European Radioisotope Power Systems Program: Recent Developments

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Radioisotope power systems have transformed our ability to explore the solar system. Radioisotope power systems (RPS) have been in existence for almost seven decades. Most missions have utilized 238Pu as the radioisotope of choice to generate electrical power and to produce heat for the operation and thermal management of space craft systems. In Europe, for the past decade, 241Am has been selected for radioisotope power system (RPS) research programs. The ESA RPS program consists of the development of both radioisotope thermoelectric generators (RTG) and heater units (RHU). The former is based on a 200 W thermal, 10 W electric architecture that is scalable to 50 W by using each 10 W RTG system as the module or building block. The specific power is roughly 1 W/kg. The RHU is a 3 W thermal system with a specific thermal power of 15 W/kg. This paper provides an update of how the European RPS technology solutions, in the form of RHUs and RTGs, are developing and evolving by providing a detailed update of some of the most recent results from the program.