam, NLR- ICAS PC Meeting & Workshop – asbr@nlr.nl – www.nvvl.org

- **26-29 October:** Manchester (UK), 2nd CEAS European Air & Space Conference 2009. Cf. pages 4-5.



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