



STRATEGIC AND TARGETED SUPPORT FOR EUROPE-UKRAINE COLLABORATION IN AVIATION RESEARCH

About project

AERO-UA is a 3-year Coordination and Support Action started on 1 October 2016 and funded by the European Commission under the Smart Green and Integrated Transport Challenge of Horizon 2020 Programme.

The project **aims to stimulate aviation research collaboration** between the European Union and Ukraine through strategic and targeted support. **AERO-UA focuses solely on Ukraine** due to the country's huge aerospace potential and comparatively low level of aviation research collaboration with the EU.

The AERO-UA project will achieve its overall aim via **four high-level objectives**:



Identifying the barriers to increased EU-UA aviation research collaboration



Supporting EU-UA aviation research knowledge transfer pilot projects



Providing strategic support to EU-UA aviation research collaboration



Organizing awareness-raising and networking between EU-UA stakeholders

Why is it important? On the one hand, enhancing EU-UA collaboration will stimulate the growth and development of the Ukrainian aeronautic community. On the other hand, the unique skills and knowledge possessed by Ukrainian aerospace organisations can help Europe to address the global aeronautics' challenges and goals identified by ACARE in the Flightpath 2050 Report.

AERO-UA Information and Networking Event in Zaporozhye

AERO-UA Information and Networking Events are organized with the aim of raising awareness about research funding available under H2020 and Clean Sky 2 aeronautics-related calls, as well as to provide networking and matchmaking opportunities between European and Ukrainian aviation experts.

Previous events in Kyiv (2017) and in Kharkiv (2018) gathered over 150 participants, including representatives of European high-level bodies, networks and industries, such as AIRBUS, DLR, ASD Europe, etc.

In April 2019 in Zaporozhye we plan to emphasize EU-Ukraine industrial cooperation dedicated to the aviation sector and engage local and national aviation authorities, key industrial players from Ukraine, and interested industrial and academic actors from the EU.

Get updated about collaboration
opportunities in aviation
and establish contacts with
potential partners



**SAVE THE DATE – 24-26 April 2019
Zaporozhye, Ukraine**

Registration will be opened soon at
www.aero-ua.eu

Ukrainian Aeronautics Research and Technology Report 2018

One of the major publications, prepared by the AERO-UA project experts, is the Ukrainian Aeronautics Research and Technology Report 2018. The aim of this valuable publication is two-fold.

Firstly, it provides a thorough **overview of Ukrainian aeronautics research and technology sector**, which spans the full spectrum of aerospace systems and components development and production with original equipment manufacturers, tier 1 and tier 2 suppliers, manufacturers, and research community. The Report presents descriptions of main Ukrainian aeronautics organisations (institutes of the National Academy of Sciences, higher education entities, industrial organisations and clusters) and key research and technology areas (from materials through to airports), which can help the reader to define possible collaboration opportunities in Ukraine.

Secondly, the Report presents **recommendations to facilitate long-term EU-UA aviation research collaboration** and is used as an instrument to communicate them to relevant EU and UA stakeholders. On the basis of the analysis of the results of the AERO-UA online survey and interviews with key Ukrainian aeronautics R&T decision makers, the AERO-UA experts, supported by the project's high-level Advisory Board, formulated the following groups of recommendations focused on decision-makers and stakeholders:



To download a free copy of the report, please click [here](#).

Ukrainian Government



- a) **Implement the Funding Law** and allocate 1.7% of GDP to science
- b) **Provide Research Spending Freedom** for Ukrainian universities
- c) **Commit to co-fund H2020 Projects** with up to 15% of the budget allocated by the EU
- d) **Increase the funding support for Ukrainian H2020 National Contact Points (NCPs)**
- e) **Reduce Bureaucracy** related to the State Treasury, currency exchange rules, payment terms rules, etc.
- f) **Harmonise the Aviation Laws and Certification Procedures** between the EU and Ukraine
- g) **Harmonise the Ukrainian Science and Technology Innovation System** with the EU standards
- h) **Ensure Ukrainian expertise Involved in EU Activities** through H2020 Programme Committees and NCPs
- i) Create **Intergovernmental Committee for Aeronautics**
- j) Create **Ukrainian Aviation Government Agency** to represent Ukrainian interests in EU Framework Programmes

European Commission



- a) **Allocate more appropriate funding** to early stage, low-TRL projects within Clean Sky and SESAR (in line with EREA and PEGASUS recommendations)
- b) **Include specific Ukrainian research interests** in the calls for proposals of the H2020 / HORIZON EUROPE
- c) **Significantly increase funding** to cover the anticipated needs of research
- d) **Simplify EU-funding bureaucracy** in terms of submission procedures, time to prepare proposals, description of calls
- e) **Promote exchange of higher education students** between EU and Ukrainian universities under the ERASMUS+ programme

Ukrainian Partners



- a) **Ensure Top-Down Responsibility of NCPs** to motivate the community
- b) **Ensure Ukrainian Partner Long Term Commitment** through regularly following-up on aeronautics related calls, establishing EU project support offices in organizations
- c) Continue to **show strong support** for the common goals and improved integration of competencies in the frame of the Ukrainian Aerospace Cluster "Mechatronics"
- d) **Seek Foreign Direct Investment** in new R&D and production facilities

EU Partners



- a) **Consider Ukrainian partners with a mutual level of respect** for their competence, expertise and ethics
- b) Consider **presenting papers at conferences** or at least **attending conferences or trade shows** which are organised in Ukraine
- c) **Share Success Stories** of aerospace research collaboration, specifically the ones with the Ukrainian partners (on the company website, newsletters, Wikipedia pages).

Progress and achievements in strategic support to EU-UA aviation collaboration

The two main results achieved by the AERO-UA project in 2018 in the context of support to EU-UA aviation collaboration on the level of strategic decision bodies and key stakeholders were:

- The AERO-UA consortium partners UkrRIAT and SE Ivchenko Progress together with two key players of Ukrainian aviation industry - JSC Motor Sich and SE Antonov - joined the official delegation from Ukraine in a meeting of the working group on EU-Ukraine industrial cooperation, which was especially dedicated to the aviation sector and held in Brussels on 20th December 2018. The EU delegation at this meeting was represented by the DG GROW, DG RTD, DG MOVE, DG NEAR, EASA and ASD. During the meeting the delegations exchanged information on the main achievements and developments in aviation and discussed the possibilities to enhance cooperation between the Ukrainian and European aviation industry. Find out more [here](#).
- The AERO-UA project recently organised a meeting between the Ukrainian aerospace cluster “Mechatronics” and Aerospace Valley in Toulouse, in order to establish contacts and to explore mutual areas of interest for cooperation. Both clusters have many aerospace industrial and research members, therefore high-level collaboration between the clusters can be extremely important for creating links and initiating new projects. Find out more [here](#).



Ukrainian success stories in Clean Sky 2 and future opportunities



[Clean Sky 2 Joint Undertaking \(JU\)](#) is a public-private partnership between the European Commission and the European aeronautics industry, which is responsible for the Europe’s largest aeronautics research programme. Clean Sky 2 (CS2) programme is a part of Horizon 2020, but has its own specifics. The funds for the projects are allocated jointly by the European Commission and key European aeronautics enterprises, therefore CS2 calls have a purely technical orientation and are focused on the development of future aircraft technologies.

Ukrainian organizations became full-fledged participants of the CS2 programme in March 2015, when Ukraine signed the association agreement to Horizon 2020. Since then, Ukrainian research teams have taken part in several applications to CS2 calls with the following two proposals having received positive feedback and been successfully selected for



AMBEC project is the first ever Clean Sky 2 project implemented by a pure Ukrainian consortium.

It involves **SE Ivchenko-Progress, JSC Motor Sich, and the National Aerospace University “KhAI”**, who work under the supervision of the Clean Sky 2 leader Safran Aircraft Engines with the administrative support of STCU.

The project started on 1 May 2018 with a budget of **€1.7 million for 3 years**. It aims to develop a reliable and experimentally validated methodology, which will be able to calculate heat transfer coefficients and fluid distribution in a bearing chamber of an aircraft gas-turbine engine. This methodology will be used to improve the design of compact bearing chambers for aircraft engines.



DENOX project is the second Ukrainian success story in the Clean Sky 2.

The project is funded under a quite new instrument – thematic topic (THT), which is focused on low-TRL research. THT is a kind of the “bottom-up” call, where no specific work is foreseen, unlike in regular CS2 calls, but the applicant has the freedom to propose a solution to a predefined challenge.

In the DENOX project the researchers of the **National Aerospace University “KhAI”** will receive **€1 million over 4 years** to develop breakthrough technology concepts to drastically reduce NOx emissions in aeronautic gas-turbine engines. The aim is to demonstrate a 20-95% decrease in NOx emissions in the exhaust gases without reducing engine efficiency.

Clean Sky 2 offers a wide opportunity to get involved in the development of innovative, cutting-edge technologies aimed at reducing CO₂, gas emissions and noise levels produced by future European aircraft. The calls for proposals (CfPs) are opened regularly and include dozens of topics in various fields, including **aircraft structures, engines, control systems, technological processes, new design and modelling methodologies**, etc. For example, the 9th CfP has a budget of €69.1 million for 55 topics including 4 thematic topics. The 10th CfP is expected in mid-2019 and will have an indicative budget of €60 million, including €15 million for low-TRL research in THTs.

The AERO-UA project pays great attention on widening Ukrainian participation in Clean Sky 2, as it is the major funding source for aviation research cooperation in the EU. Consequently, a concerted effort was made to support the appointment of Ukraine's National Representative to the high-level advisory body of the Clean Sky 2 – [the States Representatives Group \(SRG\)](#). As a result, in October 2018, Mr. Igor Rybalchenko, Head of International Projects Office of KhAI, was assigned as the National Representative from Ukraine and he has already started his work via participation in the SRG meetings and discussions. We expect that it will help the Ukrainian aeronautics community to become aware sooner of the strategic policies and priorities of the Clean Sky 2 programme **and to increase the number of successful proposals submitted by Ukrainian researchers to future Clean Sky 2 calls.**

Subscribe to our e-mail list [here](#) to be timely aware about new calls of the Clean Sky 2

AERO-UA workshop on “Composites in Action”

AERO-UA consortium partner the University of Manchester hosted a one-week workshop dedicated to “Composites in Action” within the framework of the AERO-UA pilot projects in aerostructures. The workshop was held from 19 to 23 November 2018 in the premises of the University of Manchester's Aerospace Research Institute.

Expertly organised by Dr. Mazher Ahmed (the University of Manchester), the composites workshop attracted over 15 aviation experts from the Ukrainian and European consortium partners. It comprised of a stimulating mix of classroom lectures given by the institute's researchers as well as tours of the laboratories and testing facilities within the Aerospace Research Institute and the Northwest Composites Centre at the University of Manchester.



In particular, the composites workshop facilitated knowledge exchange on the latest developments in advances in composites for aerospace applications, finite element modelling and manufacturing of aerospace blades, 3D woven reinforcements and composites for aerospace applications, joining of composite structures, syntactic foams, structural health monitoring and non-destructive testing, manufacturing advanced composites, modelling of advanced composite structures, etc.

AERO-UA experts present research results during AVT-306 Meeting

Thanks to support from the AERO-UA consortium partner Air Force Institute of Technology (ITWL) and to the knowledge exchange in the frame of the AERO-UA pilot projects on aeroengines, Ukrainian aviation experts from the National Aerospace University “KhAI” and SE “Ivchenko-Progress” recently [presented their research findings](#) at the [AVT-306 Research Specialists' Meeting on Transitioning Gas Turbine Instrumentation from Test Cells to On-Vehicle Applications](#).

Held in Athens, Greece, during the 10-12 December 2018, the AVT-306 Research Specialists' meeting was organized by the NATO Science & Technology Organization - Collaboration Support Office - under the Applied Vehicle Technology Panel (AVT). The meeting was open to NATO Nations, Australia and all Partnership for Peace Nations, including Ukraine.

Disseminating the results of the AERO-UA pilot projects is a key activity of the overall project and will hopefully stimulate further aviation research cooperation between Europe and Ukraine beyond the scope of the AERO-UA project.

Awareness-raising and networking between EU-UA stakeholders

Information and Networking Event in Kharkiv, Ukraine



The Information & Networking Event took place on 31 May 2018. With the aim to raise awareness and provide an opportunity to discuss possible cooperation, the event gathered about 60 representatives from European and Ukrainian aeronautic organizations.

The Ukrainian participants came from universities, research institutes of the National Academy of Sciences Ukraine, and industrial enterprises such as Antonov, FED, Ivchenko-Progress, Motor-Sich, UkrRIAT, Volchansk aggregate plant, etc. Among the EU experts were representatives of ASD Europe, DLR, and the AERO-UA partners - Fraunhofer-IFF, Technology Partners, University of Manchester and Intelligentsia.

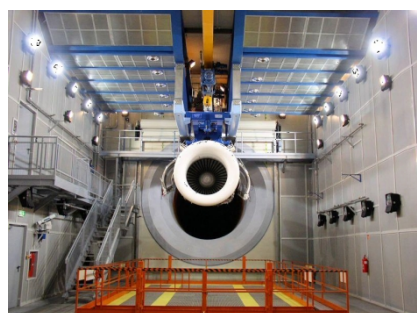
The speakers talked about the available collaboration opportunities and mutual interests, European public research funding sources open for aeronautics-related projects, prospects and benefits of participation in such collaboration. The presentations of all speakers are available [here](#).

Factory Tour to Ukrainian Enterprises

On 30 May 2018 leading Kharkiv aeronautic organizations welcomed the AERO-UA consortium partners and invited European experts to gain a first-hand understanding of their aviation capabilities and identify mutual interests for aviation research and technology collaboration.

The facilities of the following organizations were visited: State Enterprise “Kharkiv engineering plant “FED”, Aerospace Company PJSC “FED”, State Scientific Production Enterprise “Kommunar Corporation”, National Technical University “Kharkov Polytechnic Institute”, National Aerospace University “KhAI”.

The invited guests gained a positive impression of the Kharkiv region’s capabilities and expressed interest in collaboration development.



Factory tour around Warsaw

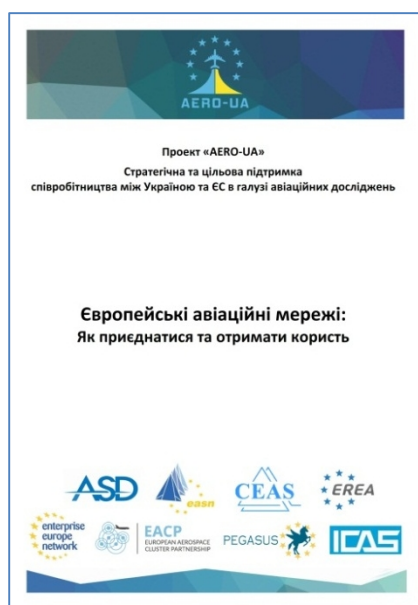
The factory tour around Warsaw was organized by the AERO-UA partner TECHPAR for the project consortium and took place during 21-22 September 2017. The partners visited WZL Military Aviation Works No. 4, which operates in the sector of maintenance, repair and overhaul of commercial and military turbine engines for airplanes and helicopters; the Faculty of Materials Science at the Warsaw University of Technology, where the group could familiarise themselves with the material characterization equipment and aerodynamic tunnel; and the Air Force Institute of Technology (ITWL) to see the engine test cell, the X-ray Computed Tomography Lab, the Oil Analysis Lab, and the Bearing and Transmission Systems Lab.

Strengths of Ukraine’s aviation industry showcased at Aeromart Toulouse convention

The AERO-UA consortium was extremely pleased to showcase the strengths of Ukraine’s aviation industry at the major international convention of manufacturers and suppliers of aerospace sector - 12th edition of the [Aeromart Toulouse](#), which was held on 4-6 December 2018. Five Ukrainian aviation companies seized the opportunity to promote themselves and sent representatives to support the AERO-UA booth at the convention (Antonov, Ivchenko-Progress, FED, UkrRIAT and Volchansk Aggregate Plant) and were able to hold over 30 business-to-business meetings with European companies such as Airbus, CELAB, Jihlavan, MEGGIT and SAFETYN. It is hoped these meetings will help to initiate new business contracts between European and Ukrainian aviation companies.

How to benefit from European aviation networks

The AERO-UA consortium has published a useful Guidebook in Ukrainian on how to participate in European networks dealing with aviation research and development. The motivation for publishing the Guidebook is to explain why it is useful and beneficial to join such networks, starting from the opportunities to enhance professional skills and getting access to information and new contacts with specialists from other countries, up to specific financial support which some of the Networks foresee.



The Guidebook includes information for a list of European networks that can be useful for academics, small and medium enterprises, large companies, and government agencies involved in aviation research and related fields, and provides an overview and opportunities of the following Networks:

- European Aeronautics Science Network (EASN) www.easn.net
- Association of European Research Establishments in Aeronautics (EREA) <http://www.erea.org/>
- Partnership of a European Group of Aeronautics and Space Universities (PEGASUS) www.pegasus-europe.org
- Aerospace and Defence Industries Association of Europe (ASD) <https://www.asd-europe.org/>
- International Council of Aeronautical Sciences (ICAS) <http://www.icas.org/>
- Council of European Aerospace Societies (CEAS) <https://ceas.org>
- European aerospace cluster partnership (EACP) www.eacp-aero.eu
- Europe Enterprise Network (EEN) www.een.ec.europa.eu

The Guidebook is prepared in Ukrainian and is freely available to download at the AERO-UA website at [this page](http://www.aero-ua.eu).

Project Partners



technology PARTNERS



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