

Rotor Dynamics Test Facility

CAPABILITY SHEET · ROTOR-BEARING-SUPPORT CHARACTERISATION · DELIVERED - AERO-ENGINE R&D

THE FACILITY

WHAT	Twin-drive rotor dynamics test facility for evaluating rotor-bearing-support systems: critical speeds, unbalance response, vibration, misalignment and damping measured on hardware at speed - up to 52,000 rpm test-shaft speed.
STATUS	Delivered - designed, manufactured, installed and commissioned for an Indian aero-engine research & development centre, with operator training and documentation.
ENVELOPE	Rotor mass to 90 kg; shaft diameters 15-70 mm; overhung discs to 750 mm diameter and 1 kgm ² polar inertia; hydraulic axial loading to 20 kN on the running rotor.

REFERENCE CONFIGURATION

DRIVE	200 kW main AC drive plus second drive line on a common T-slotted cast bed; two step-up gearboxes with dedicated lubrication systems; low-speed and high-speed couplings; VFD speed control across the full test range.
TEST SECTION	Four instrumented pedestals on precision pillow-block bearing units; rigid and flexible support options with squeeze-film and elastomeric damping; polycarbonate safety enclosure over the rotating span.
CONFIGURATIONS	Simply supported; overhung single- and double-sided (cantilever stages); twin-rotor with inter-shaft bearing for aero-engine-representative dynamics - two independent drive lines feeding a shared span.
MEASUREMENT	FFT-based vibration analysis with proximity probes at each pedestal; critical speed, unbalance, misalignment and damping protocols; PLC-SCADA operation with logging and post-processing.

ENGINEERING & ASSURANCE

SAFETY	Interlocked polycarbonate enclosure, guarded couplings, controlled run-up/run-down profiles and emergency stop integrated in the PLC safety chain.
UTILITIES	Bearing-housing and gearbox lubrication skids with flow monitoring; hydraulic power pack for axial loading; instrumentation and drive cabinets with segregated cabling.
DOCUMENTATION	Design appreciation, GA and interface drawings, FEA of critical structures, acceptance test procedures, operator and maintenance manuals - revision-controlled.

VARIANTS & ENGAGEMENT

VARIANTS	Speed class, rotor envelope, drive power and instrumentation scaled to the customer's rotor family; balancing-machine and spin-test variants from the same platform discipline.
TEST LINE	Sits alongside our aero test-rig line - engine component rigs, hydraulic and fuel-system benches, and instrumentation systems - one supplier across the test chain.
ENGAGEMENT	Send your specification to sales@neometrixgroup.com - clause-by-clause compliance matrix and budgetary quotation within two working days. Export subject to GoI authorisation.

DEFENCE PROGRAMMES DESK

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Reference configuration reflects the facility as delivered to an Indian aero-engine research & development centre. Speed class, rotor envelope and instrumentation are re-scoped against the customer's specification.