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HEATER-FREE, LOWEST POWER CONSUMPTION & HIGHEST VOLUME AVAILABILITY
GAS-GENERATOR PROPULSION SYSTEM – MOST SUITABLE FOR MICRO TO NANO
SATELLITES

Abstract

Patchedconics, LLC. of Japan successfully delivered a gas generator propulsion system to a Japanese venture satellite company in 2019. Now it presents the new product featuring Heater-free, Lowest Power Consumption & Highest Volume Availability Gas-Generator Propulsion System. It is the most suitable low-cost solution for Micro to Nano Satellites, especially when considering power and size limitations for this class of space mission.

Patchedconics has come up with key intellectual assets in such vaporization propulsion system, which continuously vaporizes a liquidized gas in space. Vaporizing systems are not new technology. However, Patchedconics way is different, and allows gas generation without heater, through its proprietary isenthalpic pressure reducer.

Another feature of this propulsion system is the utilization of energy harvesting technique, which takes advantage of the heat from the spacecraft structure in the process of gas generation. Those technologies enable the propulsion system to get rid of high-power consumption. The only remaining power consuming components being the electromagnetic valves and PCBs.

Another key technology developed by Patchedconics and featured on this new system is in terms of the volume efficiency with no dead volume. Most of the system is built buried in the propellant storage. This is one of the intellectual properties that Patchedconics possesses and enables constructing surprisingly concise, high density system with lowered cost.

Patchedconics also presents now its orbit control strategy, developed for maximizing lifetime of satellites on Low Earth Orbit.