

# Protolaunch

## Company Profile

Protolaunch is a research-intensive space company that specialises in the development of chemical thrusters and propulsion subsystem components. Protolaunch is focused on 'green' propulsion and commercialising alternatives to hydrazine systems that improve in-space mobility capabilities.

Established in February 2019, Protolaunch joined the original Westcott Incubation program at its inception and has since grown at Westcott to now employ a team of seven highly experienced multi-disciplinary engineers split across two locations at the Venture Park. The company operates a sea-level chemical propulsion test facility at E-Site as well as co-located office and lab facilities in Unit 330.

In late 2023 Protolaunch secured external investment to diversify the consultancy arm of the business and commercialise an in-house line of propulsion systems, utilising oxygen/hydrogen and oxygen/methane in the thrust classes of 1N, 20N & 500N; the development and qualification of which is progressing at pace.

Protolaunch has built a reputation for technical excellence in the field of chemical propulsion with a track record of rapid project delivery.

Protolaunch served as Chair of the UK Space Propulsion Working Group from 2021-2023 and has delivered propulsion-related technology development contracts for commercial customers including Space Forge, Nammo, Astroscale, Benchmark Space Systems, Lumi Space, Astron Space Systems and The University of Sheffield

<https://www.protolaunch.co.uk>

## Services Offered

### Technical Support, Design & Consultancy Services

Tailored to the specific customer or project needs, Protolaunch can provide bespoke technical engineering support on an ad hoc basis. This could include technical workshops, or direct collaborative engineering effort. This service provides access to Protolaunch expertise and capabilities and could cover areas including:

- Thruster design
- Test campaign design
- Thermodynamic and flow modelling
- Mechanical design and CAD
- Prototyping
- Space systems architecture
- Electronics design and/or manufacture

- Ground Support Equipment and Feed System design

## Cold Flow Testing and Characterisation

Our Cold Flow Testing services are designed to simulate and analyse the behaviour of fluid systems under non-combustive conditions. This applies directly to propulsion systems (e.g. characterising injector pressure drops) but also more broadly to wider fluid control system (e.g. pump characterisation or testing valve discharge coefficients). This crucial step in the development process helps identify potential issues and optimise performance before proceeding to more expensive or higher risk tests.

### Key Features:

- **Comprehensive Data Collection:** We employ precision sensors and data acquisition systems to capture detailed flow dynamics, pressure distributions / drops, and temperature variations.
- **Range of Test Fluids:** As standard we offer cold flow testing with: Water, Cryogenic Liquid Nitrogen, Nitrous Oxide, Nitrogen Gas, Helium Gas, Oxygen Gas or Hydrogen Gas. Other fluids are possible after discussion with the Protolaunch technical team.
- **Safety and Compliance:** Rigorous safety protocols and compliance with industry standards to ensure secure and controlled testing environments.

## Propulsion Testing

Our Propulsion Testing services provide critical insights into the real-world performance of propulsion systems.

### Key Features:

- **Advanced Test Infrastructure:** Equipped with state-of-the-art test stands, control rooms, and safety systems to conduct reliable and precise hot-fire tests.
- **Comprehensive Data Acquisition:** High-speed data acquisition systems capture parameters such as thrust, pressure, temperature, and flow rates.
- **Versatile Test Capabilities:** Capable of testing a variety of propulsion systems, including liquid, solid and hybrid engines across different scales and thrust levels.
- **Safety and Compliance:** Adherence to stringent safety protocols and industry standards to ensure secure testing environments and the protection of personnel and equipment.