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EDA HIGH POWER ELECTROMAGNETIC MUNITIONS (HPEM) STUDY

The aim of the study "High Power Electromagnetic Munitions – HPEM" is a comprehensive documentation and deep analysis of innovative HPEM-munition concepts and their potential effect on the future battlefield, since military equipment relies more and more on advanced electronics, increasing the vulnerability of military forces against HPEM threats. The tactical use of HPEM weapons, such as guided munitions, missiles or even mortars, might thus be a significant technological advantage and potential game changer in conventional warfare.

The study is conducted by the two Fraunhofer Institutes INT and EMI; to ensure its relevance and that the study is at the cutting edge, European HPEM experts from all kinds of stakeholder groups (Ministries of Defence, defence procurement agencies and defence technical centres, the armed forces, Research & Technology Organisations and academia as well as defence industry) are actively involved through project workshops.

This is a study funded from EDA Operational Budget. OB-Studies contracted by EDA are preparatory activities to catalyse pMS investments in related defence R&T.

Consortia/Organization

Fraunhofer

Objectives

>> The HPEM study is carried out in 18 months, from end of April 2020 until end of October 2021 and Its main objectives are:The elaboration and documentation of a systematic overview of the relevant technologies and components contributing to HPEM effects;

>> The development of a generic overview of the potential HPEM targets and their assessed vulnerability to HPEM;

>> The identification of the most promising operational opportunities for the (tactical) use of HPEM munitions, by specifying and evaluating relevant munitions concepts and likely operational scenarios;

>> The collection of the most relevant user requirements for the (tactical) use and future development of HPEM munitions;

>>> The derivation of conclusions from the findings of the study and proposing of recommendations for follow-on research activities, including associated roadmaps.



Work Strands

The HPEM study is conducted by desk research mainly, and complemented by two European expert workshops. The first workshop took place on 01-02 Oct 2021 and the. second workshop is planned for 19-21 May 2021.

Task 1: HPEM technology building blocks

- Task 2: Targets & vulnerability assessments
- Task 3: Concepts of HPEM munitions & scenarios
- Task 4: Identification of HPEM munitions requirements
- Task 5: Conclusions & Recommendations

Way Ahead

The ultimate goal of the project is to recommend follow-on research activities to EDA and its Member States, to address identified technological challenges and close technological gaps allowing for the deployment of HPEM munitions for the battlefield of tomorrow. Thereby, capability developers will be informed about the operational opportunities HPEM munitions could provide.

Link to TBBs, other CapTechs:

- OSRA TBB 19 Improved warhead and penetrator design;
- OSRA TBB 44 High voltage SiC devices and related energy storage for
- pulsed power applications;
- OSRA TBB 96 Platform Survivability and Operability in challenging conditions;
- OSRA TBB 99 Identifying and Countering Threats, High-Energy Weapons Integration.

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