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VASIMR™ VX-200 superconducting magnet delivered to Houston facility and passes all acceptance tests.

[Houston, TX. For immediate release] – The VX-200 low temperature superconducting magnet has been delivered to Ad Astra's Houston facility by its manufacturer, Scientific Magnetics Ltd. of Oxford, England and has successfully passed a battery of acceptance tests conducted by a combined team from Scientific Magnetics and Ad Astra. The superconductor is an essential component of the VASIMR™ engine and is responsible for generating the strong magnetic field required to fully heat and accelerate the plasma in the engine.

Short for Variable Specific Impulse Magnetoplasma Rocket, VASIMR™ is a new high-power plasma-based space propulsion technology, initially studied by NASA and now being developed privately by Ad Astra. A VASIMR™ engine could maneuver payloads in space far more efficiently and with much less propellant than today's chemical rockets. Ultimately, VASIMR™ engines could also greatly shorten robotic and human transit times for missions to Mars and beyond.

The new magnet arrived at Ad Astra's Houston facility on February 10 and was unpacked by Scientific Magnetics personnel with assistance of the Ad Astra technical team. The system subsequently underwent two complete one-week thermal and magnetic cycles from room temperature to cryogenic conditions inside its own vacuum jacket. At its nominal operating temperature of 5 ^{o}K (-268 ^{o}C), the magnet was energized to its full field capability of 2 tesla (maximum on axis). The field was measured and compared with predicted values. The difference between measurement and prediction was found to be well within acceptable margins (less than 0.3%).

VX-200 Superconducting magnet arrival and installation at Ad Astra's Houston facility

While these tests were ongoing, the VX-200i, an "interim" version of the VX-200 (hence the appended "i" in VX-200i), operating with a less powerful water-cooled magnet continued as scheduled, exercising the new control algorithms enabling the combined operation of its first and second plasma stages. The VX-200i was developed in-house by Ad Astra to minimize potential impacts to the VX-200 schedule brought about by the delayed delivery of the superconducting module by Scientific Magnetics. The in-house development of an interim magnet with the same structural "footprint" as the superconductor, allowed testing of other VX-200 subsystems to proceed.

Based upon the superconductor test results, the new magnet has been accepted by Ad Astra and is now ready to replace the interim magnet and allow the VX-200 to operate at its design capability. Integration of the new magnet is

scheduled to begin in mid–March following completion of the last few programmed tests on the VX-200i.

The successful achievement of this milestone is the last step in the full integration of the VASIMR™ VX-200 prototype and clears the way for full power tests to proceed through mid-May. The completion of these tests will yield the required data set for the design of the VF-200 flight engine.

VX-200 Superconducting magnet is installed in test frame and undergoes magnetic field measurements.


Dr. Jared Squire (left), Ad Astra's Director of Research and Dr. Steve Milward, Scientific Magnetics Research Scientist discuss the operation of the superconductor power electronics.

THE TECHNOLOGY

The VASIMR™ engine works with plasma, a very hot gas, at temperatures close to the interior of the Sun. Plasmas are electrically charged fluids that can be heated to extreme temperatures by radio waves and controlled and guided by strong magnetic fields. The magnetic field also insulates any nearby structure, so temperatures well beyond the melting point of materials can be achieved and the resulting plasma can be harnessed to produce propulsion. In rocket propulsion, the higher the temperature of the exhaust gases, the higher their velocity and hence the higher their fuel efficiency. Plasma rockets feature exhaust velocities far above those achievable by their chemical cousins, so their fuel consumption is extremely low and their fuel-related costs substantially reduced.

ABOUT AD ASTRA

Ad Astra Rocket Company is a privately-owned corporation established January 14, 2005 to commercialize the technology of the VASIMR™ engine, a plasma propulsion system originally studied by NASA with potential to support an emerging in-space transportation market. The company has its main laboratory and corporate headquarters at 141 W. Bay Area Boulevard in Webster, Texas, USA. Ad Astra also owns and operates Ad Astra Rocket Company, Costa Rica, a supporting research and development subsidiary in Guanacaste, Costa Rica.