

PROJECT SEPRON

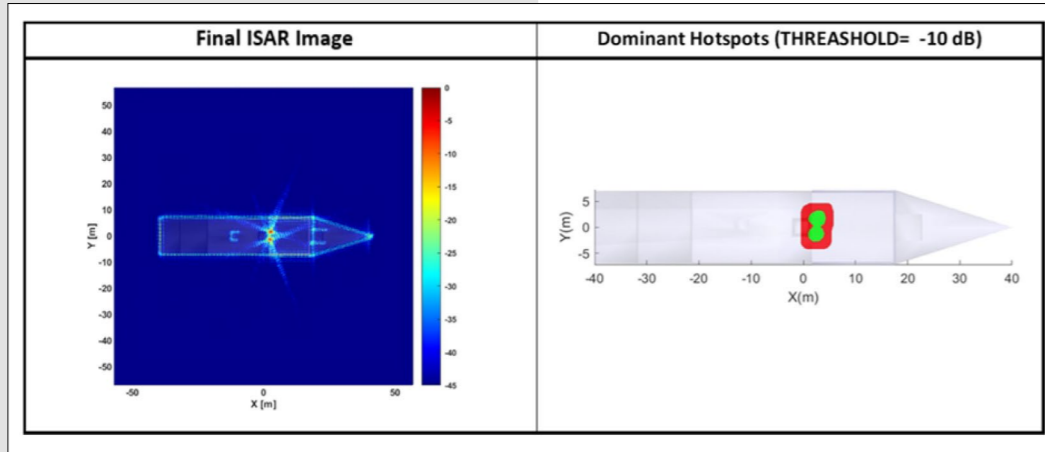
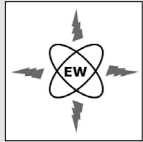
Smart Electronic PROtection Me

The project purpose is to analyze the possibility of developing a new generation of intelligent electronic warfare means for platform self-protection and to study the development and testing of components necessary for EW platform protection. In particular, the goal of the consortium members is to develop and analyze the possibilities of deploying future solutions of intelligent electronic protection measures on the modern (future-oriented) electronic warfare. The work includes analyses, design and experiments. The demonstrators are expected to be developed and used in field trials to demonstrate technology/ technological capabilities, readiness and advancement. CNIT contribution:

- The survivability of a complex platform in an operational environment increases with the reduction of its radar cross section. A platform with a smart 'skin' or coating, able to instantaneously modify the RCS, would be a very clever solution especially in conjunction with other EW protection systems for example chaffs or active chaffs, deployed at the same time.
- The main hotspots contributing to the RCS value can be treated separately, in order to obtain the variation of the RCS. An important issue to be deeply analysed is the arrival direction of the menace. Indeed, in such directions a subset of hotspots can be identified that contribute to RCS value, therefore mainly treating the necessary parts, with a clear advantage in terms of complexity reduction and higher technical feasibility.
- The use of active and passive metasurfaces has been proposed to improve the defense of a naval unit.

- The use of active and passive metasurfaces have been proposed to improve the defense of a naval unit.
- Various solutions have been studied and designed for the construction of passive and active metasurfaces.
- The dynamic RCS measurement system was defined in the basic logic blocks and the related technical specifications have been defined.

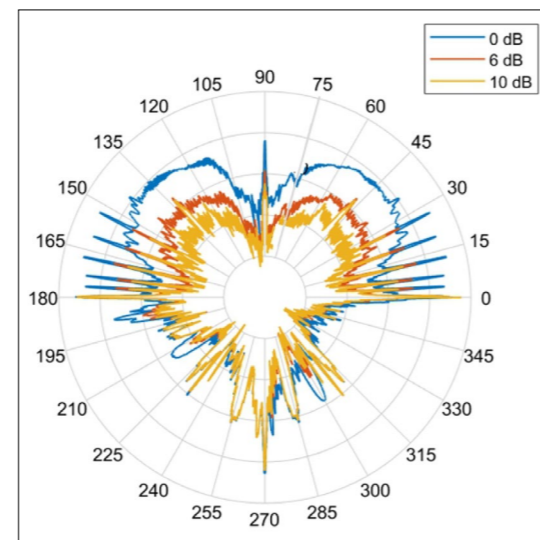
Technical Sheet	
Funding institution:	EDA
Project partners	Warsaw University of Technology, Fraunhofer Institute for High Frequency Physics and Radar Technique, Leading Innovation and Knowledge for Society (LINKS Foundation), EM Techn. Company FreeSpace Srl
Project duration	April 2021 - October 2024
Involved countries	Italy, Germany, Poland



(a) Dominant hotspot localization of a naval model



(b) Measurement of the reflection coefficient of a passive metasurface panel



(c) Simulated RCS reduction of a naval unit in the azimuthal plane due to the use of a metasurface applied on the main hotspots of the target. The legend reads 0 dB for no attenuation and 6 or 10 dB of attenuation when the metasurface is applied

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