



SpaceForest
innovative solutions



Advanced electronics

In the world of a rapidly growing demand for high-speed connectivity in both satellite and terrestrial telecommunication systems, we are facing challenges that require a creative combination of diverse technologies such as microwave techniques, artificial intelligence, automation or rockets.

We provide a wide range of services in the field of design, prototyping and manufacturing of microwave devices, precision mechanics and electronics. We turn our creativity and passion for solving difficult problems into reliable solutions in space and microwave business.

In our mechanical department we design, develop and manufacture precise mechanical components for the space industry like housings or microwave filters.

**As the result of our cooperation with
European Space Agency we have developed:**



- **Ultra-Low Phase Noise Frequency Generators** - designed to meet the stringent phase noise requirements dictated by constantly growing demand for satellite signal quality.
- **Master Local Oscillator** - a medium power dual-redundant master signal source, designed to supply a reference signal to many frequency converters.
- **X-Band Solid State Power Amplifiers in Gallium Nitride technology** - The new space solutions dedicated to modern LEO and GEO satellite communication systems, operating in typical frequency range used for downlink transmitters in earth observation missions.

We support our customers at every stage of cooperation, from the concept and design through the analyses and simulations, to the optimization and production.



AMPLIFIERS

Our solid state-power amplifiers based on the newest GaN power components are designed to operate in a frequency range up to X-Band and offer a high degree of integration, high performance (Pout, total gain, PAE), and high reliability.

The SSPAs can be supported in the telecommunication or radar system by our LNAs, which offer high gain and low noise figure values. The Low Noise Amplifiers are offered in compact housings and provide high reliability and high performance.

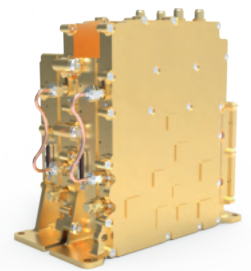
Our high power amplifiers for ground applications can be used in continuous or pulsed radar operation.



FREQUENCY GENERATORS

SpaceForest's frequency generators offer excellent phase noise levels at frequencies reaching 12+ GHz, very high output stability and very high output signal purity. Depending on the frequency, the generators are based on dielectric or coaxial resonators. The generators are offered in low weight and compact housings.

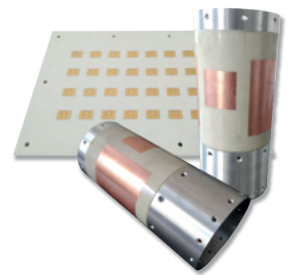
Our devices can be purchased in both phase-locked and free-running configurations and can be up-screened up to space level.



ANTENNAS

We offer a wide range of high-performance antennas, from high directivity patch and helical antennas, via low directivity compact to wrap-around antennas, which can be mounted on the body of the antenna. The antennas are available in both linear and circular polarizations, allowing use in multiple environments and industries, such as telecommunications or radar applications.

Currently our antennas are available up to Ka-band.



FILTERS

We design, manufacture and tune microwave filters, both cavity, waveguide and planar at various frequencies used in terrestrial and satellite telecommunications. Thanks to our experience in the field of mechanical engineering, at the request of our clients, we optimize the design and effectively integrate the device with other elements of the target system.



SYSTEMS

SF provides reliable RF systems based on components developed by our highly-skilled and experienced engineers. Systems such as RASEL and HRS-1 provide comprehensive tools for tracking and tracing airborne objects, such as rockets, drones, or even satellites, with the possibility to implement 2-way communication with the flying object.





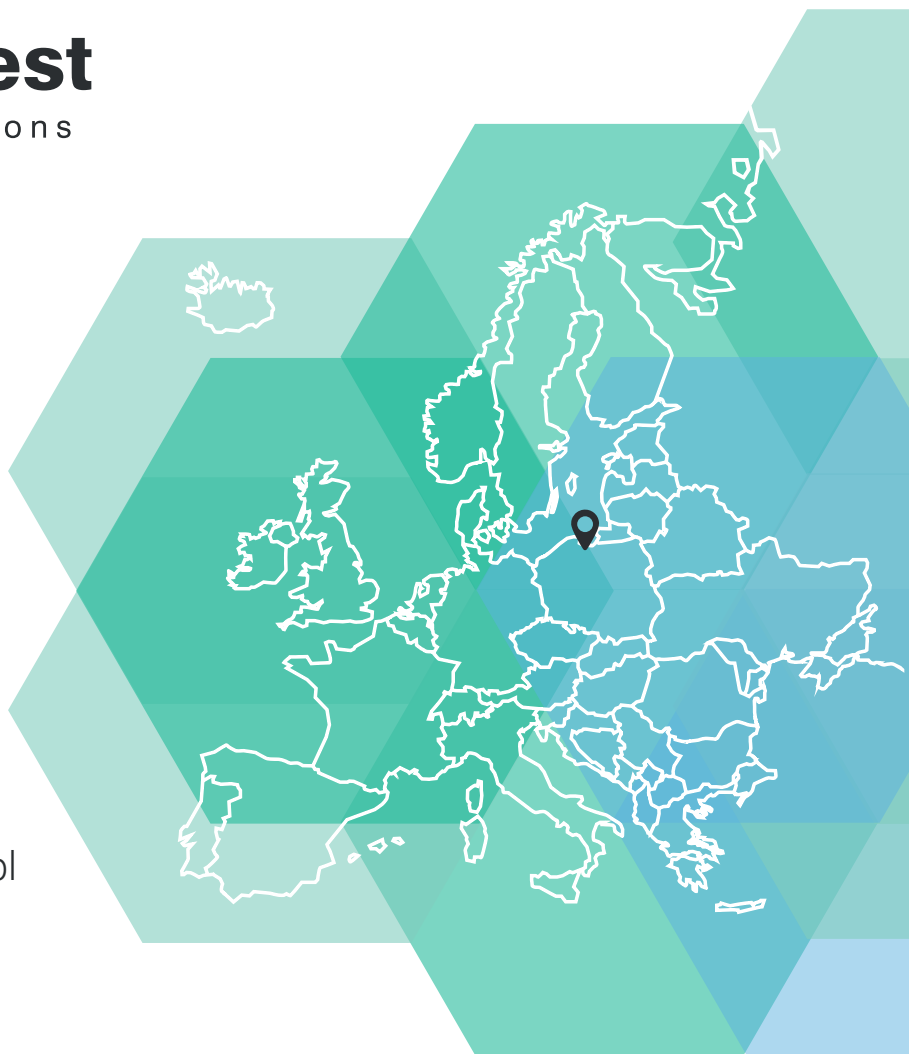
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OUR TECHNOLOGIES

-  Filter tuning solutions
-  Advanced electronics
-  Rocket technologies

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We develop and commercialize innovative solutions specializing in microwave techniques, artificial intelligence, electronics and rocket technologies.

Our mission is to provide our customers with the highest quality products and constantly improve the range and quality of services offered while taking care of the natural environment and broadly understood social interest. We aim at the consistent development of competences and technologies in the described areas in accordance with the implemented and maintained quality management system ISO 9001:2015 and ISO 14001:2015.

A highly educated, experienced and ambitious team of employees is the most valuable asset of our company.

