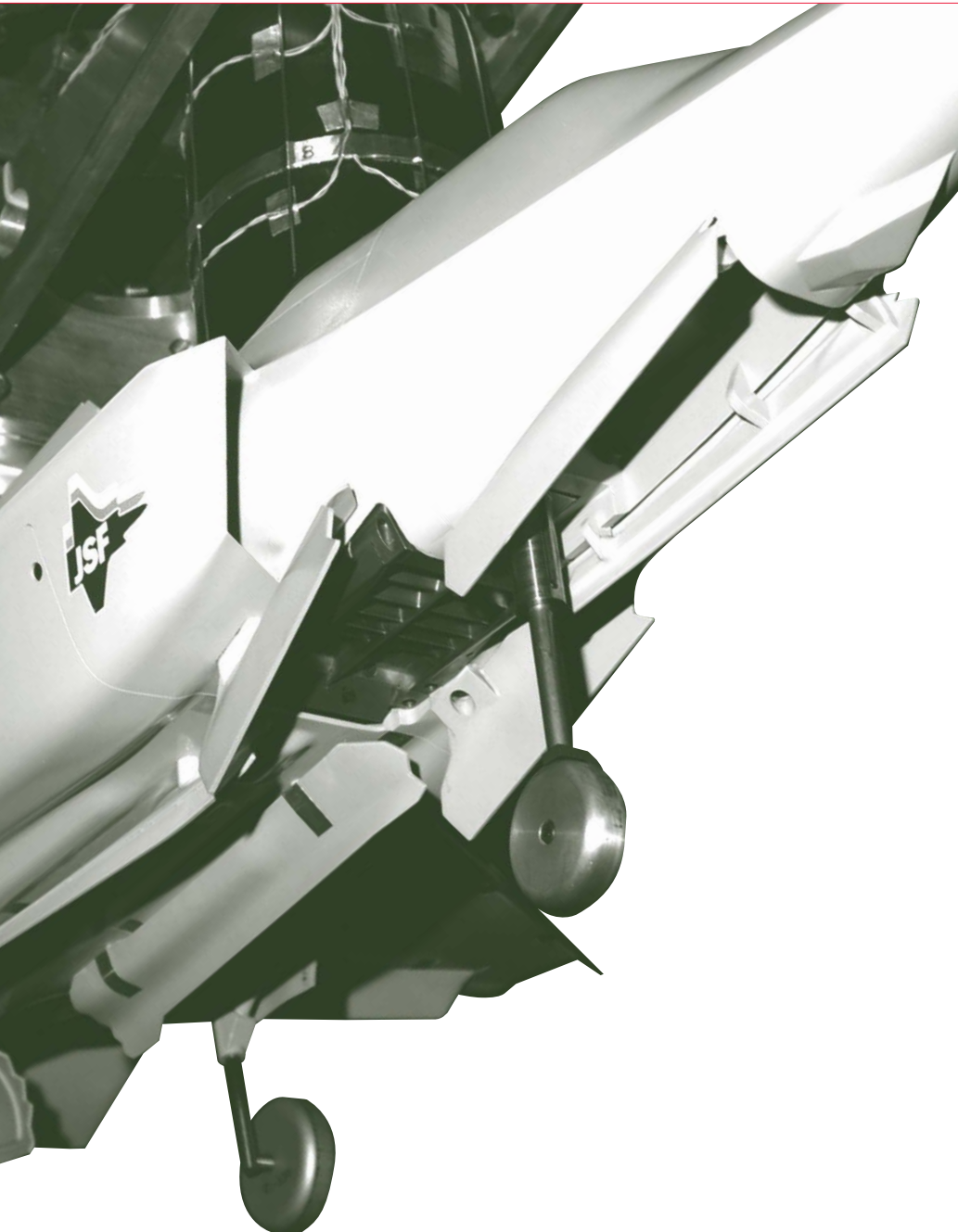


Aerodynamic Test Advanced Gas Facility



Introduction

The Ground Effects Rig (GER) and the Reaction Control System (RCS) Development Test Cell are contained within the Advanced Gas Facility (AGF).

The GER is designed to investigate ground effect jet flows on Short Take Off and Vertical Landing (STOVL) configurations. These include the evaluation of hot gas ingestion and jet induced loads.

The RCS development cell has been utilised in the development and qualification of the Harrier reaction control system. The facility is able to provide high temperature and pressure gas flows to a variety of nozzle and valve configurations.



Aerodynamic Test Advanced Gas Facility

Ground Effects Rig

Laboratory

Dimensions	22m x 20m x 5m high
Ventilation	Passive roof ventilation (during test). Forced under floor extraction (during warm up/cool down).

Operation

3 independently controlled nozzle-blowing systems (pressure & temperature).
Hydraulically powered, plc controlled pantograph model mounting system.

Max Jet Temperature	Up to 600°C
Min/Max Jet Pressure	250 - 2000 kPa
Max. Flow Rate	2 kg/s (combined)
Min/Max Intake Mach Number	0 to 0.5
Max Descent Rate	Up to 1.2m/s
Headwind/Crosswind simulation	Velocities up to 20m/s

Reaction Control System Development Cell

Test Cell

Dimensions	7.7m x 7.2m x 3.7m high
Ventilation	Valve exhaust ducting Passive roof (prevent cell overpressure) Under floor forced cooling via extraction system Over-rig low pressure cooling ducts

Operation

Gas heated compressed air up to 480°C at a maximum pressure of 1800kPa (at nozzle/duct exit).

Utilisation

Qualification and test of:

- Pipe work bellow systems
 - Ducts and branches
 - Sliding joints
 - Valves with remote shutter actuation
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Measurements

- Mass and volumetric flow (in the range of 0.06kg/s – 12.5kg/s)
 - Temperature
 - Pressure
 - Displacement
 - Thrust/Load
 - Bearing performance analysis
 - Non intrusive flow visualisation (shadow graph, oil flow)
 - Free stream plume surveying
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Data Acquisition

The facility contains a flexible data acquisition system that can accommodate a wide variety of sensors.

Compact pressure scanning hardware is also available that can provide over 1000 pressure measurements.

AGF Test Support

Full life cycle support:
specification, design, manufacture, test, analysis, reporting.



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