Dear colleague,

Welcome to the second newsletter of the X-Noise EV project, which coordinates the European research effort dedicated to the reduction of aviation noise.

You will find immediately below a description of the earlier Coordination Action X3-Noise (2006-2010) and the current Coordination Action X-Noise EV in the paper on the EUROPEAN AVIATION NOISE RESEARCH NETWORK (X-NOISE) by Dominique Collin (Snecma), X-Noise Coordinator.

This newsletter also includes:-

- descriptions of the recent progress of three major EC projects: OPENAIR, DREAM and TEAM Play,
- summaries on the recent meetings of X-Noise EV and the CEAS, Lausanne and of the General Aviation: Noise at source and impact, Marseille,
- articles from National/Regional Focal Points – Ukraine & NIS, Russian Federation and Belgium.

Additionally, there are the regular items on:-

- recent major meetings and published information, and,
- forthcoming major events.

More information on EC project NINHA will be included in the next newsletter.

We also take this opportunity to remind you of the need for active involvement in EURONOISE12 both in help with the preparation of the aircraft noise aspects and in ensuring attendance; Dominique will be grateful for your contributions.

Please kindly forward this newsletter to your colleagues to encourage their participation in the network and to draw attention to the website www.xnoise.eu on which we can and do provide topical information on all of the projects. Needless to say, the relevance and up-to-datedness of such information is largely in your hands! Think of putting information on the website via the website contact and also think of forwarding to us, as soon as you have something on the horizon!

Best regards,

Gérard Fournier and Christine Bickerstaff
Co-editors
gfic@wanadoo.fr and bickerschrism@aol.com
Recent major meetings and published information


- **General Aviation: Noise at source and impact, Marseille, 28 October 2011** – see short report from Denis Gély.

- **Aviation Noise Mapping, Madrid, 7-8 November 2011** – reviewed latest developments / technical aspects specific to aircraft noise modeling – see [ANM programme](#).

Forthcoming major events

- **Aircraft Noise Lecture Series, Rhode-St-Genèse, Belgium, 10-14 March 2012** – see item from NFP Belgium; and [http://www.vki.ac.be](http://www.vki.ac.be) or contact secretariat@vki.ac.be.


- **10th International Conference on Flow-Induced Vibration (& Flow-Induced Noise), Dublin, 2-6 July 2012** – hosted by Trinity College; Conference Chairs: Dr. Craig Meskell and Dr. Gareth Bennett; [http://www.fiv2012.com/site/view/8/](http://www.fiv2012.com/site/view/8/).

Also, see the X-Noise website [http://www.xnoise.eu](http://www.xnoise.eu) for other announcements and the CEAS website [http://www.win.tue.nl/ceas-asc](http://www.win.tue.nl/ceas-asc) for yet other noise-related conferences.
1. Introduction and General Overview

This paper is summarising the achievements of the European research effort dedicated to the reduction of aviation noise as coordinated by the X-Noise network through the Coordination Actions X3-Noise (2006-2010) and X-Noise EV (2010-2014).

Over the last 10 years, large, ambitious national and regional research programmes have been initiated to support technology breakthroughs aimed at further aircraft noise reduction. Such initiatives have been established in the European Union, the United States, Japan, Canada, Brazil and the Russian Federation. The emergence of dedicated network structures has played a significant role in the elaboration and successful implementation of these various initiatives. Such structures have then been used to develop and consolidate detailed research strategies addressing the high level goals set by national and regional research frameworks, establishing the conditions for a more active and coordinated research covering all areas related to the International Civil Aviation Organization (ICAO) Balanced Approach. Within this frame, networks provide in fact the capability to effectively manage clusters of basic research projects as well as the transition towards further stages of technology demonstration.

X-Noise may be considered as both a precursor and a typical example of such networks. Dedicated to the aviation noise research effort, it has developed its activities along three main directions as described below:

- The definition, coordination and assessment of research strategies aimed at meeting the 2020 ACARE noise target (average reduction of 10 dB per operation relative to the 2000 situation)
- The dissemination and communication of the research effort scientific and technological achievements as well as issues and priorities for the future
- The improved integration of European research community activities in the field of air transport-related noise research.

2. Achievements in noise reduction

The ACARE Strategic Research Agenda (SRA) has established a general framework for European Aviation-related research, including the definition of quantified targets for 2020. To successfully address these objectives, a key step has been the elaboration of a detailed research strategy supported by complementary tools such as state-of-the-art assessment, gap analysis, as well as mechanisms to gather novel ideas and concepts. This has been achieved through a process involving consultation of the scientific community as well as the other major stakeholders. The scope and ambition of the resulting X-Noise network strategy and associated recommendations can be well represented by means of a projects roadmap, such as provided in Figure 1 which presents the status of EU-funded aircraft noise projects as of end 2010, addressing in effect the key research fields (also called Contributors) as identified in the ACARE SRA.
As can be seen in Figure 1, this approach has ensured that all aspects of research were covered, in particular, activities that go beyond the development of quieter individual technologies and would support the implementation of operation and environmental practices aimed at managing the noise impact around airports, also including the modelling and understanding of Noise-Emissions interdependencies.

X3-Noise’s in-depth analysis of the current achievements and Technology Readiness Level 6 prospects carried out in support of the recent AGAPE exercise has allowed to consider that a mid-term interim objective of –5dB per operation could be met by 2010 through the effort pictured in Figure 1. Putting this status in perspective with further expectations relative to the stated ACARE Contributors, the aircraft noise research effort is considered as globally on track to meet the ACARE target, but will require several breakthrough achievements before 2016. As a consequence to maximise chances of meeting the 10dB noise reduction target, the following recommendations were expressed:

1) Maintain significant effort in support of Noise Reduction Technologies Generation 2 to reach TRL6, including active techniques and addressing integration issues such as weight, performance and durability
2) Maintain support to activities on Novel Architectures, with a particular focus on Low Noise Aircraft configurations
3) Ensure successful implementation of Low Noise Operational Procedures as investigated in FP5 and FP6.

It was also be pointed out that these results did not take into account the specific situation created by the emergence of open rotor engine configuration as a serious contender when dealing with low carbon technology options. Offsetting the anticipated noise source impact associated with novel open rotor engine architectures will necessitate an aggressive approach, through dedicated research aimed at
rotor blade aeroacoustic design, engine / airframe installation and flow control techniques in particular.

Furthermore, a significant aspect of research networks involves the capability to join forces and regroup with counterparts in order to address and explore wider issues.

Typical examples of such collaborations at European level include the development of a strategy aimed at “Research for a Quieter Europe” through involvement with the CALM network. The Environmental Noise Directive of 2002 focusses on a common approach to address environmental noise, to be executed at the national, regional and local levels according to the principle of shared responsibility. The associated strategic vision derived and proposed by CALM for noise research covers a wide range of areas including assessment of noise exposure and perception, health impacts of exposure to noise, noise abatement including cost-benefit aspects, new technologies and system approaches for improved noise control at source and the further development of legislative standards.

ICAO maintains a high level of activity aimed at defining future international policies and standards in the environmental area. To this end, it is developing a forward-looking view by means of technology goals definition and a modelling system predicting the interdependent impacts of future policy options. The issue of noise-emissions interdependencies is also at the core of future technology efforts as absolute component performance in noise may be dependent on the trade-off positions selected with reference to CO\textsubscript{2} or NO\textsubscript{x}. In this context, X3-Noise has collaborated with its counterpart network on aviation emissions (AERONET). Common brainstorming workshops have been organised to firm up a longterm approach for a European framework able to manage environmental interdependencies modelling and a subsequent project (TEAM_Play) was launched at the end of 2010.

3. Main Activities in the Dissemination domain

X-Noise Dissemination activities do involve scientific exchanges within the European research community as well as actions aimed at international dissemination and communication.

The backbone of Scientific Exchanges is the Annual X-Noise Workshop which revolves every year around a topic relative to the research agenda. Now in place for almost 10 years, it has become a successful periodic event in Europe where the best experts in the field can present the most recent findings and the whole network community gathers and exchanges information. The event has on average been attended by 70 participants, involving about 20 contributed papers each time. Regular international participation has been registered from Russia, US and Japan.

The network has also relied on a number of additional dissemination vectors such as its dedicated Public Website allowing free access to generic information on EC-funded aircraft noise projects, an EU projects publication database and all previous Scientific Workshops proceedings (www.xnoise.eu).

Another aspect of dissemination has involved communication of research achievements and prospect towards regulatory bodies. In 2007, an International Technology Seminar was organised, attended by Research Establishments and Industry from the major aircraft manufacturing countries, i.e., Brazil, Canada, EU, Japan, Russia and USA. It did feature general presentations of major national / regional aircraft noise research initiatives. A particular emphasis was put on research goals and their definition process. The European participants later contributed to the material presented to the ICAO CAEP Independent Experts Panel at the occasion of the Noise Technology Review held in September 2008. Similarly, early in 2011, a new event has been organised to prepare for the second CAEP Noise Technology Review scheduled at the end of 2011.
4. Integration of Research Community

Thanks to the various individual projects and the networking efforts carried out over the last ten years, the European Aircraft Noise Research Community has now reached a critical mass. As of the middle of FP7, more than 150 different organisations had participated in at least one noise project proposal over the last 4 EU research framework programmes. Three priorities have then driven the network activities in this area:

- Ensure better coordination of expertise at national level, so that value-added contributions for EU projects are more clearly identified, around a common set of well disseminated priorities and objectives, also leading to a better exploitation of national funding around similar priorities
- Ensure better identification and exploitation of national upstream research into the more comprehensive EU projects, such as Integrated (Level 2) Projects
- Favour development of local networks, with a particular emphasis on new EU member states, in order to foster participation in future projects, with a particular focus on SMEs.

To this end, a network of National Focal Points (NFPs) has been established together with appropriate resources tailored to the specific national situations. Within the NFP system, the initial phase of network development focussed on identifying potential participants, mapping local expertise as related to stated priorities in aircraft noise research at EU level (ACARE scope) and establishing the network in the national context. Workshops and information sessions have been organised by the Focal Points, national homepages have been established.

Furthermore, representatives of CIS, South America and Mediterranean regions have also joined the network to strengthen links and develop opportunities for further international cooperation.

5. Future perspectives

X3-Noise has now been superseded by the new X-Noise EV Coordination Action which will extend the network activities further as described in the conceptual “3-Pillar” approach shown below in Figure 2.
Figure 2 – X-Noise 3-Pillar Approach, Key Network Features and Geographic Involvement

This extended scope should strengthen the technology effort and simultaneously ensure that the “Management of Noise Impact” contributor is effectively implemented, having in mind further recommendations expressed in support of the AGAPE assessment, namely:

- Consolidate European predictive capability to evaluate the impacts of aircraft and rotorcraft noise on communities, including environmental interdependencies
- Support improved understanding and modelling of community impact and overall psycho-acoustic annoyance
- Promote an harmonised policy framework on land use practices and mitigation options as well as develop clear indicators to assess progress made in their effective implementation.

More generally, as lasting organisations beyond the limited timeframe of individual projects, research networks ensure a much needed structural continuity aimed at longer term strategies. Examples of multidisciplinary European network collaboration have also served to emphasise the interest of such structures to address complex environmental issues at strategic level. Similarly, a concerted approach benefitting from networks support could create more international cooperation opportunities for research aimed at reducing aviation environmental impact.
Introduction
OPENAIR, after 2 years of running is now halfway and ready to start its large-scale test.
The objective is to deliver a 2.5 dB source noise reduction (per operation) at Technology Readiness Level 5 (TRL5).
The programme structure is built on 3 strategies:
- Integrated Propulsion System Design (IPSD)
- Electronically Assisted Propulsion System Technologies (EAPST)
- Airframe noise.

Integrated Propulsion System Design (IPSD)
The Integrated Propulsion System Design sub-project has:-
- performed a multi-disciplinary optimisation of novel acoustic liner arrangements in the intake for both community and cabin noise reduction
- designed optimised fan Outlet Guide Vanes (OGVs) using advanced Computational Fluid Dynamics/Computational AeroAcoustics (CFD/CAA) techniques
- designed novel acoustically-lined fan OGVs
- optimised bypass-duct geometries for community noise, weight and Specific Fuel Consumption (SFC), and,
- designed fan nozzles.

In 2011, testing has started in the AneCom Universal Fan Rig (UFFA) to evaluate these technologies.

Figure 1: Pressure response analysis - Volvo
The Electronically Assisted Propulsion System Technologies (EAPST) sub-project has advanced significantly towards the fullscale integration of active device manufacturing for fan active stator vanes.

After two years work, partners have finalised the OGV design by integrating an advanced double-piezoelectric-based actuator. For both metallic and composite active OGVs, detailed studies have been conducted in order to optimise both the materials selection and the manufacturing processes.

Furthermore, active/adaptive flow control technologies for jet noise reduction are being investigated. Small model tests have been completed on five competing technology approaches. Preparation is underway for acoustic performance testing in the CEPRA19 facility.

PPRIME is part of CNRS, the French scientific service – see http://www.pprime.fr/?q=en/presentation-institute

Airframe Noise

The landing gear work package aims to validate the noise reduction potential of innovative flow-control add-on devices and to provide low-noise gear component designs. Included are dedicated integration studies and stress calculations for evaluation at aircraft level. Tests have started on a fullscale gear mockup in the 8 m by 6 m open test section of the DNW Low Speed Wind Tunnel (DNW-LLF).
Low-noise high-lift device concepts explored in previous projects have been further developed and will be tested on a large-scale high-lift wing model in the 8 m by 6 m open test section of DNW-LLF. These are “low-noise slat settings” and “adaptive shape” modifications as well as “flap side-edge” modifications.

Fig 4: CAA simulation result for a conventional slat setting of a typical 3-element high-lift system - DLR.

Project website with more details: http://openair.xnoise.eu/
DREAM
http://www.xnoise.eu/fileadmin/user_upload/Newsletter/DREAM_FinalWorkshopChiefEngineer.pdf
TEAM_Play
from Sven Maertens

TEAM_Play – Tool Suite for Environmental and Economic Aviation Modelling for Policy Analysis – collaborative project co-funded by the European Commission

A wide range of policy issues in the field of aviation and the environment is under discussion internationally in the ICAO/CAEP forum and at European and state levels. Currently, the most urgent requirements are to have good capabilities for modelling noise, gaseous emissions (especially nitrogen oxides) and greenhouse gases in relation to the Kyoto Protocol and related agreements along with their effects and impacts. Careful analysis of the complex interdependencies between air transport activities and environmental and economic effects is needed for the appropriate assessment of policies and guidance on a political level.

As a consequence, existing integrated modelling capabilities need to be enhanced. In the US such a modelling capability development is underway within the framework of a multi-million dollar project that is based upon criteria, assumptions and points of view primarily set by the US.

As already reported in an earlier X-NOISE newsletter, the EU FP7 project TEAM_Play aims to create a modelling framework to combine and advance European modelling capabilities in order to support the European perspective in the international policy arena.

The project deals with interdependencies and tradeoffs between noise, gaseous emissions, and environmental and economic impacts of the whole air transport sector.

The workpackages and the current status of work are as follows:

- In WP1, existing European models (noise, gaseous emissions, economic and environmental impacts) are linked to a data warehouse in which all required modelling input and output data are stored.

  So far, a structure plan for the Data Exchange Platform has been developed, along with data concepts for existing information including airport and aircraft/engine databases.

- WP2 covers the development of model interfaces to enable the models to be connected and to work in combination.

  In addition, an economic impact assessment will be conducted. There are two different parts - a Basic Modelling System (BMS) and a Responsive Modelling System (RMS), the latter being intended to interface with the AERO-MS tool (developed by NLR, TAKS and MVA) which provides a quantitative description of the present and future air transport system aimed at the assessment of aircraft engine emissions.
So far, an initial interim version of the BMS and specifications for the RMS and the Technology Response Tool have been completed, along with the interface specifications for the noise, third party risk, greenhouse gas emissions and climate response tools.

A macro-economic analysis model and an energy module are currently also being worked on.

- In WP3, assessment studies using the TEAM_Play Tool Suite will be carried out.

For this purpose, a workshop on the definition of goals, scenarios and use cases was held in May 2011, resulting in a definition of simple and elaborated scenarios and use cases.

- In WP4, an Advisory Committee is currently being formed, and, the first meeting is programmed for December 2011.

- Main dissemination activities (WP5) so far include the production of the TEAM_Play website (http://www.teamplay-project.eu), the production of flyers, and, presentations made at various conferences.

**TEAM_Play - Structure**

Project leader: DLR, Institute of Air Transport and Airport Research, Köln
Kick-off meeting in Köln: 16 December 2010
Mid-term and Advisory Committee meeting in Berlin: 19-20 December 2011

More information on TEAM_Play website http://www.teamplay-project.eu.
X-Noise EV Network Meeting, and, the combined 1st X-Noise EV Scientific Workshop and 15th CEAS Workshop

Ecole Polytechnique Fédérale de Lausanne,

Switzerland, 11-14 October 2011.

Gérard Fournier gives a brief report on the combined workshop, “Acoustic Liners and Associated Propagation Techniques”.

The 1st Scientific Workshop of X-NOISE EV, also known as the 15th CEAS-ASC Workshop, was held in the Ecole Polytechnique Fédérale de Lausanne, 13-14 October 2011.

The workshop had three keynote speakers:
- Andrew Kempton, Rolls-Royce, UK: “Acoustic Liners for Modern Aero-Engines”,
- Daniel Bodony, University of Illinois, USA: “Direct Numerical Simulation of Acoustic Liners: Results and Time-Domain Modeling”,

There were 27 contribution papers presented to 83 participants coming from 18 countries.

The six sessions covered:
- Novel liner concepts, passive and adaptive
- Measurement of liner impedance, techniques and applications
- Analytic, numerical and empirical methods for predicting liner impedance
- Analytic, numerical and empirical methods for predicting the effect of liners on far field sound pressure
- Optimisation of liners to reduce community and/or interior noise
- Other
GENERAL AVIATION : Noise at source and Impact,  
28 October 2011, Marseille  

Preliminary report from Denis Gély.

This X-Noise workshop was co-chaired by Denis Gély (Onera) & Harry Brouwer (NLR) and covered many aspects including:-

- Airfield issues and Certification aspects for General Aviation  
- Propellers - noise research, computational aeroacoustic prediction methods for single propellers, reducing propeller noise emission on pusher configuration propellers, Antonov GA Aircraft Noise: measurements in wind tunnels and certification procedures  
- Mufflers - IC-engine exhaust and intake system muffler design, and, aspects of muffler manufacture  
- Noise Mapping / Experimental Data Base - practical aspects of GA noise mapping, application of noise source prediction models to airfield noise mapping, and, Yakovlev-18 aircraft noise and its impact assessment on population in vicinity of airports/aerodromes.

Eric Lecomte of the European Commission gave the General Perspectives for European Research dedicated to General Aviation. This was followed by a discussion on Research Needs and a summary of perspectives.

Denis reports that he was very pleased with the contributions from the 31 participants attending and fuller information will be forthcoming. Contact denis.gely@onera.fr.
X-Noise seminar on

AVIATION NOISE MAPPING

7-8 November 2011
SENASA – Madrid (Spain)

Now the second round of strategic noise mapping in the frame of the EU Environmental Noise Directive (END) is approaching, it is time to review the latest developments in the field of noise mapping. To this end X-Noise EV is organising the Seminar on Aviation Noise Mapping. This 2 day event will concentrate on the technical aspects, specific to aircraft noise modelling and will revisit the various stages of the mapping process, also the global context of aircraft noise modelling will be addressed. The final part of the seminar will be dedicated to identifying potential improvements of the mapping process and corresponding research needs.

Objectives of the Seminar:

- Provide an overview of 'Lessons Learned' from the 2007 END noise mapping exercise
- Provide an overview of the latest developments, relevant for the second round of END noise mapping in 2012
- Provide insight in the wider scope of aircraft noise modelling
- Support the development of the research strategy on Management of Noise Impact in the frame of the ACARE 2020 Strategic Research Agenda

Who should attend?

- Experts on aviation noise
- Aviation stakeholders (airports, industry, airlines, ATM, research establishments)
- Authorities (local, regional, national, European)
- Developers of noise mapping software
- Consultants
- Other organisations interested in the field

Venue
SENASA Head office
Avenida de la Hispanidad, Nº 12
Madrid
This site is very close to Barajas Airport

Accommodation
Information on hotels will be provided later

Contact person:
Carmen Sicz Mercedo
Anotec Consulting SL
carmen@anotec.com

Participation to the seminar, lunch and coffee breaks are sponsored by X-NOISE.
National and Regional Focal Points Reports

NFP Ukraine & NIS
From Oleksandr Zaporozhets,

The Centre of Environmental Problems of the Airports (CEPA) was established in the National Aviation University of the Ukraine (NAU) on the basis of scientific groups under the Chair of Safety of Human Activities, which includes the Acoustic Laboratory and a few groups specialising in solving particular tasks of environmental protection around civil aviation airports.

The main purpose of CEPA is to define the protection zones around civil aviation airports and aerodromes for the dominant ecological factors: noise, air pollution, electromagnetic fields and third party risk. The task is obligatory under the requirements of current Ukrainian rules for aerodrome certification and CEPA is licensed by the Civil Aviation Authority of the Ukraine.

In 2011 CEPA with UkrAeroProject (the Ukraine State Scientific and Design Institute for Airports, Kyiv) participated in applying environmental impact assessment procedures for new developments of the airports of Ukraine before the European Football Championship in 2012:-

- Reconstruction of existing runway and design of new Passenger Terminal in Odessa International Airport;
- Reconstruction of existing runway and design of new Passenger Terminal in Kyiv/Zhulyany International Airport.

Oleksandr also sends information on three recent meetings:-

- “Stimulating Ukraine-EU Aeronautics Research Co-operation”, Aero-Ukraine, Kharkiv, 21 April 2011
- “Assessing the impact of aircraft noise in mapping the territory in vicinity of the airports in framework of the EU program X-Noise EV” presentation given at the 3rd Conference on “Ecology and Energy Conservation in Civil Aviation”, Aviation Department, Ministry of Transport of the Russian Federation, Moscow, 5-6 April 2011.

Short reports of these follow below.

“New GIS-technologies for Environment Protection Purposes” was the theme of the 5th Workshop on "Cartography, Cartosemiotics and Ecological Safety" and was organised, together with International Cartographic Association (ICA) and the Commission on Theoretical Cartography, at the National Aviation University, Kyiv, Ukraine on 19 March 2011.

A Head of the Commission on Theoretical Cartography of the ICA, Dr Alexander Wolodtschenko (Technical University of Dresden, Germany) spoke and has described the scientific aims and subjects of the Workshop in ICA Journal in 2010 http://www.icaci.org.

GIS-technologies are fully implemented in airports currently for management, safety, security and environment protection purposes. Maps, databases and different levels of information can contribute fruitfully towards a major part of environmental protection activities, beginning with monitoring and assessment of the impact factors (noise, air pollution, electromagnetic radiation, third party risk, etc.) and eventually in helping defining the reasons why the objectives of environmental protection have not always been reached.

Participants from airports and the Airport Association of Ukraine have been deeply interested in conceptual GIS-developments from NAU, primarily those for the purposes of aviation security and environmental protection.

At the same time this workshop was used for a parallel local dissemination of the information among national stakeholders in Ukraine.
To achieve the global goals of aviation and of aeronautical industry, the European Union must co-operate with all European countries, including Ukraine. This workshop provided on the one hand the opportunity to learn about the mechanisms of research funding in the EU and on the other hand showed the achievements of the two-year European Commission funded Aero-Ukraine project.

During the event, Ukrainian organisations presented their capabilities to the representatives of Europe’s aeronautical industry, as well as to researchers and policymakers, who came from leading European institutes and the Aeronautical unit of the European Commission.

A full review of the Ukrainian capabilities in aerospace science and engineering covered the Aero-Ukraine Project and Brochure and included presentations of NAU (Kyiv) and KhAI (Kharkiv) experiences in EU Framework Programme participation.

This was followed by brief presentations from Ukrainian participants of ideas for the next aeroacoustics technology call:-

- Recovery of aircraft survivability suffered in flight due to reconfiguration of control actions – Prof. Vasily Kazak – National Aviation University

- Electrochemical and electromagnetic processes in air & groundbased turbomachinery - power, greening, efficiency – Prof. Dmitriy Dolmatov – KhAI

- Advanced turboprop, propfan and turbojet bypass engines for GA and light airplanes – Ms Elena Yermolayeva – Ivchenko-Progress

- Cost-effective technology for gas-turbine engines compressor overhaul and repair – Dr. Sergey Sergeev – KhAI

- Plasma reforming of hydrocarbons into free hydrogen for use in the aerospace technologies – Olena Solomenko, PhD student – Taras Shevchenko National University of Kyiv
• Feasibility study of personal aircraft based on combined application of Coanda effect and wing-in-ground (WIG) effect – Prof. Andrey Chukhray – KhAI

• Aircraft Fatigue Life Prediction by the Surface Deformation Relief of the Aluminium Skin and Fatigue Sensors – Prof. Sergey Ignatovich – National Aviation University
“Assessing the impact of aircraft noise in mapping the territory in vicinity of the airports in framework of the EU program X-Noise EV” presentation by Oleksandr Zaporozhets given at the 3rd Conference on “Ecology and Energy Conservation in Civil Aviation”, Aviation Department, Ministry of Transport of the Russian Federation, Moscow, 5-6 April 2011.

The conference was organised by GosNII GA (Moscow) and the Centre for Environmental Safety of Civil Aviation (TsEB GA, Moscow). The programme of the conference is available from http://www.ecoflight.ru/?ELEMENT_ID=77.

Oleksandr Zaporozhets reports that his presentation summarised X-Noise EV and prior programmes and referred to:-

- A unified approach to method of calculating noise in the EU and Ukraine and Russian Federation (RF)
- Databases – common data structure
- Action Plans of the EU Directive 49/2002 and the ICAO balanced approach
- Existing problems of civil aviation in RF and Ukraine in comparison with EU practice:-
  - Instrumental noise monitoring has generally not been implemented – only the first experience started at Moscow Domodedovo Airport
  - Noise fees at RF and Ukrainian airports have not been implemented, so that the necessary funds for noise abatement programmes are not available
  - Sound insulation of residential buildings has not been able to be justified.

However, Oleksandr reports book published: Aircraft Noise: Assessment, Prediction and Control, by Oleksandr Zaporozhets, Vadim Tokarev, Keith Attenborough
The Open Russian Aeroacoustics Conference enables the research programmes of design bureaus, industry and academic and research institutes to be harmonised. The Conference originates from 1970 and occurs regularly every 2 years. Devoted to the problems of aircraft and helicopter noise, it is one of the most important scientific events in Russia. The most recent Conference, 27-30 September 2011, was organised by the Central Aerohydrodynamic Institute (TsAGI) and was opened for foreign participants for only the second time in its history. Researchers representing ONERA and CNRS took part in the Conference for the first time - this fact alone demonstrates the progress in Russia-EU collaboration in aeroacoustics. More information on:-(http://www.tsaqi.ru/cgi-bin/jet/viewnews.cgi?id=2011018524169795998).

The conference included 6 topical sessions: “Community noise of aircraft and helicopters and acoustics of aviation engines”, “Interior noise of aircraft and helicopters”, “Innovative methods in aeroacoustics”, “Aerodynamic noise sources in aviation”, “Computational aeroacoustics”, and “Aviation ecology”. The Conference was devoted to the discussion of the newest achievements in the study of modern aircraft and helicopter noise sources, and in the field of development of noise reduction techniques and elaboration of computational aeroacoustics tools for noise prediction. The results of fundamental and applied research in duct acoustics, turbulent flow noise control, turbomachinery noise, structural and vibroacoustics, environmental protection, and, sonic boom were also considered. Selected papers will be included in a special issue of RAS Scientific Journal “Acoustical Physics” http://www.springerlink.com/content/119836/.

About 180 participated in the work of the conference; 95 of them made presentations. Representatives from 36 industrial and research organisations, such as the Central Institute of Aviation Motors (CIAM), “Aviadvigatel”, “Tupolev”, the Keldysh Institute of Applied Mechanics of RAS (IPM RAS), and the State Research Institute of Civil Aviation (GosNIIGA), participated in the conference along with researchers and students from universities: Moscow State University, Moscow Institute of Physics and Technology, Moscow Institute of Aviation, Samara Aerospace University, Moscow State Technological University “Stankin” and Voronezh State Technical University. Foreign participants included representatives of ONERA (France), CNRS (France), “Bruel & Kjaer” (Denmark), “Antonov” (Ukraine), and the Kharkov Institute of Aviation (Ukraine).

The Russian X-Noise Network meeting was also held in the framework of the Conference and this gave an opportunity to discuss some of the main directions of the Russian National Programme on Aviation Ecology. TsAGI is the leader of the National Programme, which is being developed with the participation of the main Russian industrial and research organisations. During the meeting the plenary report given by V.F. Kopiev and A.G. Munin (TsAGI) on “Ecological problems in aviation”, devoted to the development of the National Programme on aviation ecology for 2012-2025 and which aims at ensuring that Russian aircraft meet the international ecological standards, was discussed. The problems of synchronisation of research in Russia with European research were also discussed.
Narrow band peak noise reduction
TsaGI concept, TsAGI+DLR measurements
OPENAIR
Noise control by high frequency excitation
TsAGI+ IVTAN concept
OPENAIR
NFP Belgium
From Yves Detandt
Forthcoming Lecture Series on Aircraft Noise in Belgium

The von Karman Institute for Fluid Dynamics is an international educational and scientific organisation hosting three departments (aeronautics and aerospace, environmental and applied fluid dynamics, and turbomachinery and propulsion). The institute organises several lectures series each year on state-of-the art topics in fields related to fluid dynamics. The lectures are given by von Karman Institute professors and top international researchers in the field.

The Institute is organising a Lecture Series on Aircraft Noise, which will take place 12-16 March 2012.

Aircraft noise remains a key societal and economical concern, as highlighted by the stringent requirements imposed by various institutional agencies across the globe. At European level, the ambitious targets for noise reduction, detailed in the ACARE 2020 Vision, have been further reinforced in the FlightPath 2050 Strategic Agenda released by the Commission in March 2011.

Meeting those ambitious objectives requires unprecedented joint efforts for the modelling, prediction, measurement and eventual mitigation of aircraft noise. Each of these fields of research has become rather complex even on its own and the latest developments therein will be expounded during this Lecture Series by top-rank experts active in research in academia, research establishments and/or industry. Starting with a general introduction to aeroacoustics, the course will briefly cover regulatory and policy aspects before detailing modern approaches for the measurement and modelling of airframe and engine noise, along with various noise mitigation techniques. The course will conclude by detailing modern community noise impact assessment and provide an overview of the main noise research projects currently underway in Europe.

Those interested in participation are invited to visit http://www.vki.ac.be or contact secretariat@vki.ac.be.

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