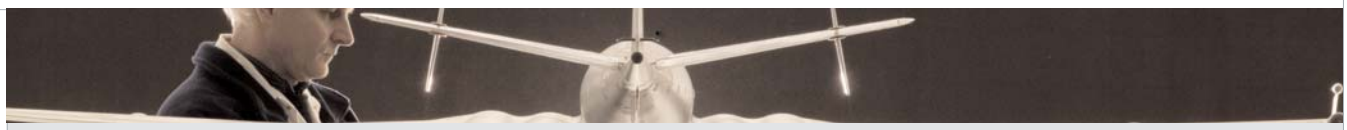
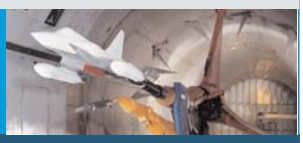


EWANEWS

Spotlight on ONERA
Turn to page 03
for full details



Update

The European Wind Tunnel Association project (EWA) was formed in April 2004.

There are activities underway in many areas and these are promoting collaboration between members and improving the wind tunnel testing capability within the European Community. This is demonstrated by the successful and well attended workshops that have been held at leading European facilities during which presentations of advanced testing techniques have been given. These include Pressure Sensitive Paint (PSP) at DNW, Model Deformation Measurement (MDM) at ETW and Doppler Global Velocimetry (DGV) at ONERA. Information about the presentations can be found on the EWA web site. Further information about the MDM workshop is presented later in this newsletter.

EWA is developing the relationship between the major aerospace wind tunnel organisations within the EC. This is being achieved in many ways. A large amount of detailed information about the equipment and test facilities available within each member organisation is now readily available to all partners. Effort is being placed on the production of mechanisms to allow the secondment of staff between members and also the leasing of equipment.

The results of this work currently being undertaken will provide significant long term benefits to the European aerospace community.

Aerodynamic development is carried out using two approaches. Firstly, undertaking tests in wind tunnels and secondly using the computational fluid dynamics (CFD) techniques which are now available. It is known that significant benefits can be gained by improving the ways that these two approaches can be used in parallel. This is a topic that is attracting a lot of attention and a successful workshop was held at DLR, Gottingen during May 2005 at which this subject was discussed. A second workshop of this type is due to be held at FOI Stockholm on 13 -14 June 2006, further information about this workshop is available at http:/www.foi.se/ewa .

A successful EWA Initial Joint Workshop was held at ONERA, Toulouse during October 2004. This allowed all members to be briefed on the status of the many EWA activities. The success of this first workshop resulted in the decision to organise a Second Joint Workshop. This was held at BAE Systems, Farnborough, UK on March 20 - 21 2006. Presentations were given to provide an overview of the work being undertaken in each of the work packages. These were supported by talks describing the current wind tunnel testing capability and technique developments underway within EWA. Additional presentations were also given on advanced testing techniques by invited speakers.

A report of this workshop will be presented in the next EWA Newsletter.

Model Deformation Workshop ETW October 2005

It is very important to have accurate data presenting the accurate position of the model, including surface deformation, when it is subjected to aerodynamic load during a wind tunnel test.

This is essential in order to allow a full understanding of the aerodynamic performance of the model to be achieved and ensure that it provides a suitable representation of the full size aircraft. This information has also become essential in order to allow meaningful comparison between experimental and CFD results.

This is an important technique and it was decided to organise a workshop at which presentations would be given showing the current status and performance of the MDM systems available within EWA.

Continues on page 02

This workshop was held at ETW on October 20th 2005 and a photograph showing the delegates is shown on page 1. Presentations of the different techniques under development by EWA members were given.

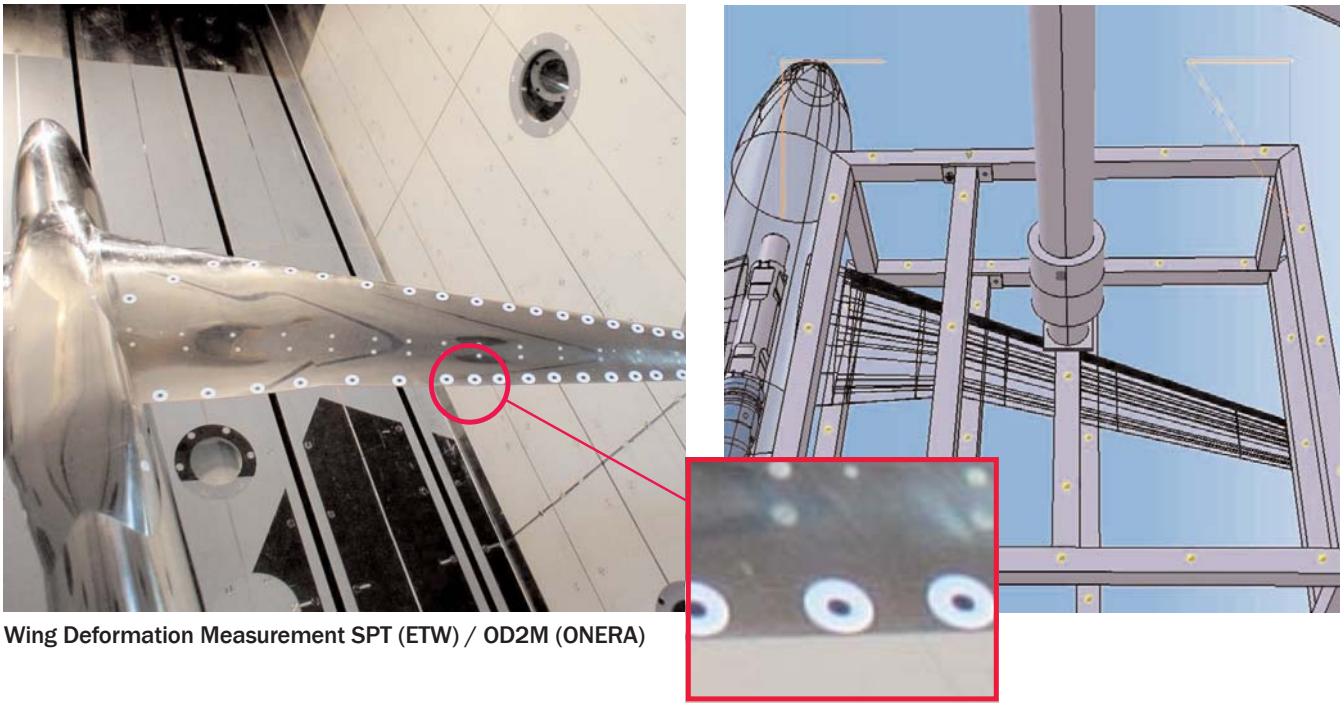
These were supported by real time wind tunnel demonstrations of the following techniques:

ETW SPT-method
DLR IPCT-method
ONERA Deformation method
ETW Pressure method

Photographs are shown below of a model undergoing tests using the SPT (ETW) / OD2M (ONERA) and IPCT techniques.

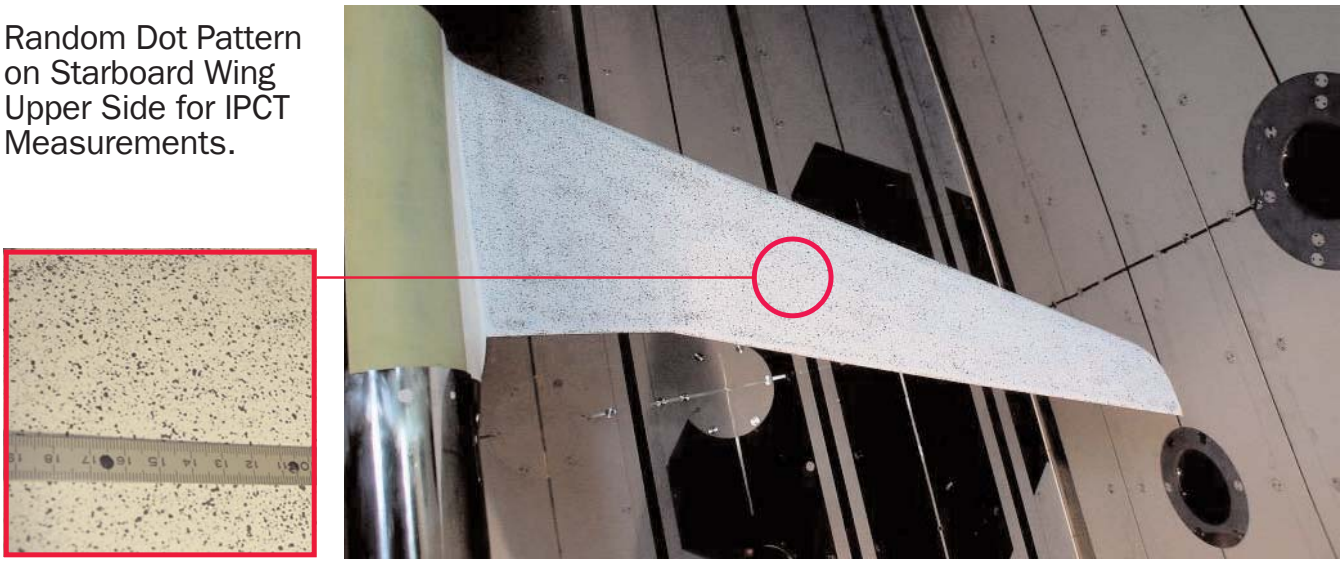
The workshop was very successful and gave the opportunity for the assessment of system performance in representative wind tunnel testing conditions. It also provided a forum for the development of collaborative activities and the transfer of information to potential system users. It clearly showed the high level of technique capability available within EWA and the information provided was found to be very useful by all EWA members.

Further information about this workshop is available on the EWA web site.



Wing Deformation Measurement SPT (ETW) / OD2M (ONERA)

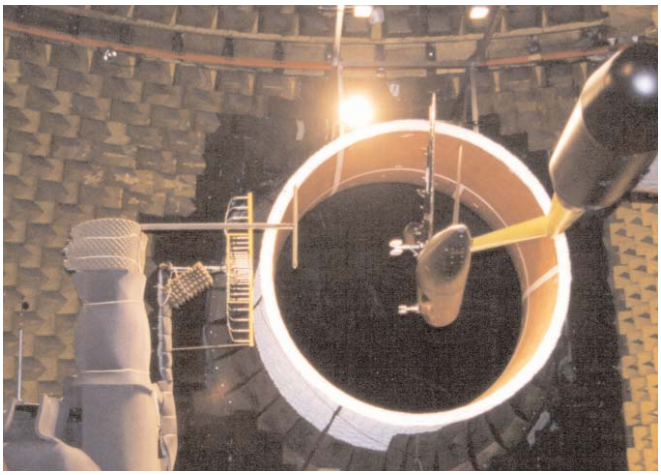
Random Dot Pattern on Starboard Wing Upper Side for IPCT Measurements.



Wing Deformation Measurement with IPCT Technique

Spotlight on ONERA

ONERA (Office National d'Etudes et de Recherches Aérospatiales) is the national research organisation in the field of aeronautics and astronautics, in France.



As such, ONERA contributes to all major programs in aerospace at both national and European levels, and has strong links with the European aerospace industries. In addition, ONERA has many scientific and technical co-operations all over the world. The R&D activities at ONERA cover everything directly or indirectly related to aerospace, i.e., aerodynamic design, numerical simulation, experimental validation, testing techniques in large facilities, etc.

The departments of fluid dynamics and propulsion (DAAP, DMAE, and DAFE) are deeply involved in the development and application of advanced non-intrusive measurement techniques, i.e., Pressure Sensitive Paints (PSP), infrared thermography, Laser Doppler Velocimetry (LDV), Particle Image Velocimetry (PIV), and Doppler Global Velocimetry (DGV). Most of these techniques have now been taken from the laboratory environment, applied to large wind tunnel applications, and finally commercialised for regular use.

The Division for Computing, Engineering and Testing Facilities (GMT) actually operates commercially the array of large ONERA wind tunnels at the Modane-Avrieux, Le Fauga-Mauzac and Saclay test centres (see pictures on this page). These facilities are equipped with up-to-date instrumentation (pressure probes, PSP, infrared thermography, PIV, strain gauges, balances, etc.) to satisfy the constantly evolving requirements of our broad customer base, both European and International.

ONERA provides commercial testing services for aerodynamic design optimisation, and performance assessments, together with specialist capabilities in such important areas as fabrication of large powered models. ONERA is confident that it has developed state-of-the-art skills, which are combined into a responsive, confidential, and efficient service, to best meet the future needs of the global aerospace community.

For more information on ONERA, please visit our website at http://www.onera.fr/english.php

Partners

VZLU is a joint stock company belonging indirectly to the State as the majority shareholder.

By Dr. Milan Holl, VZLU CEO

Staff:
320 persons, of them 140 graduates

History
Vyzkumny a zkusebni letecky ustav (VZLU, Aeronautical Research and Test Institute) was founded in 1922, being one of the first establishments of that type on the European continent. The aerodynamic department was one of the first principal departments established, the first wind-tunnel suitable for the industrial purposes began operations in 1927.

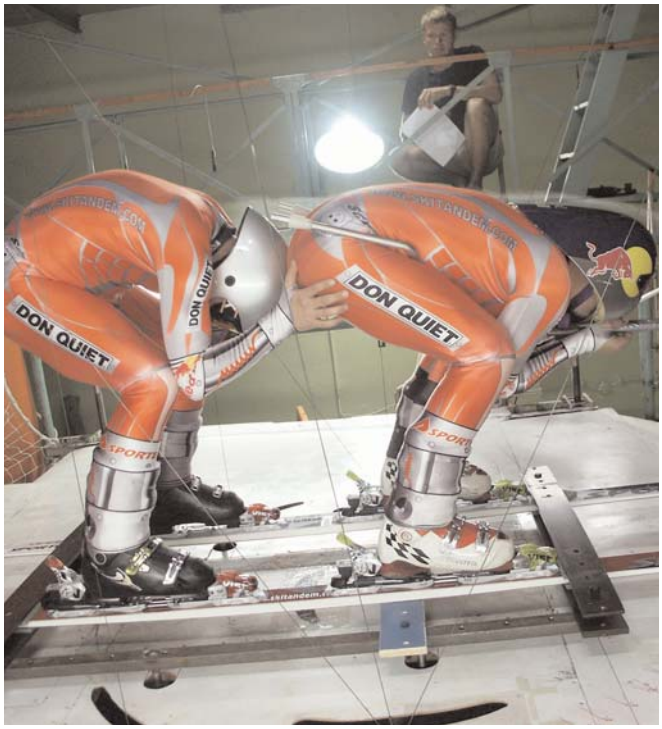
After 1989 VZLÚ got over economic difficulties due to aviation recession and collapse of East-European markets following the Soviet Union break-up by starting work on new projects within and outside aviation in the Czech Republic as well as abroad.

More than 80 different aircraft types have passed through the Institute´s offices and laboratories to date. For example Aero L 39/ 59/ 159 family of jet trainers and light attack aircraft, Let L 410 and L 610 regional turboprops, Aero 270 Ibis business turboprop or L 13 Blanik glider as well as instruments for several space satellites and Skoda cars.

Mission
VZLU is the major centre for aerospace research, development and testing in the Czech Republic. VZLU successfully fulfils orders from the Czech as well as foreign industries comprising both civil and military sectors. The VZLU staff provides the customers with advanced technologies and services. VZLU provides services for a variety of industrial branches such as aerospace, car makers, turbomachinery, railway, mechanical engineering, electrical and civil engineering industries. VZLU carries out also security and environmental studies.

VZLU undertakes a wide range of research, development and testing work including certification testing. VZLU is engaged mainly in the following fields of expertise:

Aerodynamics (Aerospace & Turbomachinery applications)
Wind engineering
Strength and fatigue
Aeroelasticity
Aircraft propellers
Aircraft systems tests
Environmental testing
Acoustics
Hydraulics
Engineering design
Regulations and standards
Security research
Prototype manufacture



For more information on VZLU, please visit our website at http://www.vzlu.cz

Quality assurance
VZLU has introduced a quality assurance system certified according to ISO 9001:2000 standard and has taken out all necessary approval certificates from the Civil Aviation Authority as well as Military Aviation Authority of the Czech Republic. Research and testing laboratories are holders of number of other certificates.

Other Partners

Name	Country Code
Airbus Deutschland GmbH	DE
Airbus UK Limited	UK
Aircraft Research Association Limited	UK
BAE Systems (Operations) Limited	UK
Centro Italiano Ricerche Aerospaziali S.C.p.A.	IT
DLR - Deutsches Zentrum für Luft- und Raumfahrt	DE
DNW - German Dutch Wind Tunnels	NL
European Transonic Windtunnel GmbH	DE
Office National d'Etudes et de Recherches Aérospatiales	FR
QinetiQ Limited	UK
Stichting Nationaal Lucht- en Ruimtevaartlaboratorium	NL
Swedish Defence Research Agency	SW
Vyzkumny a Zkusebni Letecky Ustav, A.S.	CZ
Von Karman Institute for Fluid Dynamics	BE

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Ludovico Vecchione	CIRA
Horst Hüners	DLR
Lionel Baranes	ETW
Monica Dahlén	FOI
Fred Abbink	NLR
David Dunford	QinetiQ
Mario Carbonaro	VKI
Milan Holl	VZLU

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David Hurst	BAE SYSTEMS
Ian Price	Airbus DE/UK
Jürgen Quest	ETW
Andrew Rae	QinetiQ
Michel Riethmuller	VKI

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