

Reliability Laboratory

↘ Main tasks

Reliability test facilities for evaluation and qualification in design development and production phases

Climatic



- > Thermal shock air-air (-70°C to 220°C)
17 Chambers
- > Thermal shock air liquid (-5°C to 180°C)
1 Chamber
- > Change of temperature (-70°C to 180°C /
max 25°C/min) - 23 Chambers
- > Humidity (90°C and 98% HR) - 12 Chambers
- > Storage (300°C) - 7 Chambers
- > Temperature and vacuum (-600mBars)
- > IEC60068-2-1 (*)
- > IEC60068-2-2 (*)
- > IEC60068-2-14 (*)
- > IEC60068-2-78 (*)
- > IEC60068-2-30 (*)
- > IEC60068-2-38 (*)

Corrosion



- > Salt Fog / Salt Spray / Humidity chamber / oven
(3 chambers):
- > IEC60068-2-11 (*)
- > IEC60068-2-52
- > ISO9227
- > Renault CCT1
- > GMW 3172, GMW14872
- > Volvo VCS 1027,1449
- > Ford 00.00-L-467

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Vibrations (*)



> Tests

- > 6 Shakers 5kN to 60kN
- > Combined with temperature and humidity: -40°C to 180°C; 98%RH
- > IEC60068-2-6 (*)
- > IEC60068-2-64 (*)
- > IEC60068-2-27 (*)

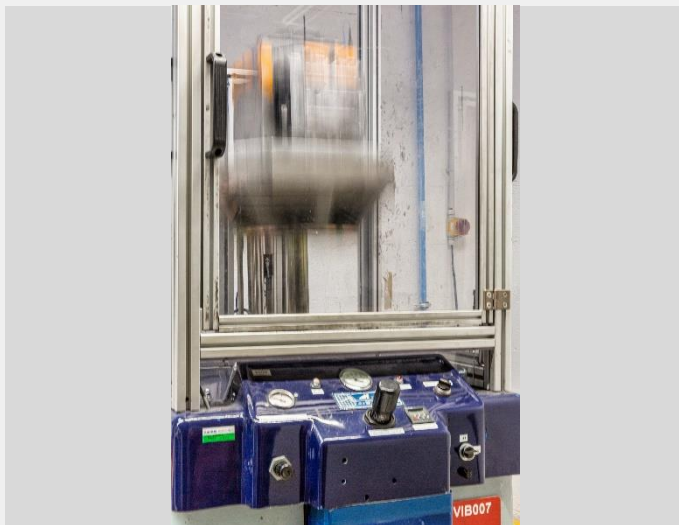
> Measurements

- > Laser velocimeter
- > Strain gauges in dynamic

> Analysis

- > Fatigue analysis: NCODE
- > Profile comparison, acceleration

Impact shock, drops



- > 1 Impact shock machine
- > 1 Drop test machine

Accelerated Test



- > H.A.L.T. Chamber (-100°C/+200°C/70Grms) to compare designs and find weakness very fast

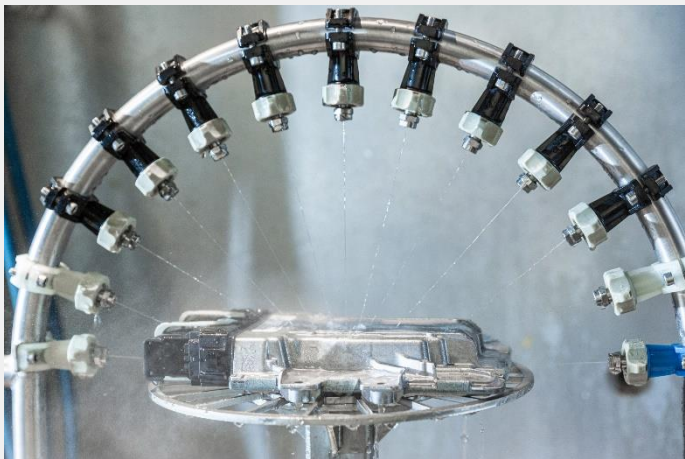


Reliability Laboratory Static mechanical



- > Tensile machines max 30kN (tensile, compression, creep, relaxation) 2 machines with 1 machine with cold and warm chamber
- > Screwing bench (torque, angle, speed, controlled)
- > Strain gauges acquisition

Watertightness, solid tightness, air tightness



- > Water resistance equipment (IPX1 to IPX9K)
1 Chamber
- > Dust test chamber, IP5X, IP6X
1 Chamber
- > 2 Air pressure regulators up to 20 Bars: ramp and steady state pressure.
- > 2 Climatic chambers for thermal shocks air/liquid or tightness tests in temperature
- > ISO20653
- > IEC60529
- > DIN40050-9
- > JIS D 0203; D 0207





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Thermal characterization



- > Infrared cameras. Resolution 0,1°C
- > Temperature (thermocouple T; K) , voltage dataloggers

Toolshop



- > Milling machines (x3)
- > Lathe
- > Sheetmetal: folding, cutting machine
- > Welding: Aluminum, stainless steel,

Spin test



- > Spinning machine. Max 3000RPM
- > Combined in temperature -40°C +180°C
- > 2 benches
- > IEC60068-2-7
- > IEC60068-2-14