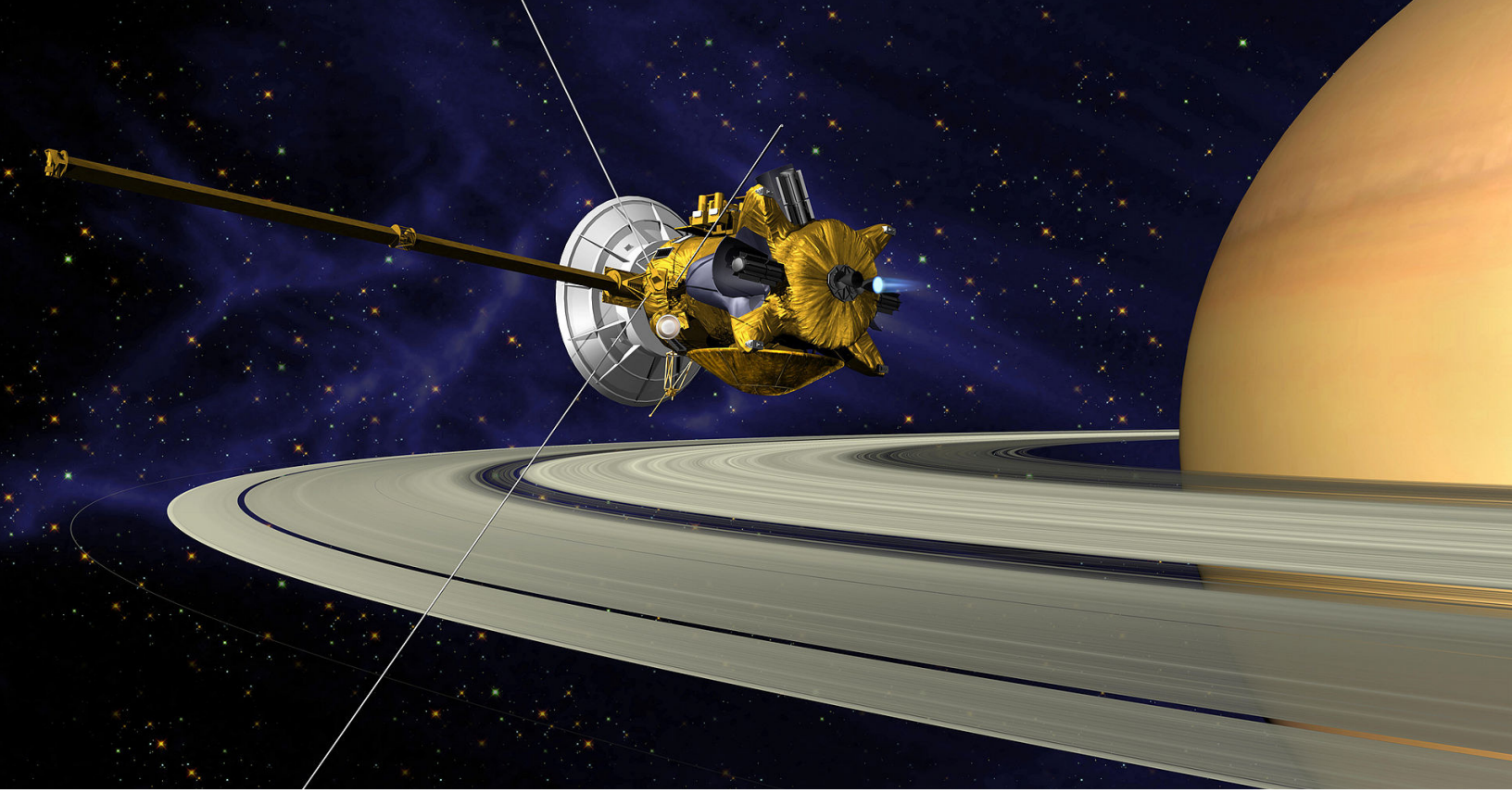

OPG looks to the stars

OPG's Darlington Nuclear Generating Station (GS) could soon help fuel NASA space probes exploring the final frontier.

Working with its venture arm, Canadian Nuclear Partners, the company is seeking approvals to produce and harvest Plutonium-238 (Pu-238), an isotope of Plutonium, at Darlington Nuclear's reactors beginning as early as 2020. The radioactive isotope, which can only be produced in a nuclear reactor, is used to power spacecraft involved in deep space exploration.

A similar process at Pickering Nuclear GS creates Cobalt-60, a life-saving radioactive isotope that is used in the sterilization of surgical and medical supplies as well as packaged food.

"This is a very exciting project," said Jeff Lyash, OPG President and CEO. "No pursuit pushes the boundaries of our scientific and technical limits like space travel. We are proud to have Ontario play a part, however small, in this most noble of human endeavours."

All deep space exploration projects are powered by the isotope, including NASA's Voyager 1 and 2, which were launched in 1977. Voyager 1 is now roaming somewhere in interstellar space, having travelled farther than anyone or anything in history. The isotope has also powered the Curiosity Rover currently on Mars and supplies of Pu-238 will be used to fuel the Mars 2020 Rover, set to launch in three years.

Acting as a nuclear battery, Pu-238 emits steady heat due to its natural radioactive decay. The isotope isn't suitable for use in a nuclear reactor and can't be used to make a nuclear weapon. But the heat generated by the isotope decreases slowly in a highly predictable manner, making it suitable to be harnessed into electric energy onboard a space ship. In addition, the heat keeps scientific instruments warm enough to function in space.

The energy provided by Pu-238 is also more practical for deep space exploration, as these craft usually travel far distances from the sun, making solar power less feasible.

If the project is approved, OPG's efforts could help bolster the global supply of Pu-238, which has been dwindling in recent years. As of March 2015, a total of 35 kilograms of Pu-238 was available for use in NASA spacecraft, but only one kg was in good enough condition to meet NASA specifications for power delivery. It takes about 4.5 kg to power one deep space probe.

"This project is just another example of the broad economic and societal benefits of nuclear power," Lyash said. "It provides clean, low-cost power, it helps in the medical world and if successful can be a part of the next generation of space travel."