

Capital and Strategic Partnership with Phase Four Inc. in the US.

Marubeni Corporation (hereinafter, “Marubeni”) and Phase Four Inc. (hereinafter, “Phase Four”), a company that makes radio frequency (RF) plasma engines for in-space propulsion, entered into a capital and strategic partnership and concluded an exclusive representative agreement for the company’s Maxwell line of satellite engines in Japan, and in other strategic markets around the world.

Phase Four is a startup company, established in 2015 in Los Angeles, that develops and provides high-performance electric thrusters for satellites. Satellite operators must maintain, station and avoid potential collisions for the duration of each satellite mission and then safely de-orbit the spacecraft at the end of its mission; thrusters are essential in accomplishing these space missions. Thrusters account for about 10-20% of all satellite production expenses. The Maxwell line of satellite engines was developed by Phase Four with recent advancements in RF power electronics technology (*1), which enables a more simplified structure, shorter lead time and high reliability and performance. Also, Phase Four was able to cut 75%+ of manufacturing cost and time compared to ordinary engines. Furthermore, satellite operators using Maxwell thrusters will be able to save on launching satellites by substituting existing thrusters for the smaller and lighter Maxwell.

According to Euroconsulting’s report, 7,000 small satellites are expected to be launched by 2027. Deloitte Tohmatsu Consulting predicts that the small satellite thruster market will grow from US\$ 190 million in 2020 to US\$ 350 million in 2025. Phase Four already established mass-production readiness to produce 10 units per month, and will play a great role in satellite megaconstellations (*2) to meet the growing demand for small satellites. At the same time, Phase Four will accelerate the development of more reasonable and efficient next-generation engines by using water and air as fuel.

Marubeni aims to provide various solutions which support satellite operators in launching and operating small satellites. In 2020, a satellite that is equipped with Phase Four’s Maxwell thrusters is scheduled to launch, and additional deliveries are scheduled for the future. Marubeni and Phase Four, by provision of revolutionary RF engines to customers all over the world, endeavor to promote new space missions, including remote sensing, high speed communications and space exploration, and also strive to make a substantial contribution to the development of space industries worldwide.

(*1) RF power electronics technology: The technology that uses Radio Frequency to heat propellant into ionized plasma, creating thrust.

(*2) megaconstellations: A group of hundreds of satellites, working together as a system

< Profile of Phase Four Inc. >

Company Name : Phase Four Inc.
Headquarter : El Segundo, California
Established : 2015
Representative : Beau Jarvis
Business : Phase Four develops and manufactures RF thruster for small satellites.
Web site : <http://phasefour.io/>

■ Maxwell on the small satellite

