

MULTI-MISSION RADIOISOTOPE THERMOELECTRIC GENERATOR

WHAT IS IT?

A Multi-Mission Radioisotope Thermoelectric Generator (MMRTG) is a type of nuclear power system used in space exploration.

It is designed to provide consistent and reliable power to spacecraft over long durations, even in environments where sunlight is limited or unavailable.

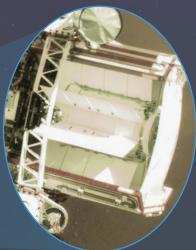
MMRTGs are robust and versatile, making them suitable for a variety of missions, including those to Mars, the outer planets and other challenging environments.

MMRTG FUN FACTS

Powering high-profile missions like the **Mars Curiosity Rover** and the **Mars 2020 Perseverance Rover**



Credit: NASA



Contains **10.6** pounds of plutonium dioxide fuel

Provides **110** watts of power at mission start

A LOOK INTO THE FUTURE

NASA's **Dragonfly** mission to Saturn's moon, Titan, in 2028 will rely on an MMRTG.



Credit: NASA/Johns Hopkins APL

HOW DOES IT WORK?

MMRTGs generate power by harnessing the heat released from the natural radioactive decay of plutonium-238.

The heat produced is converted into electricity using thermoelectric couples, devices that generate an electric current when exposed to a temperature gradient.

This setup allows the MMRTG to deliver continuous electrical power to the spacecraft's instruments, communication systems and other essential functions, while also providing thermal energy to keep the spacecraft's components warm in the cold environment of space.

The reliable and long-lasting power supply **enables missions to venture far from the Sun**, reach shadowed craters on the Moon or explore the outer reaches of our solar system

