



Polish Space Agency

at IAC 2022

10 YEARS OF POLAND IN ESA



Please visit us at our stand!

**Hall 7.2, Stand B29, IAC 2022
Paris, France**



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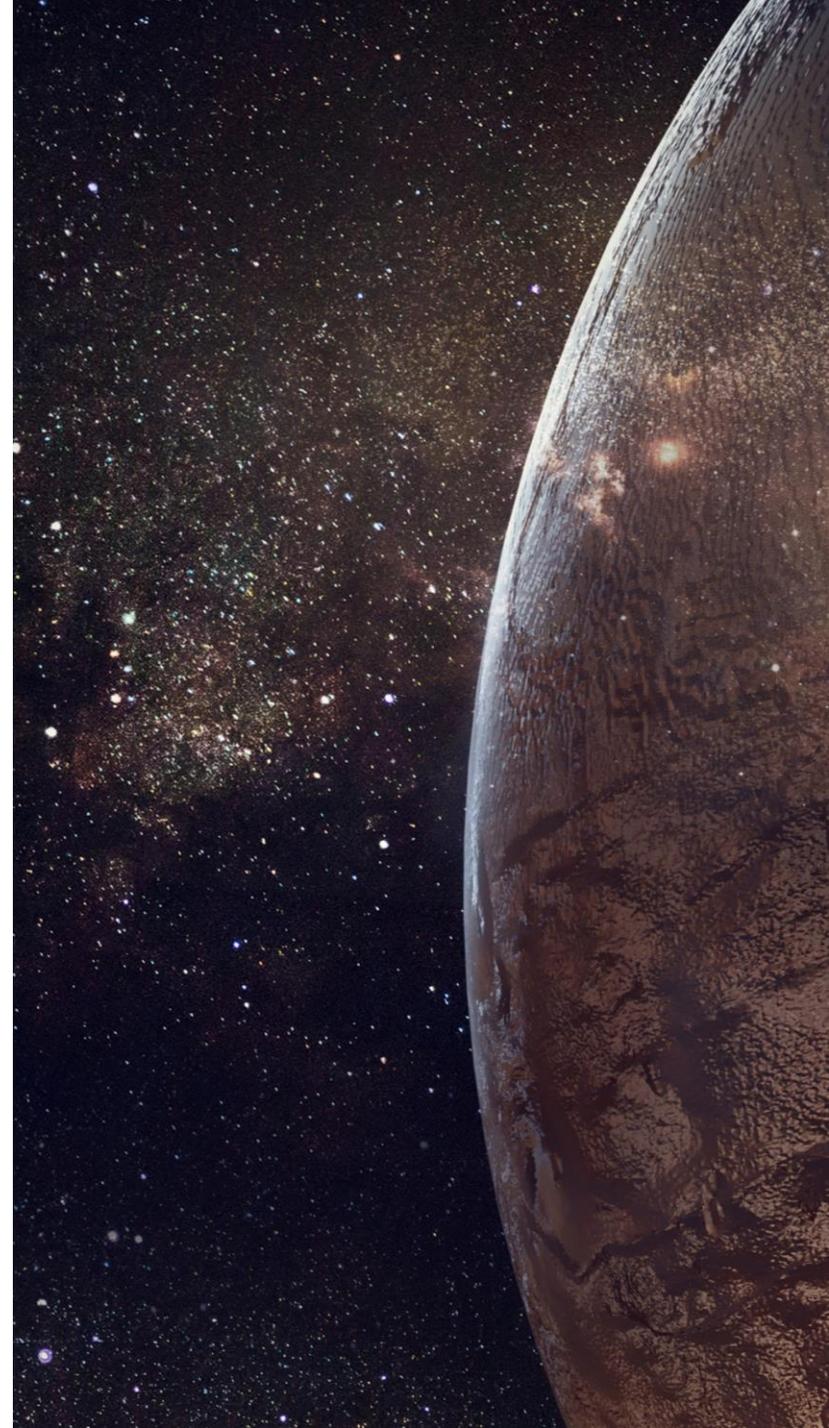
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Polish Space Sector

What will you find at our stand? Presenters and exhibits list.

10 YEARS OF POLAND IN ESA



AGH University of Science and Technology (the AGH UST) is a modern university that actively participates in fostering a knowledge-based society and creating innovative technologies. AGH University has a well-established position in the country and is recognized abroad.

The projects and research in the field of space technologies carried out so far at AGH UST include innovative rockets, space probes, Mars rovers and stratospheric balloons, which are created by students. The main tasks of Space Technology Centre includes in particular: conducting scientific research in the field of space exploration, creating interdisciplinary research teams in the field of space technologies, cooperation with AGH units, as well as other scientific and research units in the country and in the world.

Credits: NASA / GSFC / Arizona State University



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ASTRONIKA is a private company founded in 2013 by a unique group of engineers from the Space Research Center of the Polish Academy of Sciences (CBK PAN). We specialize in space instruments and mechanisms. We have in our portfolio planetary missions to Mars InSight and orbital missions like Juice. We also operate in the market of small and medium-sized satellites. We provide booms solutions for CubeSats, such as for the RadCube and HERA Juventas missions. We have our own machining workshop, ISO 8 clean room and a prototyping laboratory. In the scope of tests, we have a thermal-vacuum chamber and shock generation equipment, as well as bake - out chamber for composite structures.

Credits: NASA / GSFC / Arizona State University



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The company offers services related to technological expertise and defining products using satellite data as well as information and operational services related to the space sector and the development of entrepreneurial and design activities at an early stage of development. The company implements projects based on satellite navigation (including fields of jamming, indoor positioning, etc.), Earth observation, integrated applications, as well as modern materials with a porous (net) structures and mechanics. In its projects the company uses the expertise of an extensive network of contacts in over 50 countries and the International Space University network. As part of the Space3ac accelerator mechanism, the company helped to obtain financing for R&D activities in the total amount of over PLN 23 million for over 100 small companies.

Credits: NASA / GSFC / Arizona State University



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ESERO Space Education Offices were established on the initiative of the European Space Agency (ESA). It was created to introduce the space theme to primary and secondary schools and inspire young people to choose engineering or science-related professions in the future. In Poland, the coordinator of the ESERO program is the Copernicus Science Center. ESERO Poland is open for collaboration with Polish and international space companies.



Credits: NASA / GSFC / Arizona State University

**CENTRUM
NAUKI
KOPERNIK**



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CloudFerro provides cutting-edge cloud services. The company delivers and operates cloud computing platforms for demanding markets, such as the European space sector, climate research and science. Its broad experience and in-depth expertise include storing and processing big data sets, such as multipetabyte repositories of Earth Observation satellite data. The company offers cost-effective, open-source-based, flexible cloud solutions in a public, private or hybrid model, customized to meet user needs. Extensive range of ancillary services and dedicated technical support are provided by the highly experienced local team of IT specialists with unmatched competences.

CloudFerro has been trusted by leading European firms and scientific institutions from various big-data-processing market sectors, including the European Space Agency (ESA), EUMETSAT, the European Centre for Medium-Range Weather Forecasts (ECMWF), Mercator Ocean International, German Aerospace Centre (DLR), the EGI, to name a few.

Credits: NASA / GSFC / Arizona State University



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Creotech Instruments is Poland's leading manufacturer of satellite systems and components as well as advanced electronics for use in, among others, quantum computer control systems. The company is also active in the field of unmanned aerial systems, where it delivers devices and software for, among others, drone movement supervision. The Company has its own electronics production plant as well as small satellite integration facilities. Its portfolio consists of 26 projects realised for the space sector, while 10 space missions took place including Creotech subsystems, 4 of which were realised for the European Space Agency.

Credits: NASA / GSFC / Arizona State University



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Elproma was founded in 1992 by C&K Europe B.V. (The Netherlands) as a distribution company specializing in electronic components and gradually evolved into a R&D facility specializing in time & frequency. In early 2000, New Elproma Holding B.V. Group (The Netherlands) was created and successfully acquired Elproma Poland.

Over the last 15 years we have gained vast experience in manufacturing telemetric, wireless telecommunication and IoT solutions, which has resulted in our rich portfolio of products. Our devices are of the highest quality and unparalleled solidity, performing in many different industries world-wide. They meet and exceed the expectations of even our most demanding clients.

Credits: NASA / GSFC / Arizona State University

EUROTECH Sp. z o.o. is a recognized producer of custom and technologically advanced equipment and systems for aviation and oilfield.

The company is based on engineering knowledge, experience, an interdisciplinary and experienced team of specialists in cooperation with scientific centers designs and manufactures highly technologically and qualitatively advanced equipment, systems that meet the demanding European safety standards.

Credits: NASA / GSFC / Arizona State University

GMV Innovating Solutions Sp. z o.o. was founded in 2008 as a fully owned subsidiary in Poland of the international technology group GMV. The company develops in Poland the whole GMV portfolio of activities and performs their own projects with particular focus on three industries: Space, Intelligent Transportation Systems (ITS), defense and security. The global aim of GMV Innovating Solutions Sp. z o.o. activities is to provide IT solutions, integrated systems, specialized hi-tech products and services with close cooperation with clients and end-users. Within few years GMV Poland become reliable partner, products and service provider for European Space Agency, European prime contractors and satellite operators. GMV Poland possesses their own technical and service facilities and 80% of its employers are engineers (IT specialists, mechanics and telecommunication specialists).

Credits: NASA / GSFC / Arizona State University



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Hertz Systems has been operating with passion for technology for over 32 years, providing comprehensive services - from design to production, assembly, integration, testing, training. The company offers hardware and software solutions for the army, governmental and European institutions and private sector. Hertz Systems for over a decade has been active on the military market, providing the Polish Armed Forces with a satellite navigation receiver integrated with the cryptographic module. The entity is executing space projects related to GNSS systems for downstream applications, and sensors for upstream use. The company is also working on development of the European GALILEO PRS service, actively striving to produce PRS receivers in Poland.

Credits: NASA / GSFC / Arizona State University



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The Jakusz SpaceTech was established in 2015 on the basis of a team of experienced chemists and initially focused its activities on space technologies, mainly in the field of the production of green rocket fuels. With the expansion of the team of engineers, the activity was expanded to include the design and production of chemical installations for the production of various substances polymers, ingredients and intermediates for various industries. Jakusz SpaceTech has been a valued producer of ecological HTP rocket fuel (98% hydrogen peroxide) for several years.

We have well-equipped analytical laboratory, which examines the various stages of the chemical process on an ongoing basis. Our analytical laboratory analysis for example: hydrazine, 98 % hydrogen peroxide, 2-dimethylaminoethylazide (DMAZ), polymers (HTPB) etc.

Credits: NASA / GSFC / Arizona State University

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KP Labs – is a new space company whose mission is to accelerate space exploration through the development of autonomous spacecraft and robotic technologies. The experience includes development of on-board software, hyperspectral imaging devices, artificial intelligence algorithms and high-performance computers. Its flagship project is the Intuition-1 mission, the launch of which is planned for the turn of 2022 and 2023. The goal is to launch a satellite for Earth observation into a low orbit, which, thanks to artificial intelligence solutions and a dedicated on-board computer, will automate and accelerate the process of acquiring and processing photos already on board the satellite. From 2019, the company has the status of a R&D Center, and in 2022 it plans to open a Research and Development Center.

Credits: NASA / GSFC / Arizona State University

The Łukasiewicz Research Network – Institute of Aviation is one of the most modern research institutions in Europe, with traditions dating back to 1926. The Institute closely cooperates with global giants of the aviation industry, such as GE, Airbus, Leonardo, Lockheed Martin or Ariane Group, as well as with institutions from the aviation and space industry, including the European Space Agency. The strategic research areas of the Institute are aviation, space and unmanned technologies. It also provides research and services for domestic and foreign industries in the field of material, composite, additive, remote sensing and many other technologies. In the field of space technologies, the Institute specializes in satellite propulsion, rocket systems, avionics, environmental research and satellite remote sensing.

The most important achievements in the space sector:

- ▶ ILR-33 AMBER 2K suborbital rocket
- ▶ Hydrogen peroxide concentrated to over 98%

Credits: NASA / GSFC / Arizona State University

N7 Space specializes in software development for space industry. Company has a broad experience in projects of on-board software for satellite systems for ECSS criticality B level.

Main products and services: application software for on-board systems (Leon3, ARM), boot software and Board Support Packages for Leon3 and ARM CPUs, Model Based Systems Engineering technologies, test scripting engines, database software, ground segment software, EGSE & SVF software, Independent Software Validation & Verification, ECSS qualification processes.

Credits: NASA / GSFC / Arizona State University



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PIAP Space is active in the space and satellite engineering sector. The company specializes in the following areas: robotics, automatics and mechanics. PIAP Space develops technologies and products in the field of satellite integration and testing equipment (MGSE), active space debris removal, manipulators and grippers, in-orbit satellites operation, human-robot interaction, vision systems and mechanisms.

Credits: NASA / GSFC / Arizona State University



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PILC Company specializes in designing technologically advanced measurement systems for industry, science sector as well as aviation area. The company employs highly skilled workers including engineers from the field of metrology, electronics, electrotechnics, aviation industry and software.

PILC Company is involved in the following activities: designing of specialised electronics and embedded systems, prototyping, short test series, CAD/CAM, designing specialised measurement systems for harsh environment conditions, testing properties of the materials with electronic parameters reporting, making specialised software for devices and industrial processes, industrial automatics, building flight simulators with the possibility of the virtual reality simulation, processes visualization.

Credits: NASA / GSFC / Arizona State University



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Progresja Space is New Space startup working on cutting-edge technologies. Our mission is to provide advanced propulsion and ADCS solutions to small satellites to push the frontier of our civilization by enabling disruptive services to function in the emerging space economy.

Main products and services:

- ▶ „BLINK” cold-gas thruster for nano and micro-satellite
- ▶ „FLARE” resisto-jet thruster for nano and micro-satellite
- ▶ „FLASH” pulse plasma thruster for nano and micro-satellite
- ▶ „MRW” reaction wheels series for nano and micro-satellit

Credits: NASA / GSFC / Arizona State University

Planet Partners is a consulting company specializing in communication consulting, campaign implementation and crisis management. We support B2B companies, companies from innovative sectors of the economy (including the high-tech industry), and public sector entities in achieving their business goals through effective communication with the environment. The company prepare communication strategies, take care of their good relations with the environment and react to crises. Planet Partners provides comprehensive services in cooperation with experienced marketing partners. As a part of the international Globalcom PR network, Planet Partners provides clients with a network of branches located in 60 countries. Thanks to this, the company can effectively support the communication of any brand in Poland and abroad.

Credits: NASA / GSFC / Arizona State University

SatRevolution was established in 2016 with the aim of developing the real-time earth observation constellation. The company was the first in Poland to place its satellites: Światowid (2019), KRAKsat (2019) and AMICal Sat (2020) in orbit around the Earth. NASA's State of the Art Small Spacecraft Technology report lists SatRevolution as one of only 12 companies in the world that comprehensively design, manufacture and place observational nanosatellites collecting optical data in orbits. Currently, SatRevolution is implementing the next steps to build a functional, commercial constellation of 1,500 observation satellites (REC) by 2028.

Credits: NASA / GSFC / Arizona State University

SATREV 

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SpaceForest develops and commercializes innovative solutions specializing in microwave techniques, artificial intelligence, advanced electronics and rocket technologies. Cooperation with ESA lead to developing low-noise high frequency generators and solid state power amplifiers used in the satellite communication systems. SpaceForest implements internally developed technologies applied in aerospace systems, autonomous tracking and communication system for flying vehicles, or Filter Tuning Solutions for manual and automatic cavity filters tuning. We provide a wide range of services in the field of design and prototyping of microwave equipment, precision mechanics and electronics, as well as launching experiments on board of internally developed experimental rockets.

Credits: NASA / GSFC / Arizona State University



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We are a commercial supplier of optical instruments for the space industry. We create observation systems for micro and nanosatellites. Our specialists are the authors of, among others: the 3D laser system for orientation in the space of drilled particles (DREAM experiment), the Earth observation satellite system (ScanSAT) or (currently) designers and creators of the optical part for the EagleEye microsatellite and the PIAST - Polish Imaging SaTellite project. Our software and optical devices worked in space. We are in the process of implementing orders and projects that will fly into orbit on board at least 3 satellites within 4 years.

Credits: NASA / GSFC / Arizona State University

Thorium Space Technology creates next-generation Small LEO/MEO/GEO HTS satellite platforms and RF payloads, particularly Multi-Beam communication transponders in K/Ka and E-Band. We redefine the future of satellite communications by pushing beyond the possible. Our flagship projects are Flat Panel Active Antenna for Ka-Band, Multi-Beam E-Band AESA Transponder, Polish 5G mmWave MicroCell, and Satellite Sensing and Communication System for Suborbital Rockets (SUBCOM). The company consists of an interdisciplinary team of space technology engineers and specialists in related fields. In 2021, www.startus-insights.com announced Thorium Space as one of the ten most innovative space technology startups and our Ka-band transponder and antenna - one of the 5 Top Space Tech Global Manufacturing Solutions 2021.

Credits: NASA / GSFC / Arizona State University



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Wasat provides services based on satellite remote sensing for clients in agriculture, environmental protection and archaeology sectors, as well as it develops innovative tools for EO data processing and analysis. At the IAC we present 2 services:

- Irriget.com: the service provides precise information on current crop water requirements based on analysis of satellite and meteo data, hence it facilitates decisions on irrigation of field crops.
- Jupyter.com: IDE environment in the cloud, based on Jupyter Notebooks solution, which enables a user to access EO data and functions needed for their processing, visualization and sharing.

Credits: NASA / GSFC / Arizona State University

Wiran manufactures TRL9 flight RF hardware. Wiran is a comprehensive RF solutions provider since 2002. Experienced in the aerospace, military, rail and IoT markets with particular emphasis on wireless communication systems. Our RF design office carries out the design of electronic devices from the concept to the working prototype including dedicated tests to ensure the required quality of the product. Our engineering team assists the customer with their EMC troubleshooting process. For more than 4 years Wiran develops S and X band radio modules under contracts for ESA.

Credits: NASA / GSFC / Arizona State University



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