

FUTURE SPACE TRANSPORTATION FLPP SPRING SESSION 2026



THRUST!

COMPANY INFORMATION

Company: The Exploration Company – Prime & engine designer

Location: Germany, France, Italy, Luxembourg, USA & UAE

Founded: 2021

Employees: ~400

Mission: We build a globally cooperative future in space

Consortium:

DLR

Pre-burner designer & test provider

MTA

Bi-material manufacturer

SOGECCLAIR

Bi-material manufacturer

Fraunhofer IGC

Bi-material manufacturer

AMCM

Additive manufacturing support

Arceon

Nozzle extension designer & manufacturer

deltaVision

Valve designer

BeBlue

Test provider

Pangea

Turbopump designer



ACTIVITY

Project name: THRUST! Technologies for High-Thrust Re-Usable Space Transportation

Objective: To de-risk the key missing technologies associated with developing a high-thrust methalox full-flow staged combustion cycle engine.

Applications: Main propulsion system for the first and second stage of a future European reusable heavy launcher.

TECHNOLOGY AND INNOVATION

What we developed: Within THRUST! a set of demonstrators, at scale and subscale, to prove the feasibility of the selected technologies, materials and manufacturing processes, with a strong focus on testing:

- Subscale preburners (ox-rich and fuel-rich)
- Subscale thrust chamber
- Innovative resonance ignition system
- Fuel turbopump at scale 1
- Regulation valves

This hardware will be all tested, with the exception of the turbopump.

Unique features: Such a complex and powerful engine using full flow staged combustion cycle has never been developed in Europe before.

KEY RESULTS

- Successful subscale fuel pre-burner tests performed at DLR Lampoldshausen (June 2025)
- Subscale Resonance Ignition System testing performed at TEC premises in Bordeaux (October 2025)
- Bi-material manufacturing trials and characterisation in cooperation with external partners

NEXT STEPS AND MARKET READINESS

Roadmap:

- **April 2026:** Subscale fuel and oxidiser pre-burners tests
- **Q4 2026:** Regulation valves cryogenic flow testing
- **December 2026:** Combined subscale pre-burners and thrust chamber assembly tests

Opportunities: Thrust level increase thanks to engine growth potential

Target Launch: 2031 (Qualified engine)

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