

IAF SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS SYMPOSIUM (D2)
Small Launchers: Concepts and Operations (7)

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PLD SPACE, "THE EUROPEAN COMMERCIAL LAUNCH SERVICE PROVIDER DEDICATED TO
SMALL PAYLOADS AND SMALL SATELLITES**Abstract**

PLD Space is a European company with the goal to provide easy and frequent access to space. The company aims to provide launch services for suborbital applications such as scientific research or technology development as well as orbital launches for small satellites. For this, PLD Space is developing two dedicated, reusable launch vehicles named MIURA 1 and MIURA 5.

MIURA 1 is conceived as a one-staged suborbital sounding rocket using a liquid propulsion system designed and built by PLD Space as well. MIURA 5 – using five units of the engine propelling MIURA 1 – is a two staged launch vehicle for small satellites.

The maiden flight of MIURA 1 will be launched from the historical Spanish launch site "El Arenosillo" in the south-west of Spain. From there the rocket will fly into south-westerly direction and after a flight time of about 12.5 minutes splash down about 40 km off the coast in the Gulf of Cadiz in the Atlantic Ocean.

In this first test flight, MIURA 1 will already carry several payloads. Half of the total available payload capacity will be used by PLD Space. A variety of sensors will be integrated into the rocket with the intention to quantify the flight environment. These sensors will for example measure flight loads and temperatures in the payload compartments, pressure profiles along the rocket to qualify the aerodynamic model and many more.

Recovery System Drop Tests Two drop tests have been performed successfully in order to verify the parachute design and recovery operations. The first drop test was performed in Eloy, Arizona in February 2019. A mass dummy was equipped with the MIURA 1 parachute system and dropped from an airplane. The test successfully verified the proper functioning of the drogue and main parachute, but also the design of the parachute canister, proper hatch ejection and correct functioning of parachute deployment triggers.

A second drop test was performed in April 2019 from INTAs the "El Arenosillo" launch site in Spain, in the framework of ESAs FLPP Programme. A mock-up of the first stage of the MIURA 5 was dropped from a Chinook-CH47 helicopter into the Atlantic Ocean.

The flight version of the TEPREL engine is currently tested at the propulsion test facilities in Teruel. An extensive test campaign is performed during which the burn time of the engine is gradually increased between tests.

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