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Demonstrator 3 linear aerospike ready to start tests

The ground test stand and aerospike engine for the Demonstrator 3 rocket are ready for tests at ARCA Space Corporation. The effort was completed in 60 days since the start of fabrication.

The system will perform a series of ground tests that will ultimately qualify the engine for flight. After the ground tests, the same engine will be integrated into the Demonstrator 3 rocket that will perform a suborbital space flight up to an altitude of 120 km above the New Mexico desert. It will be the first ever flight of a linear aerospike engine and the first ever space flight of an aerospike engine.

The engine, with a sea level thrust of 4.2 tons, uses hydrogen peroxide 70% as monopropellant. Despite low energy propellant, the rocket is able to reach space due to the use of an extremely lightweight tank and high efficiency aerospike engine.



An aerospike engine exhaust jet ideally expands from sea level up to space, ensuring superior efficiency at all flight levels. A "classic" bell-shaped nozzle works efficiently at only one flight level, usually at sea level. After that point, the engine isn't properly taking advantage of the atmospheric pressure decrease as the gases are contained by the nozzle. An aerospike nozzle allows virtually unlimited expansion ratios, thus significantly increasing the specific impulse of the engine at high altitude. The extremely lightweight composite tanks for hydrogen peroxide and kerosene have been extensively tested at ARCA.

The results of the ground and test flight will be used by ARCA for the Haas 2CA Single Stage to Orbit rocket that is scheduled to be launched in 2018 from NASA's Wallops Flight Facility.



The Haas 2CA will operate on the nano/micro satellites market, which is based on a SpaceWorks forecast indicating 3,000 satellites between 1- 50kg will require a launch between 2016-2022. The total market value is estimated to be \$5.3 billion in the next decade. At \$1,000,000/launch, the Haas 2CA perfectly fits into this market seeking economical solutions. ARCA's efforts are focused on the creation of the world's most cost-effective orbital launchers.



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About ARCA

ARCA Space is an aerospace corporation from Las Cruces, New Mexico, whose main objective is to develop the most cost-effective and responsive space launchers for commercial access and space exploration purposes.

ARCA Space achievements:

2004 - During the \$10 million, Ansari X Prize Competition, ARCA launched the first rocket, Demonstrator 2B.

2006 - ARCA built the world's largest solar balloon that lifted the crew capsule of Stabilo, a manned suborbital vehicle created after the end of Ansari X Prize Competition, into the stratosphere.

2007 - The Stabilo program continued, this time with an even larger solar balloon lifting the complete Stabilo vehicle into the stratosphere.

2008 - ARCA joined the \$30 million Google Lunar X Prize Competition.

2010 - Helen rocket was launched at 120,000 ft, representing the first powered flight in the Google Lunar X Prize Competition. The rocket was transported into the stratosphere with the help of a helium balloon.

2012 - Haas rocket series was introduced, consisting of Haas 2B and 2C.

2013 - The European Space Agency (ESA) awarded ARCA with a contract to test the parachutes system for the ExoMars spacecraft that would be launched to Mars in 2016.

2014 - AirStrato "The most amazing air robot in the world" UAV performed the first flights.

2015 - ARCA presented the ArcaBoard, the first truly personal flying machine commercially available.

To learn more about ARCA Space and specifications of the Haas 2CA, please visit:

<http://www.arcaspace.com>

<https://www.facebook.com/arcaspace>

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