µHoubolt Test Protocol

[3RD STATIC FIRE]

[28.05.2022]

LEAD	MISSION CONTROL	PAD	RANGE SAFETY	FIREFIGHTER
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TESTTYPE	Third static fire of µHoubolt
TESTGOAL	Successful test of new combustion chamber, successful internal control operation
CHANGES	New combustion chamber, new batch of igniters, new firmware code for internal operation
ADDITIONAL INFO	-

Fails and Learnings

1. For simplicity, a debugging and flash cable was connected to the ECU inside the rocket. Due to a large fireball after burnout, it was destroyed, and the ECU stalled until a reset.

2. The combustion chamber failed at the throat but held up at the walls.

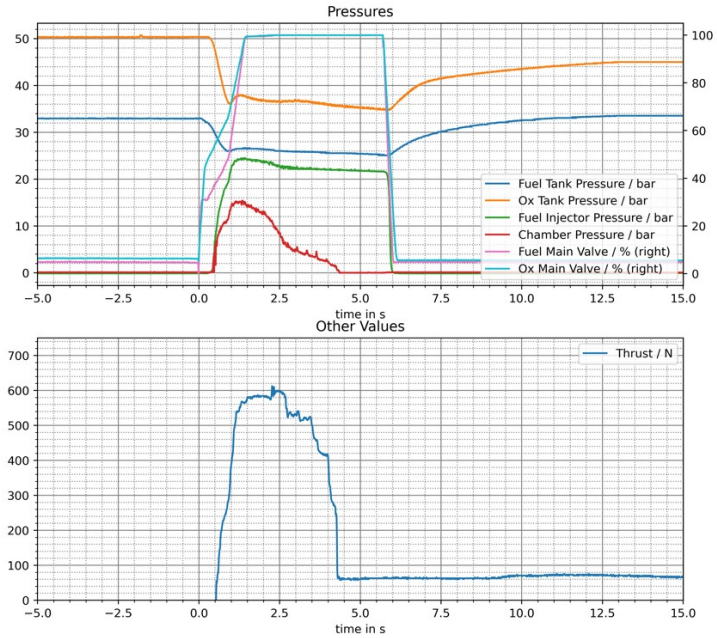
Test summary

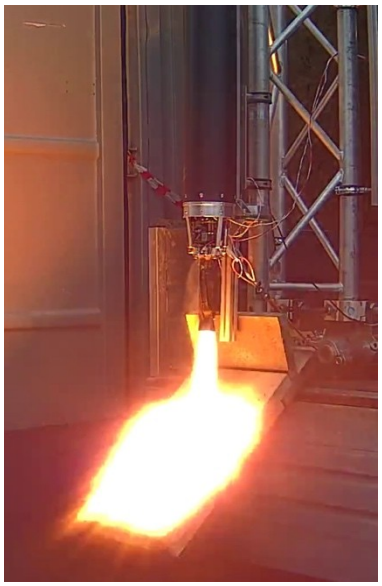
For the third test we used a similar ablative combustion chamber made of carbon fibre and epoxy resin to exclude any manufacturing flaws of the chamber used for the first static fire.

Tanking went flawlessly. Internal control operation was successful. Engine start-up was nominal. After approximately two seconds the combustion chamber broke at the throat which led to a rapid loss of pressure inside the chamber. Interestingly the produced thrust stayed above 400N even with the missing throat.

Due to the new internal control sequence, the main valve opening curves where modified to achieve a softer engine start-up which worked perfectly.

Diagrams and Pictures





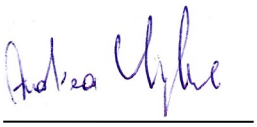
Signature 1

Georg Mikula

Signature 2

Markus Pinter

Signature 3



Andreas Ungersböck