



AIM² Advanced Flight Testing Workshop

September 9 -14, 2013

Rzeszów University of Technology, Poland

www.workshop.prz.edu.pl

General

It is our pleasure to invite you to attend the AIM² Advanced Flight Testing Workshop in Rzeszów, Poland.

The aim of the workshop is to present the state-of-the-art knowledge on the application of modern optical measurement techniques to measure the thermal and flow parameters in-flight. Furthermore, advanced optical methods to measure the deformation of the surface of the wings and rotor blades of aircraft will be presented. Participants will gain basic knowledge and experience, as a result of research conducted in the framework of two European projects AIM and AIM² and verified during the flight test on various types of aircraft. These have included the Evektor VUT100, Airbus A380, Dornier 228, Fairchild Metro II, Janus, PW-6, Piaggio P180 and Scottish Aviation Bulldog. Participants will also see, on practical examples, the advantages of these methods applied to in-flight testing over conventional methods.

AIM² (Advanced In-Flight Measurement Techniques) is an EC-funded project within the 7th Framework Programme. The researchers from European universities, research centres and strong industrial partners are working together in order to develop these measurement techniques to be easily and routinely applied to in-flight testing for industrial demands. www.aim2.dlr.de

Scope and main topics

Lectures and practical exercises on optical measurement techniques including:

- Background Oriented Schlieren Method (BOS)
 - Fibre Bragg Grating (FBG)
 - Image Pattern Correlation Technique (IPCT)
 - Infrared Thermography (IRT)
 - Light Detection and Ranging (LIDAR)
 - Particle Image Velocimetry (PIV)
- will be delivered by AIM² personnel. Several aircrafts, including the PW-6 from Rzeszów University of Technology, will be used to demonstrate the flight test techniques.

Lecturers

Dipl.-Ing. Fritz Boden, *German Aerospace Center, (DLR)*, will present a review lecture on optical methods used in-flight testing.

Dr. Klaus de Groot, *German Aerospace Center, (DLR)*, will deliver lectures about physical principles of IRT, application in aerodynamic research including wind tunnel and flight test applications.

Dr. Henk Jentink, *National Aerospace Laboratory (NLR)*, will describe how the IPCT technique can be used to measure wing deformations.

Dipl.-Ing. Tania Kirmse, *German Aerospace Center (DLR)*, will describe the theoretical basis of BOS and how it can be used to visualise density gradients in a flow.



Dipl.-Ing. Jörg Meyer, *German Aerospace Center (DLR)*, will discuss special conditions, preparations and procedures at flight tests for unsteady IRT.

Dipl. Ing. Christina Politz, *German Aerospace Center (DLR)*, will describe the theoretical basis of the PIV technique and how it can be used to measure velocity vector fields in-flight.

Prof. Bronyus Rinkevichyus, *National Research University (MPEI)*, will deliver a lecture on principles of laser refractography using a laser optical method.

Dr.-Ing. habil. Bolesław Stasicki, *German Aerospace Center (DLR)*, will present a lecture on in-flight propeller blade deformation measurement by using the IPCT method.

Prof. Ralph P. Tatam, *Cranfield University*, will present a new measurement technique for flight test - the Fibre Bragg Grating method (FBG) - which allows highly accurate measurement of strain, pressure and temperature in-flight.

Dr. Matthieu Valla, *Office National d'Études et de Recherches Aéropatiales, (ONERA)*, will present lectures on LIDAR, which allow a precise remote measurement of the wind velocity.

Together with:

Dr. Nicholas Lawson (*Cranfield University*), **Dr. Mariusz Szewczyk**, **Dr. Robert Smusz**, **Dr. Marek Szumski**, **Dr. Jerzy Bakunowicz** (all from *Rzeszów University of Technology*), and **Dr. Pavel Růžička** (*Evector*), practical exercises and demonstration will be delivered on the techniques in-flight on available airframes.

Preliminary program

From Monday to Saturday sessions will run as follows: Lectures: 9:00-12:30, Practices and Demonstrations: 14:30-18:00. We plan to present a flight test method each day.

The official language of the workshop will be English. A detailed program will be available in early 2013 at: www.workshop.prz.edu.pl

Registration

Only online registration is possible from January 2013 at: www.workshop.prz.edu.pl

The registration fee of € 260 includes a course book, lunches and refreshments during the workshop and a workshop dinner.

Accommodation

Each participant is expected to reserve a room in a hotel. The list of recommended hotels is available at: www.workshop.prz.edu.pl

Contact

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For general inquires, please send a mail to:
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Postal Address:

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Venue

The workshop will be held at the **Aviation Training Centre of Rzeszów University of Technology (ATC)**, which is located about 9 km from centre of Rzeszów and 3.6 km from Rzeszów Jasionka International Airport.

ATC postal address:

Jasionka 913, 30-317 Trzebownisko, Poland

Travel information is available at:

www.workshop.prz.edu.pl

