Rotor Spin Test Facility

CAPABILITY SHEET · SPEED SQUARES THE ENERGY. · AN EVACUATED CHAMBER, A CONTAINMENT LINER, A FLEXIB

THE ONE IDEA

PRINCIPLE	Speed squares the energy.
WHY IT MATTERS	The stored energy of a spinning rotor grows with the square of its speed, so a small overspeed adds a larger share of energy, and the chamber is built for the energy at the top speed.

THE FACILITY

CHAMBER	A heavy evacuated chamber with a lid and a hoist, so that the drive spins the rotor and not the air around it.
LINER	A containment liner and outer rings built for the energy at the top speed, with a lid that stays locked until the rotor has stopped.
SPINDLE AND DRIVE	A long, flexible spindle that lets the rotor find its own centre, and a drive with a ramp that suits the test.
TRIPS	A vibration trip, an oil trip, a vacuum trip, and an overspeed trip that works apart from the controller.

THE METHOD

ORDER	Duty, rotor and spindle, chamber and vacuum, drive and oil, containment and control, build and prove. The containment and the trips are the two that a quick job skips.
LIMITS	Speeds, energies, masses and pressures come from the customer's duty, and are not printed here.

CONFIGURATIONS

OVERSPEED AND BURST	An overspeed and burst facility: a heavy chamber, a strong liner and a drive that goes up in steps.
CYCLIC FATIGUE	A cyclic fatigue facility: a quick drive and a count of starts and stops.
HEATED SPIN	A heated spin facility: a heater in the chamber, and instruments that work warm.

STANDARDS & SCOPE

REFERENCE	Public reference: 14 CFR 33.27, for the overspeed margin of aircraft engine rotors.
SCOPE BOUNDARY	It is the rotor spin test facility: not a rotor dynamics test facility, not a balancing machine and not a lubrication system.
STATUS	Neometrix engineers rotor spin test facilities to order, and no delivered rotor spin test facility is claimed.

DEFENCE PROGRAMMES DESK

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