



## TsAGI–EU Scientific Cooperation National Contact Point Aeronautics

Central Aerohydrodynamic Institute (TsAGI) named after  
prof. N.E. Zhukovsky

## TsAGI — National Contact Point



In 2004 TsAGI was appointed National Contact Point for aeronautics research (NCP Aeronautics) and since then it has been working to provide information, consulting and methodological assistance for international cooperation development between Russian and European research organizations under 6th, 7th Framework Programmes and “Horizon 2020”.



**TsAGI is arranging NCP's representation in Brussels.**

## EU–Russia Working Group on Civil Aeronautics Research

- In 2007 during the Paris Air Show (Le Bourget) the cooperation agreement between the EC and Federal Agency on Industry was signed under which a EU – Russia Working Group on civil aeronautics research was established. Its main objective is to prepare favorable conditions for the enhancement of EU – Russia cooperation in the field of aeronautics research as well as to create a single research area.
  
- The main points discussed during the first meeting of the WG in the framework of “Horizon 2020” (March 11, 2014, Brussels) are the perspectives of Russia – EU international cooperation in the field of aeronautics research and organization of the first coordinated call in the framework of the “Horizon 2020”.

## TsAGI's Participation in European Associations

- TsAGI is associate member of Association of European Research Establishments in Aeronautics (**EREA**)
- TsAGI is admitted to Council of European Aerospace Societies (**CEAS**)
- TsAGI is member of European Aeronautics Science Network (**EASN**)
- TsAGI is focal point in RF of X-Noise Aviation Noise Research Network and Coordination



## FP Projects with TsAGI Participation



As NCP on Aeronautics TsAGI has carried out and goes on carrying out **about 50 joint research projects** with the EU partners.

## Projects with NCP Aeronautic's and Russian participation in the framework of EU-Russia Coordinated Calls

- **RESEARCH** — Reliability and Safety Enhanced Electrical Actuation System Architectures
- **HEXAFLY-INT** - High speed EXperimentAl FLY vehicles —INTERNATIONAL
- **Buterfli** — BUffet and Transition delay control investigated within European–Russian cooperation for improved FLlight performance
- **PoLaRBEAR** — Production Aspects of Lattice Related Barrel Elements with Advanced Reliability
- **NRD** - Noise Reduction Devices
- **Verification** - Verification of experimental and numerical methods developed and used by research organizations of Russian aircraft industry
- **Novelty** - Development of innovative technologies to use the non-conventional aviation fuels including those ones manufactured of associated petroleum gas
- **ALASCA** - Advanced Lattice Structures for Composite Airframes
- **ORINOCO** — Improve Plasma Actuators Concepts for Jet Noise Reduction

# PoLaRBEAR — Production Aspects of Lattice Related Barrel Elements with Advanced Reliability

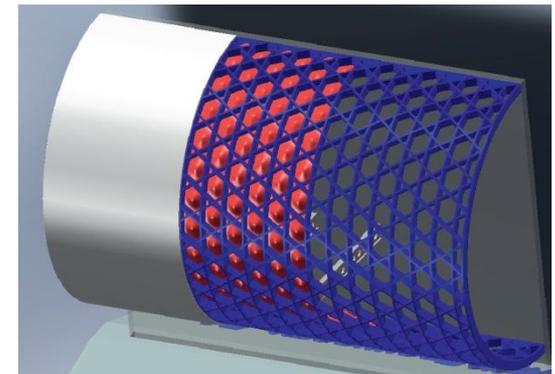
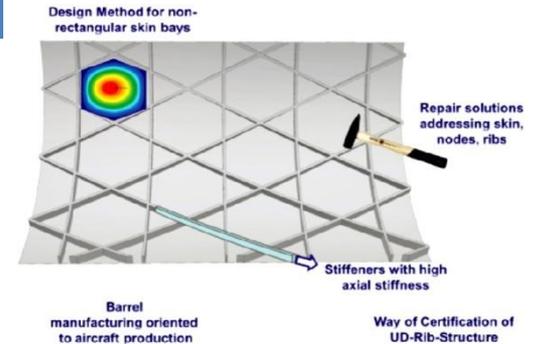
**POLaRBEAR** project focuses on the reliable novel composite aircraft structures based on geodesic technology aiming at significantly higher Robustness and Technology Readiness Level (TRL).

**POLaRBEAR** approach and objectives:

To increase the technology readiness level of the innovations addressed in **EU-ALaSCA**, further analyses are necessary on local level.

**The main objectives of this research program are:**

- Design rules for robust grid structures.
- Advanced reliability of geodesic structures under operational loads.
- Industrial highly automated process for cost-efficient barrel manufacturing.



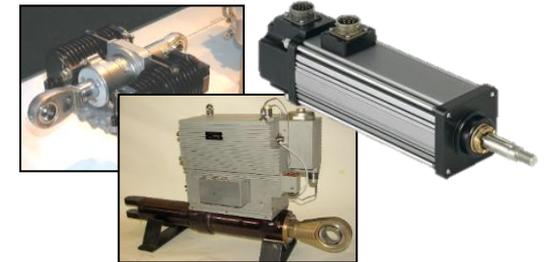
# RESEARCH — Reliability and Safety Enhanced Electrical Actuation System Architectures

## RESEARCH

The main objective of RESEARCH project is the definition of an electrical architecture for Flight Control System capable of controlling a flight control surface on an aircraft with the help of electrically operated actuators, thus replacing the hydraulic actuators commonly used in current aircraft designs.

This architecture will be designed with the main objective of being electrical, as this is the main purpose of this call, and certifiable, since the intention is to be able to use it in a possible future aircraft.

The objective of the RESEARCH project is to find a robust architecture to meet the constraints imposed by safety regulations while keeping other system performances (as weight, reliability) as optimal as possible.



Russia			
Spain			
France			
		Italy	

Coordinated call

# HEXAFLY-INT — High speed EXperimentAl FLY vehicles — INTERNATIONAL

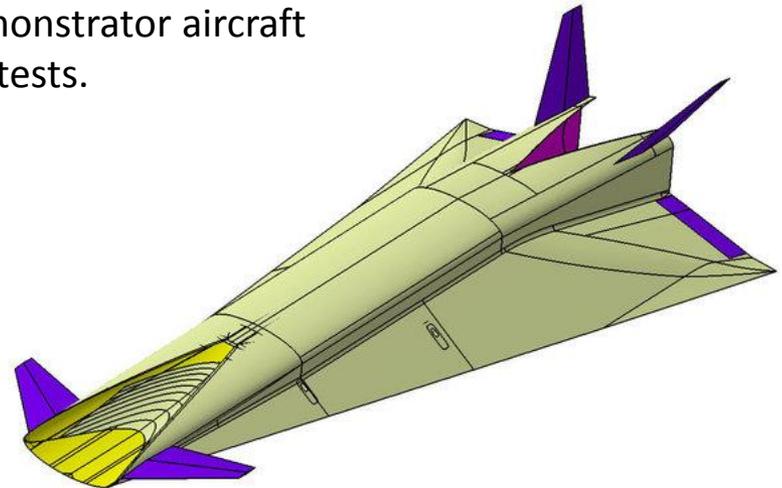


## Russian research establishment participation:

- Conceptual and numerical research on aerodynamics, traction, economic and aircraft performance characteristics, sonic boom,
- Model design, production and tests in TsAGI wind tunnels,
- Verification and adaptation of computation methods and programs,
- Production, mount and delivery of an experimental demonstrator aircraft (without engine) and an adapter module ESM for flight tests.

## Objective:

To test one of the radically new conceptual designs based upon a well elaborated integration of a highly efficient propulsion unit with a high-lifting vehicle concept accompanied with several breakthrough technologies on board of the high-speed vehicle in free flight.



Coordinated call

## Research in Engine Development Directions

### Novizna (Novelty)

Development of innovative technologies to use the non-conventional aviation fuels including those ones manufactured of associated petroleum gas

- In the framework of this project Russian partners collaborate with BBAA — Berlin Brandenburg Aerospace Association (German Aerospace Alliance).



## NCP Aeronautic's and Russian research institutions' Participation in European research programmes



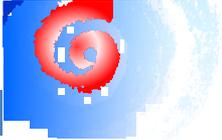
Association of European Research Establishments in Aeronautics



Clean Sky2

- As NCP Aeronautics TsAGI promotes Russian aviation organisations' participation in different European research programmes - Horizon 2020, Clean Sky 2, Future Sky (direction "Safety"), etc.
- In order to enforce the role of Russia in international cooperation, NCP Aeronautics negotiates with Clean Sky, European Commission representatives as well as with top management of European leading aeronautics companies such as Airbus Group, ONERA, DLR, NLR, Dassault Aviation and others.

## Denis Maugars Award



TsAGI — ONERA  
SEMINAR



In the framework of the international congress ICAS 2014 was announced the decision to launch a special Denis Maugars Award for young specialists from TsAGI and ONERA. It is planned that later the Award will be spread to other research institutions.

## Creation of Zhukovsky Zone of Innovative Development

- As NCP Aeronautics TsAGI organized a visit of representatives of large French aeronautics institutions to Zhukovsky.
- During the visit a meeting with a French aeronautics cluster Pole Pegase, TsAGI representatives and Zhukovsky municipal Administration was held.
- As a result, Pole Pegase agreed to sign a Cooperation Agreement with Zhukovsky Zone of Innovative Development and share its experience of organization of a cluster.
- Besides, There will be a Pole Pegase agency in Zhukovsky.
- Pole Pegase cluster's main research areas:
  - Helicopters, UAV, space, airship building, small aircraft.
- There are about 300 institutions in the cluster representing a total amount of 18.000 employees.





ICAS  
2014



Saint Petersburg, Russia  
September 7–12, 2014

## 29th Congress of the International Council of the Aeronautical Sciences ICAS 2014

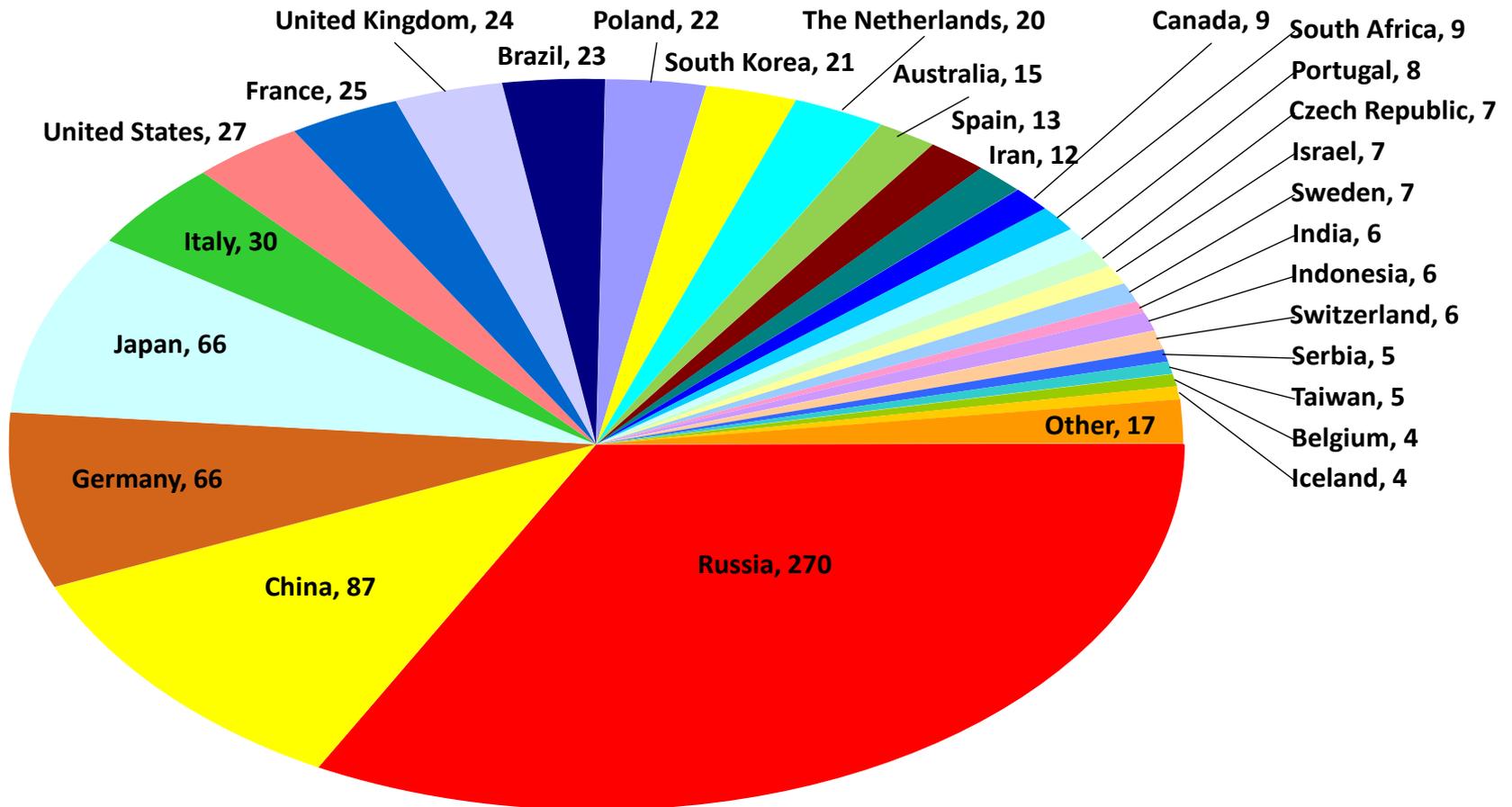
## ICAS 2014 Topics

- Aircraft and Systems Integration
- Aerodynamics
- Materials and Structures
- Propulsion
- Flight Dynamics and Control
- Systems, Subsystems and Equipments
- Systems Engineering and Supply Chain
- Air Transport System Efficiency
- Safety and Security
- Challenge of the Environment
- Operations and Sustainment

**The following topics are added to the ICAS 2014 programme on the initiative of Russia:**

- Up-to-date Challenges in Aeronautics: Solutions of Young Scientists
- International Cooperation in Aeronautics Research within European Programmes
- Fundamental Research in Aviation Sciences

## Participants with Report ICAS 2014



# THANK YOU FOR YOUR ATTENTION!



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