

# SUCCESS: SME from Latvia is involved in an ambitious space project funded by Horizon Europe programme



The DEEP PPU consortium of 6 organisations, including the Latvian WIT Berry, are to develop a disruptive electrical propulsion power processing unit for gridded ion thrusters for geostationary orbit (GEO), medium Earth orbit (MEO) and deep space missions.

Demand for electric propulsion is growing for space applications and the proposed technological solutions are evolving fast. Gridded Ion Technology allows more efficient management of Xe, providing a more sustainable alternative to Hall Effect Thruster Technology. The current market and platform accommodation studies show that compactness and cost reduction of existing Gridded Ion Thruster solutions are mandatory to provide a credible alternative in size and costs to Hall-effect thruster technology.

To maintain Europe's position and autonomy in Gridded Ion technology, and to increase our market share, the DEEP PPU consortium comprising of 6 organizations proposes to develop a disruptive electrical propulsion power processing unit for gridded ion thrusters for GEO, MEO and deep space missions.

This technology will be developed within the project DEEP PPU, funded under the Horizon Europe programme, topic Technologies and generic building blocks for Electrical Propulsion. An SME from Latvia - SIA WIT Berry is involved in this project and will fulfil the role of communication and dissemination partner. Participation in these types of projects allows WIT Berry to expand their network and gain new knowledge and experience in the field of communication and dissemination as well as in the specific area of space technologies.

The developed solution will target a large mass and volume reduction (30%) as well as a cost reduction of approximately 50%. DEEP PPU will also simplify traditional Gridded Ion architecture by incorporating functions which are nowadays implemented with additional units. This project complements the PPU evolution started with the ongoing Horizon 2020 project GIESEPP-MP, where a first step has been taken to develop the power supply for the screen grid and integrate it within the current PPU design for Ariane Group RIT-2X thruster.

The targeted Power Processor Unit for gridded ion thruster will be achieved through the use of ground-breaking technologies in space, namely Gallium Nitride semiconductors and Commercial Off-The-Shelf components, together with the implementation of custom design of power magnetics, the integration of the radio frequency generation (RFG) function and the synergies with previous developments in the frame of GIESEPP (Gridded Ion Engine Standardized Electric Propulsion Platforms).

Integration of the radio frequency generation function into the Power Processing Unit, simplifying the Electric Propulsion System and lowering the overall costs, will allow to ease gridded ion thruster (GIT) system implementation in existing and future platforms, making the GIT solution much more attractive to satellite integrators.

The Horizon Europe project's DEEP PPU has successfully started with an online kick-off meeting beginning in November 2022. The consortium is led by Airbus Crisa (Spain), which will closely collaborate with Polytechnic University of Madrid (Spain), Airbus DS (France), AXON CABLE (France), Fraza (Slovenia) and WIT Berry (Latvia).

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