

ThrustMe awarded contract from the European Space Agency to demonstrate the world's first iodine electric propulsion system in space



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Paris, 30th September 2020 - After significant support from the French state and the European Commission, ThrustMe announces their first contract with the European Space Agency (ESA) ARTES C&G programme in support of the development of a breakthrough technology to solve emerging challenges in space associated with the rise of satellite constellations.

The space industry is growing rapidly, and an exponential increase in the number of satellites launched into space is expected in the coming decade. The industry is facing new challenges, particularly with the increase in satellite constellations, and in-space propulsion is becoming a critical subsystem to ensure the environmental sustainability of space, and enable economic sustainability for the industry.

Existing space propulsion systems are not suitable for the next generation of satellites. Chemical propulsion solutions require too much propellant, while traditional electric propulsion systems need too much power, and most are too complex for streamlined production and integration. *“But the biggest problem of all is the propellant. For ride share missions it is just not safe enough to use pressurized gas propellants, which in addition, can lead to very high direct and indirect costs in the overall use of propulsion, particularly with regards to testing, assembly, and launch integration”*, explains Ane Aanesland, CEO of ThrustMe.

ThrustMe has demonstrated groundbreaking achievements in developing electric propulsion systems with unmatched performance for the new space paradigm. *“We have leveraged the technology of our existing cold gas system, the I2T5, which was launched last year, and which was the first ever iodine propulsion system tested in space. Our new iodine electric propulsion system, the NPT30, uses plasma generation and beam neutralization technologies that have been under development at ThrustMe since 2017, and have already reached a high-level of maturity through extensive testing and qualification campaigns”* says Dmytro Rafalskyi, CTO of ThrustMe.

While most electric propulsion systems currently use xenon propellant, it has become evident that this is not a viable long term solution. If we keep using xenon, the total space industry demand alone will exceed twice the global capacity of xenon production in the next 5-10 years. This is one reason why SpaceX, for example, are using krypton for their Starlink satellites. *“But Krypton is just a quick fix before better solutions come along”*, says Ane Aanesland.

Iodine has been considered a promising alternative propellant for over a decade, and is identified as a key strategic technology for space, due to its higher density, easier storage, and lower costs – this while still giving similar, or even better, thruster performance than xenon. Both NASA and ESA have initiated significant R&D programs for the purpose of developing technologies compatible with iodine thrusters, but so far, only ThrustMe has demonstrated the building blocks of this technology in space. *“We have been impressed by ThrustMe’s technical solution for using iodine for space propulsion. We see the value to the satcom industry and are pleased to support ThrustMe in this upcoming demonstration through*

the ARTES C&G programme.”, says Barnaby Osborne, Small Satellite Technology Coordinator, ESA Telecommunications and Integrated Applications.

In 2019, the French Space Agency, CNES, supported the development of ThrustMe’s iodine technologies via a project as part of their R&T program.

“We have very strong confidence in both the team and the technology being developed at ThrustMe, and we are eager to see the first results in space”, says Thomas Lienart, Head of the Propulsion, Pyrotechnics and Aerothermodynamics office at CNES.

About ThrustMe

ThrustMe is an in-space propulsion company based in the Paris-region, France, which spun out from a joint research lab of Ecole Polytechnique and the French National Centre for Scientific Research (CNRS). Founded by Dr Ane Aanesland and Dr Dmytro Rafalskyi in 2017, ThrustMe was born because of the rise of small satellite constellations and their need for adequate in-orbit propulsion solutions to enable economic and environmental sustainability for the industry, and of space. ThrustMe has a portfolio of propulsion solutions for a wide range of satellites and space missions. In 2019 they made history with the demonstration of the world’s first iodine propelled spacecraft together with Spacety, one of the first commercial aerospace companies in China.

About the NPT30

Named after the farthest known planet in our Solar System, Neptune (in short NP), the Thruster (T) can operate with a minimum power of 30 W (30). The NPT30 is a smart, turnkey, electric propulsion system using solid iodine propellant, and designed for the next generation of cost-capped and streamlined satellites sent into space on a ride-share basis. It provides the very high total impulse that these satellites need for deployment, significant orbit changes, collision avoidance maneuvers, and finally, end-of-life removal to reduce space debris and free up important operational orbits.

About the ARTES program

The Directorate of Telecommunications and Integrated Applications (TIA) is the part of ESA shaping and supporting innovation for the satcom business. This is achieved through ESA’s programme of Advanced Research in Telecommunications Systems (ARTES). By stimulating R&D and forging partnerships, TIA and the ARTES 4.0 programme enable European and Canadian industry to develop innovative products, services, applications and even whole systems that give them a leading edge in a highly competitive global market.

