

Chassis Dynamometer

CAPABILITY SHEET · 4x4 · 48 IN ROLLS · 250 km/h · ENGINEERED TO ORDER

THE MACHINE

WHAT	The road, indoors: the vehicle drives with its wheels on large rollers while the machine pushes back exactly as the road would - drag, rolling resistance and the vehicle's own inertia - so a complete drive cycle runs repeatably, instrumented, in a conditioned room.
THE CORE IDEA	The road is an equation the dyno must obey: coastdown road-load $F = A + Bv + Cv^2$, applied continuously, with the vehicle's mass created electrically. If the control loop answers slower than about 65 ms, a gearshift feels like software instead of mass.
STATUS	Engineered to order. Reference configuration, not yet built - engineered against India's current vehicle-laboratory build-out; no order followed, so no delivered dynamometer is claimed.

ENVELOPE

CONFIGURATION	Two-axle 4x4 with four independently driven wheels (runs 2WD too), bi-directional, to 250 km/h. 48 in (1,219 mm) single rolls, chrome-plated, concentric to 0.25 mm TIR, balanced to ISO 1940 G2.5.
POWER	Four AC flux-vector motor-absorbers on IGBT drives, about 224 kW each - roughly 900 kW installed - four-quadrant: they absorb what the vehicle delivers and motor it when the cycle demands, including EV regenerative braking.
FIDELITY	Electric inertia simulation across about 150-5,500 kg in 0.454 kg steps; road-load accuracy about +/-1 kgf; front-to-rear axle synchronisation +/-0.05 km/h; force measurement +/-0.1 % FS; system response under 65 ms.

WHY THE NUMBERS MATTER

SYNC +/-0.05 km/h	On the road all four wheels see one surface, and the vehicle continuously checks that they agree. If the dyno's two axles drift apart, traction control intervenes against a road that does not exist - and the test measures the fight, not the vehicle.
ELECTRIC INERTIA	Flywheels add mass in coarse lumps; drives create the force a given mass would exert, matched to the kilogram. The catch is transients - which is why response time is a headline figure, not a footnote.
48 IN ROLLS	A tyre wraps a small roller and reads it as a different road. At 48 in diameter the contact patch approaches the flat-road case, which is why this architecture became the reference for emissions-grade and high-speed work.

FACILITY, RETROFIT & ENGAGEMENT

THE CELL	Restraint anchorages, speed-matched cooling fan, guarding and E-stops; the cell can itself be a climatic chamber (about -30 to +55 degC, 10-90 %RH) with a driving robot running standardised cycles hands-off - conventional emissions and EV range determination alike.
UPGRADATION	Existing chassis dynamometers modernised in place: new drives and controls, load cells, centering-device overhaul, calibration, acceptance tests and training - using the existing pit and civil works.
ENGAGEMENT	Send the vehicle classes, the cycles and standards you run, and whether the duty is a new cell or an upgradation, to sales@neometrixgroup.com - compliance matrix within two working days.

PROJECTS DESK

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