METROSERT

Metrosert Applied Research Center
Drone Technologies

METROSERT

AS Metrosert

- State enterprise 100%
- National Metrology Institute
- Evaluated Technical Assessment Body

Services

- Metrology services: calibration and verification
- Certification of management systems
- Precious metal analyses
- Custodian of national standards
- R&D activities
- Representative of Estonia in international organizations
- Applied Research Center (2023)

DRONE TECHNOLOGIES

Science and research activities

- **Unmanned Aviation (UA) research team** - handling concepts across different subsystems and drone types
- **Communications and Navigation (CN) research team** - secure communications, various communication technologies, navigation systems, sensors, data centre solutions, and electronics.
- **Flight Physics (FP) research team** - aerodynamics, materials, platform development, new energy carriers and more efficient engines.

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DRONE TECHNOLOGIES – LAB SERVICES

Indoor laboratories

- EMC (emission, interference immunity, RCS)
- Climate
- Corrosion
- Pressure
- Dust
- Vibration
- Electronics and communication laboratories

Testing the reliability, durability, and functionality of drones and their components under various conditions.

Outdoor testing area

Runway and dedicated airspace for validating drones' functionality, safety, and reliability in a real-world environment. UAV’s up to 700 kg MTOM

OUR LABORATORIES

Altitude

Corrosion

Dust

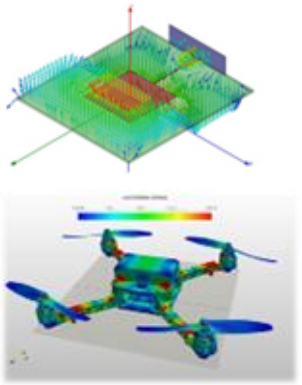
Climate chamber

HALT / HASS (Highly Accelerated Life Test) / Highly Accelerated Stress Screen)

Vibration

Gyroscope

Simulations



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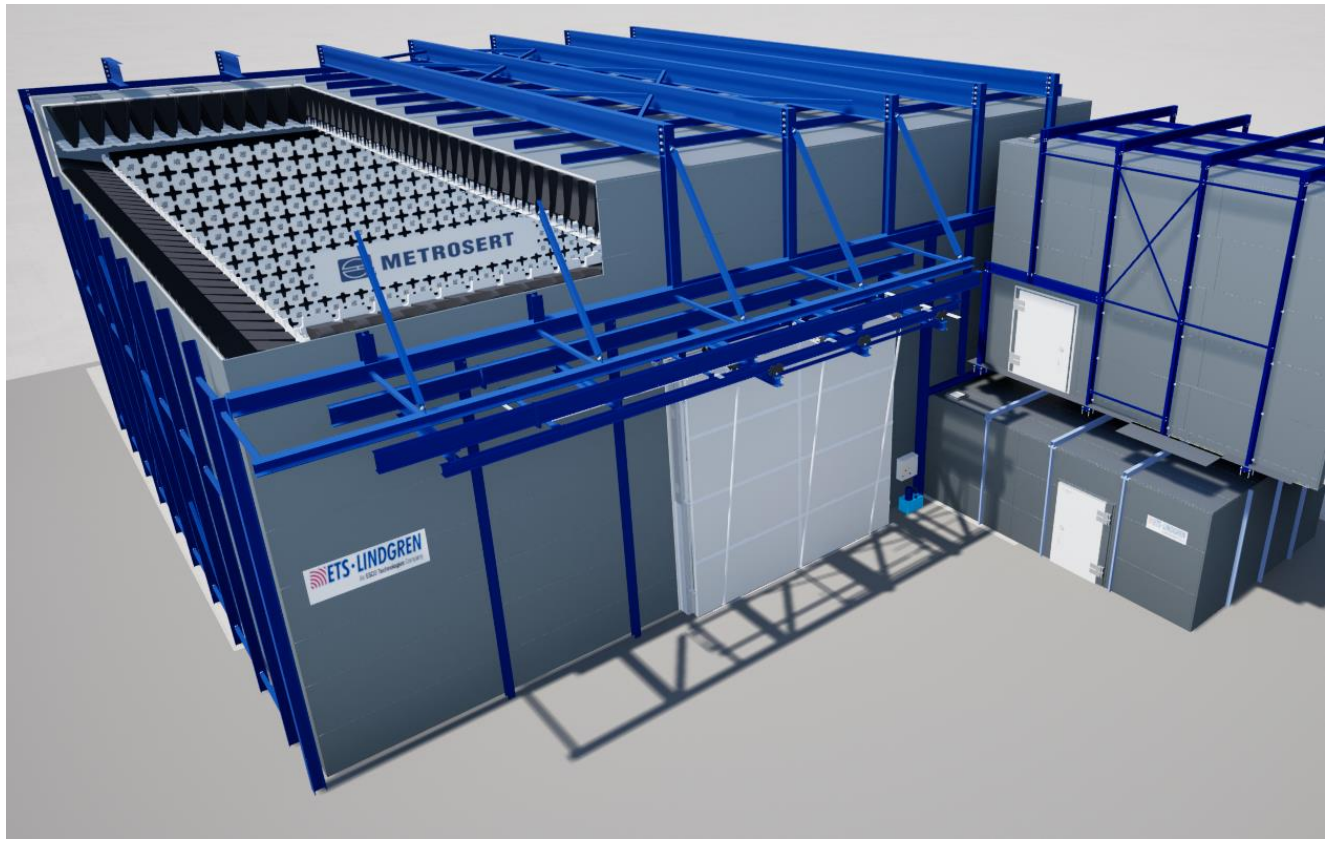
OUR LABORATORIES, ready 3Q2027

EMC emissions, immunity, RCS (Radar Cross-Section)



Drive-in climate chamber

CUSTOMER SERVICES

- **Testing requirements: Conduct product-based testing in accordance with specified standards, situational factors, and environmental requirements.**
  - Component testing
  - Subsystem testing
  - Integrated entire system testing
- **Subsystem development and prototyping**
- **Industrialization support**
- **Consultations**

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Labs in details

Vibration Test System

Description:

IMV vibration shaker model *A30/SA3HAG* together with *Centrotechnica* sliptable model *RT900* for 3 axis testing. Simulates vibrations experienced during transportation and operation, identifying potential weaknesses to ensure durability and component stability. Tests the durability of electronic connections and solder joints.

Technical capability:

30 kN force sine and random, 60 kN shock shaker, max displacement 75 mm, max loading 400 kg.

Services:

- Sinusoidal test
- Random test
- Sine-on-random test
- Random-on-random
- Shock + High velocity shock
- Modal analysis, and consultation.
- Standards: ISO 5309, RTCA DO-160, MIL-STD-810, DEF STAN 00-35, IEC 60068-2-6, IEC 60068-2-64.

HALT/HASS

Description:

ACS Halt (Highly Accelerated Life Test) / Hass (Highly Accelerated Stress Screen) model *UHS1400*, collectively referred to as Accelerated Stress Testing (AST), involves subjecting a product to a series of stresses to force weak links to emerge by accelerating fatigue (destruct limit).

This process aims to achieve the following objectives:

- Shorten Design Verification Time (DVT) and reduce expenses
- Eliminate costly manufacturing defects
- Enhance product reliability
- Lower warranty costs
- Improve brand quality recognition

Technical capability:

Six degrees of freedom, random, broadband excitation (5 Hz to above 10,000 Hz), volume of 1400 L, vibration table size of 914 x 914 mm, acceleration ranging from 5 to 65 gRMS, temperature range from -100 °C to +200 °C, and thermal shock of 100 K/min.

Services:

Combined Environment Testing: Temperature (Shock), Humidity, and Vibration. We provide failure analysis, consulting, and troubleshooting services.

FOC: Q2, 2026

Climate chamber

Description:

ESPEC model ARS-1100-10 Climate chamber evaluates product performance under various temperature and humidity conditions to ensure reliability in different environments. Cost-effective solution for frequent testing needs.

Technical capability:

Volume: 1100 L, Dimensions: 1100x1000x1000 mm (WxHxD), Humidity Range: 10-98 %, Temperature Range: -70 °C to +180 °C. Temperature change rate 10 K/min.

Services:

Temperature cycling, humidity and condensate, thermal shock and steady-state temperature testing. Examining material behavior and lifespan across different climate conditions.

Standards: RTCA DO-160, IEC 60068-2-1/2/14/30/38/78, MIL-STD-810G, Method 501.5, 502.5, 503.5 and others.

Corrosion chamber

Description:

Ascott corrosion chamber *CC1000IP*. Assesses a product's resistance to corrosion from elements such as salt spray and humidity, guides material selection for enhanced longevity and performance, and ensures long-term durability in corrosive environments.

Technical capability:

Volume: 1000 L
Temperature range: Ambient to +60 °C

Services:

Salt spray test, condensation water test, cyclic corrosion test, humidity, and moisture resistance testing. Material compatibility screening. Standards: IEC 60068, MIL-STD-810, ASTM B117, ISO 9227, and ASTM G85.

Altitude chamber

Description:

Weiss-technik altitude chamber *SkyEvent TAH 1500*. It simulates high-altitude conditions to validate product performance and reliability in low-pressure environments.

Technical capability:

Volume: 1500 L; temperature range: -70 °C to +120 °C; altitude simulation: 36 km; relative humidity: 15 to 95 %rh; operating range: +5 °C to +80 °C.

Services:

High-altitude simulation (storage/air transport, operation/air carriage), rapid decompression, combined altitude and temperature testing. Improving control algorithms, optimizing flight performance, and increasing reliability. Standards: IEC 60068-3-5, MIL-STD-810, RTCA DO-160, MIL-STD 202G, JIS W 0812.

Dust ingress testing

Description:

iTS dust chamber model *SK. 1000-10*. Tests product resistance to dust ingress, ensuring it operates reliably in dusty environments.

Technical capability:

Volume: 1000 L; Minimum specimen volume for vacuum device: 3 L; Maximum specimen volume for vacuum device: 37.5 L.

Services:

Dust ingress, sand and dust exposure testing, IP rating and testing. To test protection against dust, IP 5X and IP 6X ratings are applied according to DIN EN 60529, MIL-STD-810, IEC 60068-2-58, ASTM F2910, ISO 21384-1, RTCA DO-160.

Gyroscope stand

Description:

Creates a safe environment to test various climate conditions and peak performance to verify control algorithms and increase reliability and overall functionality.

Technical capability:

Different sizes are available to support multirotors up to 2.75 meters in size.

Services:

Precision measurement of angular velocity, stability testing, and optimization of flight performance. Collision-free 3 DoF(Three Degrees of Freedom) functionality and performance testing in different environmental conditions.

Drive-in climate chamber

Description:

Conducts environmental tests on large assemblies or multiple products simultaneously in controlled temperature and humidity settings.

Technical capability:

Volume: 300 m^3 (10 x 6 x 5) m; temperature range -40 to +60 °C; 10 to 95 %RH.

Services:

Large test area for simultaneously testing whole assemblies or multiple products in operating state and conducting environmental simulations, offering tailored testing capabilities for comprehensive environmental screening.

FOC: Q3, 2027

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Electromagnetic compatibility (EMC) Immunity, Emissions and Interference

Description:
Evaluates electromagnetic compatibility to ensure products do not interfere with other electronic devices and meet regulatory standards.

Technical capability:

- Dimensions: 22 x 20 x 9 meters (absorber tip-to-tip measerment)
- Turntable: 5-meter diameter, 10t loading capacity. Heavy load area up to 55 t
- High- power testing limits for immunity, electromagnetic field strength up to 200 V/m
- Large Equipment Under Test (EUT). Boundary box dimensions: 14 x 5 x 4 meters.
- Testing frequencie range: 30 MHz - 40 GHz
- Fully compliant with EMI (Electromagnetic Interference) according to CISPR 16-1-4 and ANSI C63.4
- Fully compliant with EMS (Electromagnetic Susceptibility) according to IEC/EN 61000-4-3
- Fully compliant for certification with standards CISPR 25, CISPR 12, CISPR 16, CISPR 36, ISO 11451, and ISO 11452 at a test distance up to 10.0 meters

FOC: Q3, 2027

Radar cross-section (RCS)

Description:

Measures radar cross-sections in order to evaluate stealth capabilities and improve detection systems.

Technical capability:

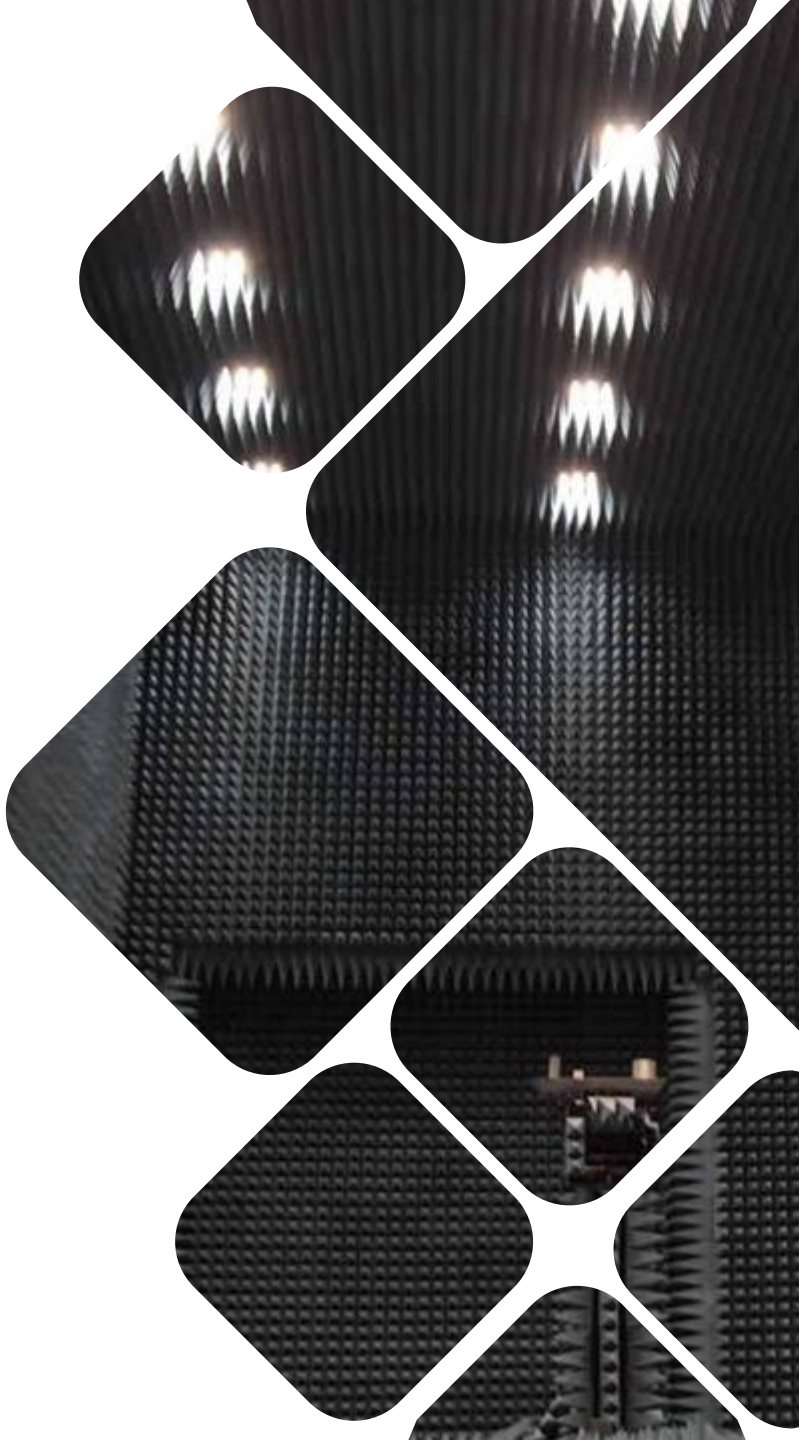
EUT size: 4 x 4 x 4 m testing area.

Testing frequency 30 MHz to 20 GHz

Services:

Radar cross-section (RCS) measurement, stealth technology assessment, reflectivity tests, and RCS analysis and modeling are conducted to ensure that products meet regulatory standards for radar visibility (MIL-STD-464, IEEE 1502-2020). We specialize in advanced design and material innovationor low-RCS or high-detectability products.

FOC: Q3, 2027



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Thank you!

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