



WHO WE ARE

ENGINEERING FOR COMPLEX ELECTROMAGNETIC SYSTEMS

We design and produce devices for transmission, receiving and processing of electromagnetic signals.

Founded in 2017 in Pisa by a group of researchers and engineers with a high level expertise in applied electromagnetics, coming from the Microwave and Rodiation laboratory of the Department of Information Engineering of the University of Pisa, from research centers (CNIT), and from private enterprise world.

WE COMBINE ENGINEERING AND TECHNOLOGY WITH STATE OF THE ART INNOVATION TO OFFER INNOVATIVE AND RELIABLE SOLUTIONS

WHATWEDC

OUR FOCUS: ELECTROMAGNETIC WAVES

- we analyze, study, predict, evaluate and measure them
- we are able to transmit and receive them to produce high performance systems
- we can modify them, direct them where convenient, control them for interference-free ICT systems

ACTIVITY AREAS

design, development and production of customized devices and subsystems

studies, consultancy and systems integration simulation codes and modelling

measurements and monitoring of electromagnetic fields

OUR APPROACH IS **TAILOR-MADE** EACH CLIENT HAS HIS OWN MEASURES, HIS NEEDS, HIS GOALS THAT **WE CONTRIBUTE TO ACHIEVE.** WE FOLLOW OUR CUSTOMERS **UP TO THE PRODUCTIVE LEVEL (TRL9)**



EXPERTISE

system integration

Proprietary numerical codes for analysis and design Synthesis and optimization based on evolutionary algorithms Electromagnetic Interference Prediction and Control (**EMIC**) in complex platforms Electromagnetic **Safety** in working and general public environments Biological effects of e.m. fields Electromagnetic **Compatibility** of devices and subsystems Estimation and measurement of e.m. field levels Network **radio-planning**

antennas and sensors

FREE SPACE has extensive experience in the design and optimization of antennas, compliant and miniaturized, with particular attention to **tailored solutions for naval communications**.

Communications conformal antennas for HF/VHF/UHF High performance antennas Reflectarrays **Low RCS** antennas RFID sensors Magnetic Resonance coils **Biomedical** RF devices

metamaterials

FREE SPACE is specialized in the design of **metasurfaces** and frequency selective surfaces (**FSS**) for the realization of dichroic filters, narrow and wideband absorbers, surfaces for reconfigurable antennas. The typical electromagnetic absorption configurations are:

Sheets of material loaded in multi-layered configuration

Utrathin e.m. absorbers

A-in resistive FSS for structural absorbers

igh Impedance Surfaces (HIS) and **Bandgap**

Wide Angle Impedance Matching layers (WAIM)

te able to provide a complete e.m. characterization of materials and metamaterials through novel action algorithms.

MARKETS

Our customers and partners are **world leaders in their markets**, from Automotive to Environment, from Medical to Nautical, both civil and military.

ICT & MOBILITY

Engineering solutions, transmission systems, RF and microwave components for mobile ICT.

HUMANCARE

Solutions for improving diagnostics (MRI) and biomedical systems employing RF and microwaves.

INDUSTRY PRODUCTS

Specific compatibility measurement and control for processes and products. Qualification and configuration of products. Design from ideas to market.

ENVIRONMENT

Integrated solutions for environmental monitoring.

DEFENCE/NAVY

Reliable solutions, robust devices and subsystems for defence. Sound experience in naval applications.

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