High power solar electric propulsion

What is the solar electric propulsion project?
The SEP project is a part of the Technology Demonstration Missions program within NASA's Space Technology Mission Directorate. NASA Glenn leads the Solar Electric Propulsion project for the agency. Meet Dr. Peter Peterson, an electric propulsion engineer at NASA's Glenn Research Center.

Why is NASA pursuing high power solar electric propulsion?
NASA is committed to the development and application of high power solar electric propulsion as a key element of future human exploration plans and returning humans to the Lunar surface.

Can high-power solar electric propulsion become a flight-qualified system?
This prototype demonstrated the technology readiness needed for industry to continue the development of high-power solar electric propulsion into a flight-qualified system. A prototype 13-kilowatt Hall thruster is tested at NASA's Glenn Research Center in Cleveland.

What is NASA's solar electric propulsion (SEP) project?
NASA's Solar Electric Propulsion (SEP) project is developing critical technologies to enable government and commercial customers to extend the length and capabilities of ambitious new exploration and science missions.

Does NASA have a solar electric propulsion mission?
Since 2012 the NASA Space Technology Mission Directorate has had a coordinated plan to mature the requisite solar array and electric propulsion technology needed to implement a 30 to 50 kilowatt solar electric propulsion technology demonstration mission.

Can solar electric propulsion improve the affordability of in-Space Transportation?
NASAhas sought to utilize high-power solar electric propulsion as means of improving the affordability of in-space transportation for almost 50 years.

SEP HERMeS TDU Evolution to Advanced Electric Propulsion System (AEPS) o13-kW class Hall thruster ion propulsion string developed for 50-kW SEP vehicles. -Power: 12.5 ...

Engineers from NASA and Aerojet Rocketdyne have begun the multiyear qualification testing of the most powerful solar electric propulsion (SEP) thrusters, which are expected to radically...

-Design, preparation, and execution of the high power, long-duration tests -Facilities capable of long duration testing of high power systems are a challenge. -May require ...

Concept Design of High Power Solar Electric Propulsion Vehicles for Human Exploration NASA/TM--2011-217281 December 2011 IAC-11-D2.3.5. NASA STI Program . . . ...

Therefore, the #1 enabling technology for these small spacecraft missions is an electric propulsion system that can execute these high-delta-v maneuvers. The propulsion system must operate using low power (sub ...

With SEP, the spacecraft collects energy from the Sun via solar arrays to generate thrust, eliminating many of the needs and limitations of storing propellants onboard. That solar energy is then converted to electric power and ...

eginning of life propulsion power of over 60-kW [4]. High-power solar electric propulsion is one of the key technologies that has been prioritized because of its significant ...

High-power electric propulsion is critical for future crewed transportation systems that will be key in helping NASA explore more of deep space beyond the Moon, the engineers say. ... NASA"s high-power solar ...

The High Power Solar Electric Propulsion (HP-SEP) Orbital Maneuvering Vehicle (OMV) provides transfer capabilities for both large and small payload in excess of what is ...

Historically, the lack of sufficiently capable in-space transportation has been one of the key impediments to space resource exploitation [2] ophy [2] concluded that in-space ...

Solar Electric Propulsion Concepts for Human Space Exploration Carolyn R. Mercer, Melissa L. McGuire, Steven R. Oleson, and Michael J. Barrett ... (LEO) could be cost ...

Solar electric propulsion (SEP) has been proposed by NASA"s Human Exploration Framework Team (HEFT) as an option to achieve human exploration missions to Near Earth ...

term and future architectures and science missions.1 A high-power Solar Electric Propulsion (SEP) element is integral to NASA"s Artemis lunar exploration program, illustrated ...

NASA has launched the high-power Solar Electric Propulsion Program (SEP) since 2012, and its Glenn Research Center (GRC) and Jet Propulsion Laboratory (JPL) are ...

is baselined to include two 13-kW Advanced Electric Propulsion Systems (AEPS) and four 6-kW Hall thrusters, currently under development by Maxar, for a total beginning of ...

o Robust operation at high voltage near thruster plasma. High Power Electronic Parts o High voltage, high power, low losses, radiation tolerant. Power Processing Units o High ...

The Power and Propulsion Element (PPE) for Gateway will demonstrate advanced, high-power solar electric propulsion around the Moon. It is a 60kW-class spacecraft, 50 of which can be dedicated to propulsion, ...

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Use of high-power solar arrays, at power levels ranging from ~500 KW to several megawatts, has been proposed as the power source for solar-electric propulsion (SEP) ...

NASA has sought to utilize high-power solar electric propulsion as means of improving the affordability of in-space transportation for almost 50 years. Early efforts focused on 25 to 50 ...

NASA is continuing to develop and qualify a state of the art 13 kW-class Advanced Electric Propulsion System (AEPS) for NASA exploration missions through a contract with Aerojet ...

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