




Łukasiewicz
Institute
of Aviation



*WHEN EVERYTHING
SEEMS TO BE GOING AGAINST YOU,
REMEMBER THAT THE AIRPLANE
TAKES OFF AGAINST THE WIND, NOT WITH IT.*

HENRY FORD

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CONTACT

Dear Sirs,

the history, passion, commitment, knowledge and experience of our employees cannot be closed in few words.

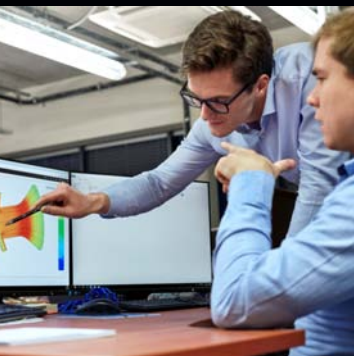
It is the history of over 90 years of research, creation of new visions and lively discussions from which the spirit of the entire Polish aviation emerges.

I invite you to get familiar with the Łukasiewicz Research Network - Institute of Aviation, as the workplace for outstanding researchers, scientists and engineers, as well as the opportunities offered by our research centers.

I believe that through cooperation with the Łukasiewicz Research Network - Institute of Aviation, your institutions will increase their potential on the market and will succeed.

Paweł Stężycki, Ph.D.Eng.

Director of the Łukasiewicz Research Network
- Institute of Aviation



MISSION

The Łukasiewicz Research Network – Institute of Aviation provides the highest quality R&D services to the local and global industrial partners in order to obtain direct benefits for the national economy.



VISION

By 2024, the Łukasiewicz Research Network – Institute of Aviation will become one of the leading research units in Europe in the areas of:
design and testing of aircraft structures,
rocket engine technologies,
and technologies of autonomy and safety of unmanned aircraft systems.

COMPANY STRUCTURE



**PAWEŁ
STĘŻYCKI**
PH.D. ENG.

Director General



**SYLWESTER
WYKA**
PH.D. ENG.

Deputy Director for Research



**IZABELA
IWANIAK-RYBAK**
M.SC. ENG.

Deputy Director for Operations



**KATARZYNA
ROSTKOWSKA**
M.SC.

Deputy Director for Finance



**ROMAN
DOMAŃSKI**
PROFESSOR

Chairman of the
Łukasiewicz - Institute of Aviation
Council

ANDRZEJ LESKI

PH.D. D.SC.

Director of
Research Coordination Department



JERZY ŻÓŁTAK

PH.D. D.SC.

Director of
Aviation Technologies Center



LESZEK LOROCH

PH.D. ENG.

Director of
Space Technologies Center



MIKOŁAJ JARKOWSKI

PH.D. ENG.

Director of
Unmanned Technologies Center



ARTUR RUDNIK

M.SC. ENG., MBA

Director of
Engineering Design Center



PAWEŁ SZUCHNIK

M.SC. ENG., MBA

Director of
Materials and Structures Research Center



ALEKSANDER DĄBROWSKI

M.SC. ENG.

Director of
Engineering Services Center



KONRAD KOZACZUK

M.SC. ENG.

Director of
Composite Technologies Center



HISTORY



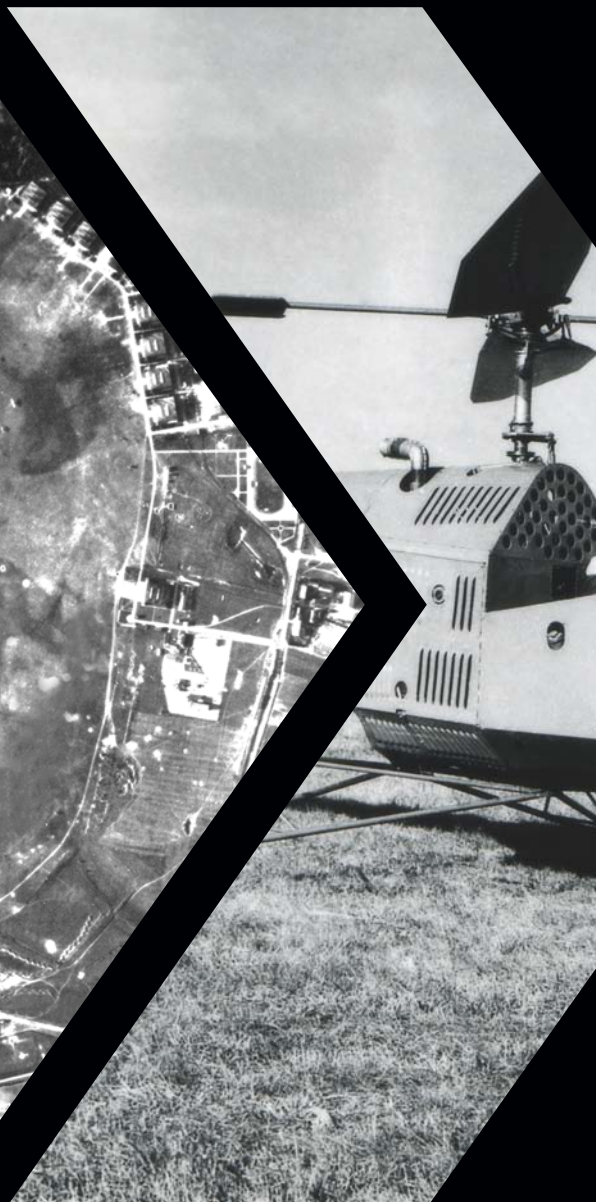
1926-1939

CERTIFICATION
OF POLISH
AIRCRAFT



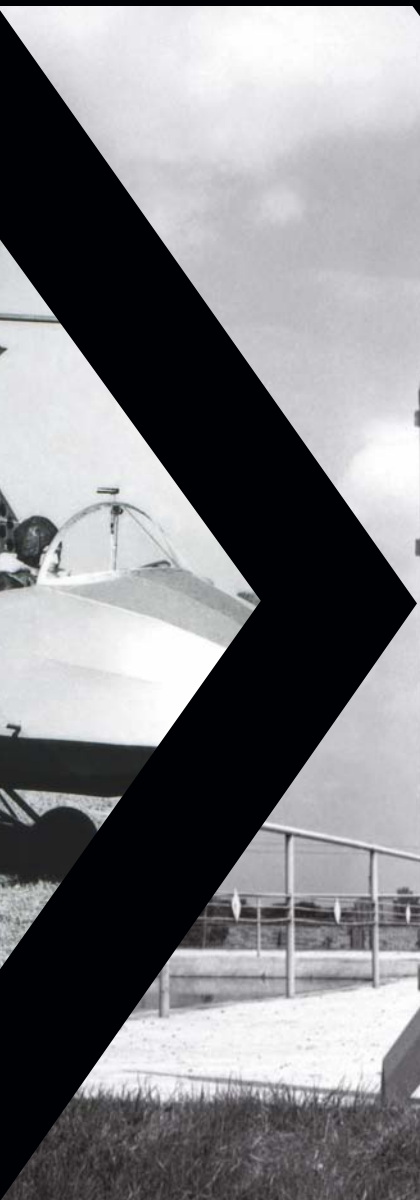
1939-1945

CONSPIRACY



1945-1956

CERTIFICATION
OF MILITARY AIRCRAFT
AND HELICOPTERS



1956-1967

**MISSILE
PROGRAM**



1967-1993

**TRAINER
AIRCRAFT
PROGRAM**



1993-2021

**CONDUCTING
RESEARCH
AND DEVELOPMENT
FOR THE INDUSTRY**

ŁUKASIEWICZ RESEARCH NETWORK

32 INSTITUTES

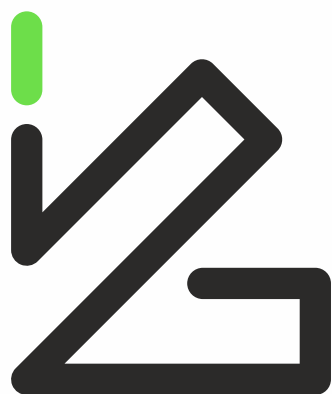
provide attractive,
complete and competitive business
solutions in the areas of:
intelligent and clean mobility,
sustainable economy and energy,
digital transformation
and health

1ST APRIL 2019

we became a part of the
Łukasiewicz Research Network,
a governmental project
associating Polish
research institutes

**3RD LARGEST
NETWORK IN EUROPE**

employs a total of
7 000 employees in 12 cities
located throughout Poland



Łukasiewicz





INSTITUTE TODAY

95 YEARS OF EXPERIENCE

Our history consists of the passion, commitment and experience of our employees. We are an important part of the Polish aviation history

7 RESEARCH CENTERS

Institute consists of seven centers of excellence that meet actual needs and cover key areas of activity

27 LABORATORIES

In the Institute we have specialized laboratories, including 9 certified

1300 EMPLOYERS

We employ highly specialized engineers and scientists from the best domestic and foreign universities

RESEARCH FOR INDUSTRY

AVIATION
TECHNOLOGIES



SPACE
TECHNOLOGIES



OIL AND GAS
TECHNOLOGIES



REMOTE SENSING
TECHNOLOGIES



UNMANNED
TECHNOLOGIES



MATERIAL
TECHNOLOGIES



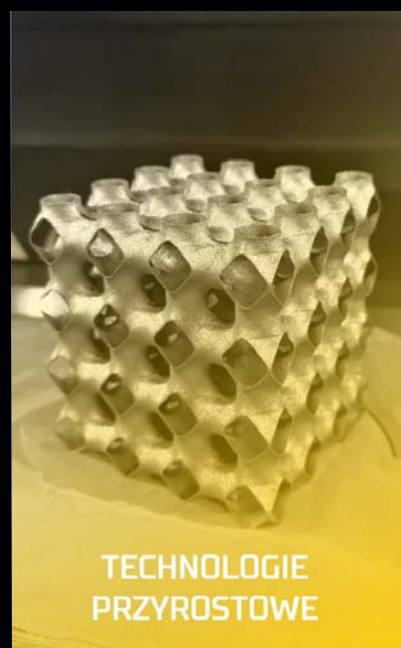
MILITARY
TECHNOLOGIES



ENERGY
TECHNOLOGIES



TECHNOLOGIE
PRZYROSTOWE





RESEARCH
AND DEVELOPMENT
FOR INDUSTRY

AVIATION
TECHNOLOGIES

UNMANNED
TECHNOLOGIES

SPACE
TECHNOLOGIES

STRATEGIC RESEARCH AREAS



AVIATION TECHNOLOGIES

We conduct research and development activities related to innovative technologies in the field of aviation, including design and analysis as well as laboratory tests. Our research infrastructure is one of world's most advanced in the field of applied aerodynamics. We are a leading design and research center of aviation structures.

**EXPERIMENTAL
AND NUMERICAL
AERODYNAMIC RESEARCH**

**METAL AND COMPOSITE
AVIATION STRUCTURES
DESIGN**

**AVIONIC EQUIPMENT
DESIGN AND TESTING**

**AIRCRAFT ENGINE
COMPONENTS DESIGN**

**RESEARCH OF ADVANCED
PROPULSION (BLI, RDE)**

**HYBRID PROPULSION
SYSTEMS DESIGN**

**AIRCRAFT CERTIFICATION
PROCESS SUPPORT**

**AIR TRANSPORT SYSTEMS
RESEARCH & DEVELOPMENT**

AIRCRAFT DESIGN



SPACE TECHNOLOGIES

We offer advanced solutions in the field of space technologies and remote sensing. Our engineering staff has extensive experience in European space programs. We provide remote sensing services for modern agriculture, forestry as well as for the purposes of environmental protection and the development of smart cities.

**DEVELOPMENT OF SATELLITE
AND ROCKET SYSTEMS,
INCLUDING PROPULSION**

**SUBORBITAL FLIGHTS
AND MICROGRAVITY RESEARCH**

**IT SOLUTIONS FOR REMOTE
SENSING AND SPACE
TECHNOLOGIES**

**DEVELOPMENT
OF PROPULSIVE
DEORBITATION MODULES**

**DEVELOPMENT
OF CHEMICAL PROPELLANTS**

**DEVELOPMENT
OF OPTOELECTRONIC
AND MECHATRONIC TOOLS**

**DEVELOPMENT OF
AVIONIC ROCKETS SYSTEMS**

UNMANNED TECHNOLOGIES

We conduct R&D activities in the field of unmanned technologies for user-defined applications. Teams of engineers create advanced UAV software based on machine vision. Our engineering experience covers planning and implementing test flights and integrating avionics systems, both on a domestic and global market. We design precision mechanics and electronics dedicated to UAV.

**DEVELOPMENT
OF UAV CONTROL SYSTEMS
AND UAV DESIGN**

**DEVELOPMENT OF MACHINE
VISION AND REAL-TIME
SOFTWARE**

**ELECTRONIC AND MECHANICAL
SYSTEMS FOR UAV**

**DEVELOPMENT
OF ANTI-DRONE SYSTEMS**

**INTEGRATION WITH UTM/ATM
SYSTEMS**

**INTEGRATION OF ON-BOARD
AVIONICS SYSTEMS**





MATERIAL TECHNOLOGIES

We implement the latest technologies in strength testing of materials and sub-assemblies of aircraft engines as well as other structures operating under heavy mechanical loads at a broad range of temperatures. We are one of the global leaders in strength testing.

MECHANICAL TESTS

STATIC, FATIGUE
AND DYNAMIC TESTS

STRUCTURAL COMPONENT
TESTS

IMPACT TESTS

VIBROACOUSTICS TESTS

NON DESTRUCTIVE
TESTING

STRESS MEASUREMENTS
WITH DIFFRACTION METHODS

DESIGN AND TESTS
OF LANDING GEAR, WHEEL
AND BRAKE SYSTEMS



COMPOSITE TECHNOLOGIES

We provide technological solutions and implement comprehensive research programs in the field of high-strength composite materials. We have a certified composite testing laboratory and advanced equipment for the production of composite structures.

QUALIFICATION TESTS
FOR COMPOSITE MATERIALS

THERMOPLASTIC COMPOSITE
TECHNOLOGIES

COMPOSITE PARTS
MANUFACTURING TECHNOLOGIES

COMPOSITE STRUCTURES
DESIGN

STRESS ANALYSIS

NON DESTRUCTIVE TESTING



R&D FOR INDUSTRY

Our teams design aircraft engine components, aircraft construction elements, co-create avionic on-board systems. We are creators of trends in building software and control systems for the needs of the aviation market. At the Institute, we develop production, repair and maintenance technologies for designed elements. Our people design industrial heavy duty and aeroderivative power gas turbines, electric motors and power generators as well as equipment for the oil and gas industry. We are also present in the area of renewable energy.

**STRUCTURAL, DURABILITY
AND RELIABILITY ANALYSIS**

**FLOW AND HEAT TRANSFER
ANALYSIS**

**DEVELOPMENT OF NEW
PRODUCTION TECHNOLOGIES**

**AUTOMATION AND PRODUCTION
PROCESSES OPTIMIZATION**

DESIGN OF EMBEDDED SYSTEMS

**MECHANICAL COMPONENT
TESTS**

**MEASUREMENT
OF ELECTRICAL PARAMETERS**

**DIGITAL AVIONIC
PROTOCOL TESTS**

**3D PRINTING
TECHNOLOGY DEVELOPMENT**

PRESSURE TESTS

TRUSTED BY MAJOR COMPANIES

PRATT & WHITNEY

DLR - GERMAN AEROSPACE CENTER

LEONARDO

NLR - ROYAL NETHERLANDS
AEROSPACE CENTRE

GENERAL ELECTRIC

CIRA - ITALIAN AEROSPACE
RESEARCH CENTER

HONEYWELL

THALES ALENIA SPACE

AIRBUS

ARIANEGROUP

BAKER HUGHES

ONERA - FRENCH AEROSPACE LAB

INNIO

CNES - CENTRE NATIONAL
D'ÉTUDES SPATIALES

WABTEC CORPORATION

OHB SYSTEM AG

NAMMO





COOPERATION WITH INDUSTRY

PUBLIC-INDUSTRIAL PARTNERSHIP

SINCE 2000, WE HAVE BEEN
DEVELOPING COOPERATION
WITH THE WORLD LEADER
IN THE ENGINEERING INDUSTRY

WE HAVE LAUNCHED ONE
OF THE LARGEST ENGINEERING
CENTERS IN EUROPE

WE DEVELOP JOBS
FOR TEAMS OF ENGINEERS
WITH A BROAD COMPETENCE
SPECTRUM

CORPORATE CUSTOMERS

WE PROVIDE ENGINEERING
SERVICES IN THE FIELD OF
ANALYSIS AND DESIGN,
AS WELL AS RESEARCH
AND DEVELOPMENT WORKS
FOR CORPORATE CLIENTS
BASED ON LONG-TERM
COOPERATION AGREEMENTS

WE PROVIDE SERVICES
AS PART OF AN ENGINEERING
CENTER CREATED ESPECIALLY
FOR THIS PURPOSE

CERTIFICATES AND QUALITY SYSTEMS



PN-EN ISO/ IEC 17025:2018-02

- AB 129 AERODYNAMIC LABORATORY
- AB 1490 COMPOSITES TESTING LABORATORY
- AB 792 NON DESTRUCTIVE TESTING LABORATORY
- AB 792 MATERIALS TEST LABORATORY
- AB 792 STRUCTURAL TEST LABORATORY
- AB 131 LANDING GEAR LABORATORY
- AB 132 ENVIRONMENTAL LABORATORY
- AB 1489 MATERIALS TECHNOLOGY LABORATORY
- AB 1491 TEST LABORATORY



ISO 9001:2015 AND AQAP 2110:2016

- SCIENTIFIC RESEARCH AND LABORATORY TESTS
- DEVELOPMENT WORKS
- DESIGN AND PRODUCTION
- IN AEROSPACE AND RELATED FIELDS



INTERNAL CONTROL SYSTEM

- EXPORT, IMPORT AND INTRA-COMMUNITY TRANSFER OF GOODS OF STRATEGIC IMPORTANCE
- TECHNICAL SUPPORT AND BROKERING SERVICES



AS9100D CERTIFICATE

- AVIONICS AND DIGITAL SYSTEMS LABORATORY

ISO 9001:2015
ENGINEERING DESIGN CENTER



NADCAP
COMPOSITE TESTING LABORATORY



PART-21, PART-145 CERTIFICATES
PRODUCTION AND MAINTENANCE ORGANIZATIONS



ADDA AP-270
DESIGN ORGANIZATION



ACE QUALITY SYSTEM – SILVER LEVEL
MATERIALS AND STRUCTURES RESEARCH CENTER



S-400 CERTIFICATE
MATERIALS TEST LABORATORY



OUR PROJECTS

We are involved in European and national R&D programmes in the field of aviation, space, remote sensing, material and composite technologies.

27

INTERNAL
PROJECTS

40

PROJECT
GRANTS



25

**PROJECT
LEADER**

13

**PROJECT
GRANTS FOR
INDUSTRY**

Status as of July 2021

AVIATION TECHNOLOGIES

STRUCTURES / MATERIAL TECHNOLOGIES
UAV / TRANSPORT SYSTEMS

EU PROJECTS VALUE: EUR 7,75 MLN

PL PROJECTS VALUE: PLN 6,53 MLN

2
DOMESTIC

ISSLOT, M2PD

11
INTERNAL

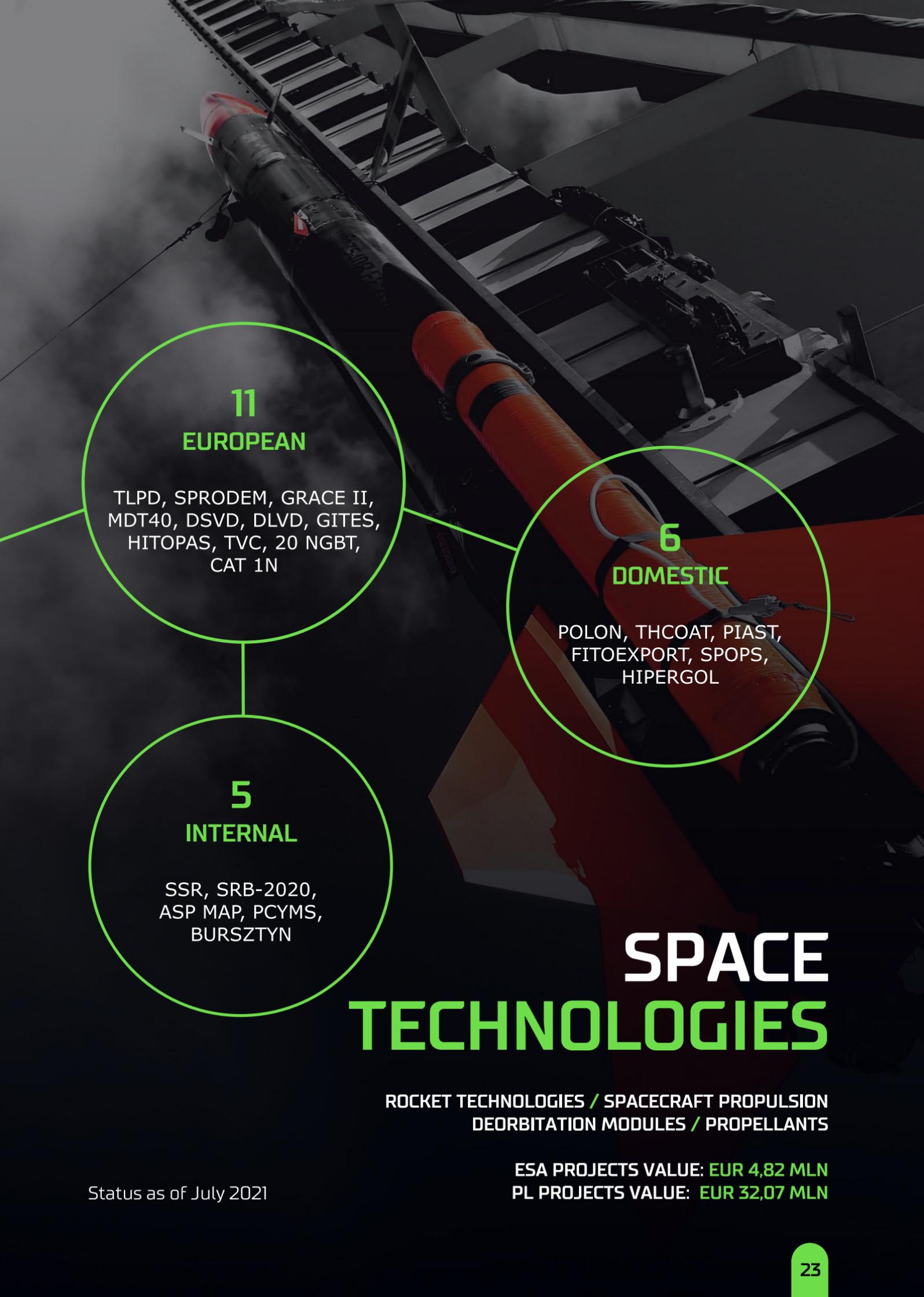
I-31P (2), JAY, PRC-650,
NOISE, TRWAKOM,
CUSTO-PROBE,
SUDIL-2, CEDDUP,
MAŁY BEZZAŁOGOWY
PŁATOWIEC HYBRYDOWY,
HYDRA

10
EUROPEAN

DREAM, LATTE, HIGHTRIP,
TRAIL, SAT-AM, IMOTHEP,
COAST, WINGPLUSE,
X-TEAM D2D, CHRZĄSZCZ



Status as of July 2021



**11
EUROPEAN**

TLPD, SPRODEM, GRACE II,
MDT40, DSVD, DLVD, GITES,
HITOPAS, TVC, 20 NGBT,
CAT 1N

**6
DOMESTIC**

POLON, THCOAT, PIAST,
FITOEXPORT, SPOPS,
HIPERGOL

**5
INTERNAL**

SSR, SRB-2020,
ASP MAP, PCYMS,
BURSZTYN

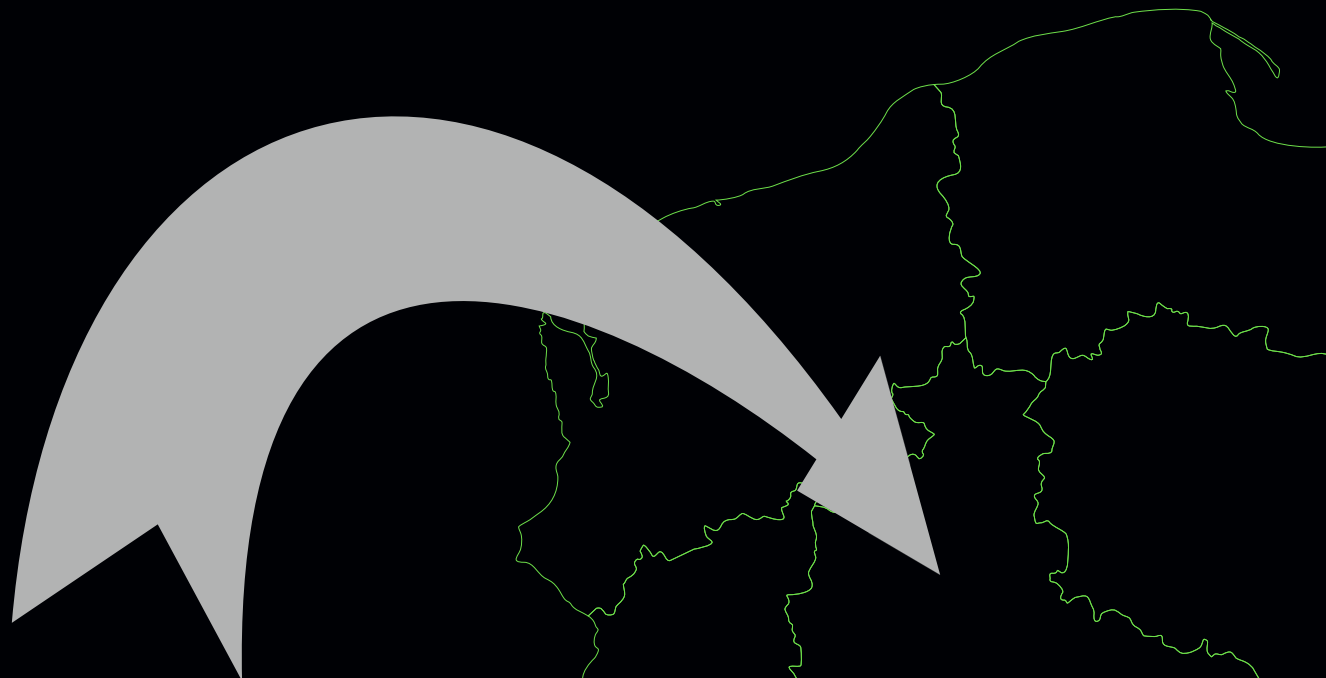
SPACE TECHNOLOGIES

ROCKET TECHNOLOGIES / SPACECRAFT PROPULSION
DEORBITATION MODULES / PROPELLANTS

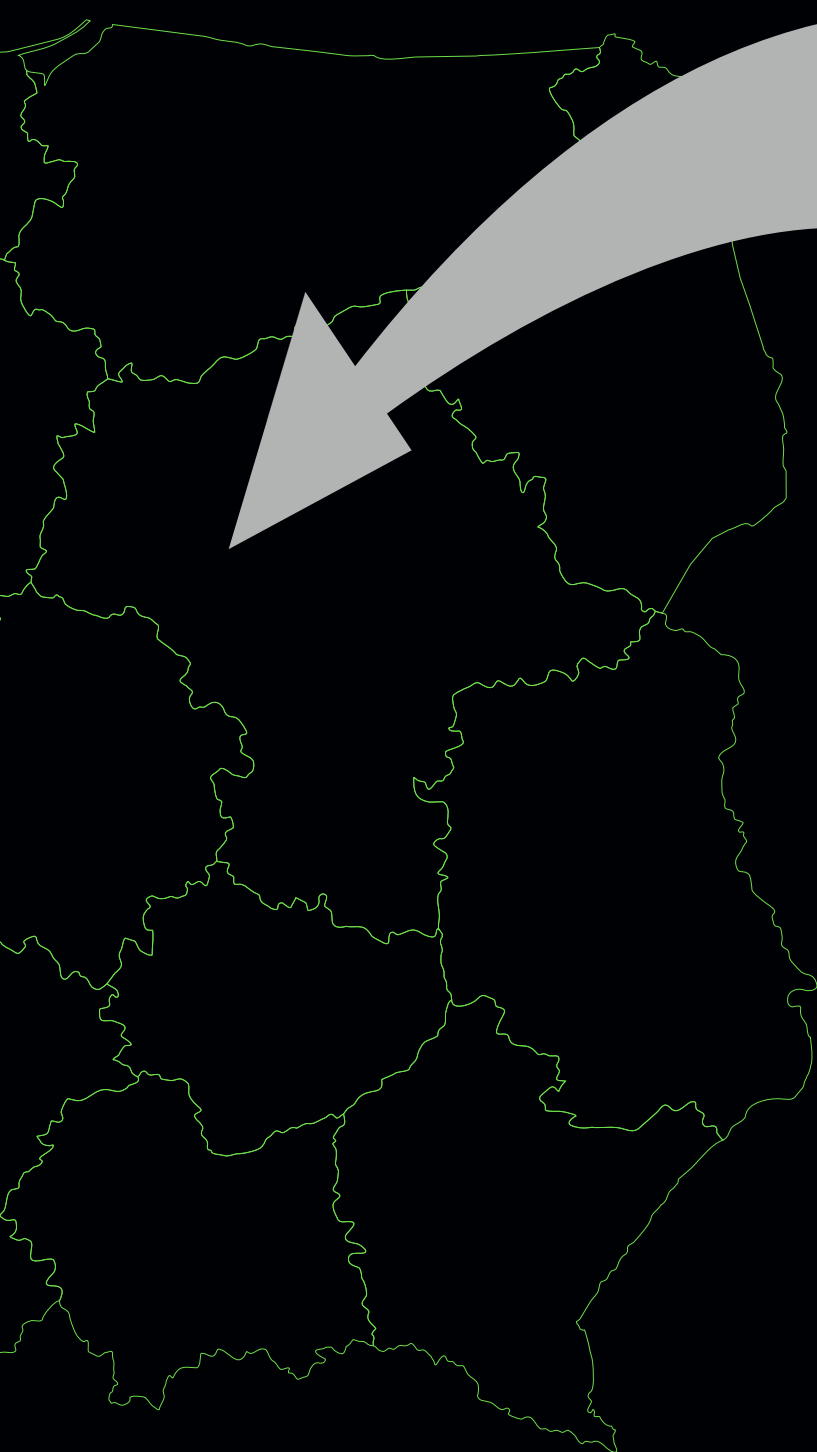
ESA PROJECTS VALUE: **EUR 4,82 MLN**
PL PROJECTS VALUE: **EUR 32,07 MLN**

Status as of July 2021

DOMESTIC COOPERATION



- AVIA – SPLOT AVIATION AGREEMENT
- AERONET – AVIATION VALLEY
- BIELSKO FEDERATION OF AVIATION COMPANIES
- POLISH CLUSTERS
- POLISH CHAMBER OF COMMERCE FOR HIGH TECHNOLOGY
- POLISH AVIATION TECHNOLOGY PLATFORM
- POLISH SPACE TECHNOLOGY PLATFORM
- POLISH SCIENTIFIC SOCIETY OF COMBUSTION ENGINES
- ASSOCIATION OF POLISH AVIATION INDUSTRY
- SILESIAN AVIATION CLUSTER
- ASSOCIATION OF DEFENSE AND AVIATION INDUSTRY EMPLOYERS
- POLISH SPACE INDUSTRY ASSOCIATION



- ŁUKASIEWICZ RESEARCH NETWORK
- POLISH ARMAMENTS GROUP
- PZL MIELEC
- WARSAW UNIVERSITY OF TECHNOLOGY
- MILITARY UNIVERSITY OF TECHNOLOGY
- RZESZOW UNIVERSITY OF TECHNOLOGY
- ASTRONIKA
- POLISH SPACE AGENCY
- CREOTECH INSTRUMENTS
- CIVIL AVIATION AUTHORITY
- AIR FORCE INSTITUTE OF TECHNOLOGY

INTERNATIONAL COOPERATION

We are member of global research and technical organizations. Within their structures, we undertake actions aimed at strengthening the position of the Polish research sector.



- **ACARE – ADVISORY COUNCIL FOR AERONAUTICS RESEARCH IN EUROPE**
- **AHS – AMERICAN HELICOPTER SOCIETY**
- **AIAA – AMERICAN INSTITUTE OF AERONAUTICS AND ASTRONAUTICS**
- **ASD – AEROSPACE AND DEFENSE INDUSTRIES ASSOCIATION OF EUROPE**
- **CEAS – COUNCIL OF EUROPEAN AEROSPACE SOCIETIES**
- **EASN – EUROPEAN AERONAUTICS SCIENCE NETWORK**
- **EREA – EUROPEAN RESEARCH ESTABLISHMENTS IN AERONAUTICS**
- **IAA – INTERNATIONAL ACADEMY OF ASTRONAUTICS**
- **ICAS – INTERNATIONAL COUNCIL OF THE AERONAUTICAL SCIENCES**
- **IFAR – INTERNATIONAL FORUM ON AERONAUTICAL RESEARCH**
- **STAI – SUPERSONIC TUNNEL ASSOCIATION**
- **ICAF – INTERNATIONAL COMMITTEE ON AERONAUTICAL FATIGUE**





ENGINE RESEARCH

COOPERATION WITH THE OHIO STATE UNIVERSITY

"Distortion-tolerant Fan Capable of Ingesting Boundary Layer (BLI-Fan)" research project

ROTATING DETONATION ENGINE (RDE) TESTS FINANCED BY US AIR FORCE LABORATORY

As a result of the agreement with Air Force Office of Scientific Research, a rocket engine research test stand and a detonation combustion chamber was built



UTM TESTS IN NEVADA

We are the only foreign institution invited to participate in American tests of the unmanned traffic management system in the urban area, which took place in Reno, Nevada, USA. The project coordinator was NASA's Ames Research Center in cooperation with the Nevada Institute of Autonomous Systems (NIAS) and Federal Aviation Administration (FAA). Academic and scientific institutions as well as significant global companies operating on the drone market took part in the tests.



AWARDS AND DISTINCTIONS

- **FORBES „30 UNDER 30” EUROPE (2020)** – distinction for Adam Okniński, Ph.D. participating, together with the team, in the development of a major spacecraft propulsion center in Europe
- **INTARG (2019)** – Unmanned Aerial System designed for acquiring multispectral data about the area
 - MAIN EXHIBITION PRIZE – GRAND PRIX FOR THE BEST INVENTION OF INTARG 2019
 - STATUETTE OF THE MINISTER OF AGRICULTURE AND RURAL DEVELOPMENT
 - PLATINUM MEDAL FROM THE MINISTER OF INVESTMENT AND DEVELOPMENT
 - INNOVATION LEADER 2019 IN THE TECHNOLOGY CATEGORY
- **INTARG (2018)** – ILR-33 AMBER rocket, QUERCUS.2 multispectral platform
- **NI ENGINEERING IMPACT AWARD (2017)** – rocket engine testing software
- **BRUSSELS INNOVA (2015, 2016)** – gold medal for compact digital radar altimeter with integrated antenna and Individual Autonomous Navigation System
- **CLEAN SKY FORUM (2015)** – STARLET project



SCIENTIFIC CONFERENCES

POLISH-AMERICAN CONFERENCE ON SCIENCE AND TECHNOLOGY

The event serves to extend cooperation between Polish and American partners in the field of innovation.

FATIGUE OF AIRCRAFT STRUCTURES

Conference topics cover all issues related to material fatigue and aircraft structures.

EUROPEAN FORUM FOR MARKETING OF SCIENTIFIC AND RESEARCH ORGANIZATIONS

The Forum is an opportunity to present the latest achievements in the field of promoting science and innovation.

DEVELOPMENT TRENDS IN SPACE PROPULSION SYSTEMS

The main goal of the event is the promotion of space research and the motivation to solve problems in this field.

ROTORCRAFT FORUM

Scientific conference and meeting of people interested in rotorcraft.

SAFETY AND CERTIFICATION OF COMPOSITE STRUCTURES

Seminars and workshops for: national civil aviation office inspectors, Industry representatives and academics.



PUBLISHING HOUSES

PUBLISHING HOUSES

Our publishing houses have been operating since 1927. We edit and publish articles and books prepared by Polish and foreign scientists

SCIENTIFIC LIBRARY

We have one of the best-stocked aviation libraries in Poland with collection of 80 000 volumes and about 5 500 microfilms of scientific papers and publications

SCIENTIFIC QUARTERLY

Our scientific quarterly '*Transactions on Aerospace Research*' is one of the longest-published journals in Poland devoted to aviation and space (1951).

PUBLISHING SERIES

HISTORICAL LIBRARY OF THE INSTITUTE OF AVIATION
SCIENTIFIC LIBRARY OF THE INSTITUTE OF AVIATION
FATIGUE OF AIRCRAFT STRUCTURES
MARKETING OF SCIENTIFIC AND RESEARCH ORGANIZATIONS
JOURNAL OF POLISH-AMERICAN SCIENCE AND TECHNOLOGY

EDUCATION

The aviation class is an educational program coordinated jointly with the Primary School No. 87 with Integration Departments in Warsaw.



VOLUNTEERING

We are actively involved in pro-educational, pro-health and pro-social activities.

DIVERSITY

We are signatories to the Diversity Charter. We are committed to taking action to support and promote diversity.



INTEGRATION

We help senior pilots and engineers. We support aviation initiatives. We are also open to local activities.

OUR CSR

We are involved in socio-educational and pro-health initiatives. Our experts are happy to share their knowledge with the youngest aviation enthusiasts as well as engineering students. We strengthen our position by joining initiatives relevant to the aviation industry. Cooperation through the exchange of experience is the motto we want to follow in our daily activities.



NIGHT AT THE INSITUTE OF AVIATION

10 EDITIONS

THE NIGHT AT THE INSTITUTE OF AVIATION IS THE LARGEST
EDUCATIONAL NOCTURNAL EVENT IN POLAND.
ITS PURPOSE IS TO POMOTE THE AEROSPACE SECTOR
AND ENGINEERING PROFESSIONS.

THE LAST EDITION GATHERED OVER 51 000 VISITORS.

THE TOTAL ATTENDANCE AT THE PREVIOUS TEN EDITIONS
OF THE EVENT GATHERED 300 000 VISITORS.

CONTACT

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Łukasiewicz
Institute
of Aviation