



VALVETRAIN CYLINDER HEAD TEST STAND

**A powerful tool to develop
valvetrains and optimize
lubrication conditions.**



EXPERTISE

- Benchmark of valvetrains and cylinder heads, but also reducers, oil pumps, vacuum pumps, chain drive, etc.
- Investigation of the impact of mechanical design on frictional losses
- Study of new materials (especially hard coatings such as DLC) to reduce friction
- Investigation of wear. Real-time, high accuracy, wear measurement available, based on the RadioNuclide Technique (TLA - RNT)
- Study of the impact of lubricant formulations - allows for quick benchmark of lubricants and/or additives
- Simultaneously friction and wear measurement - study of running-in and limit operating conditions
- Various operating speeds available, from 3.000 to 20.000 RPM
- Very slow and idle driving speed available to study friction and wear on critical phases such as start-up

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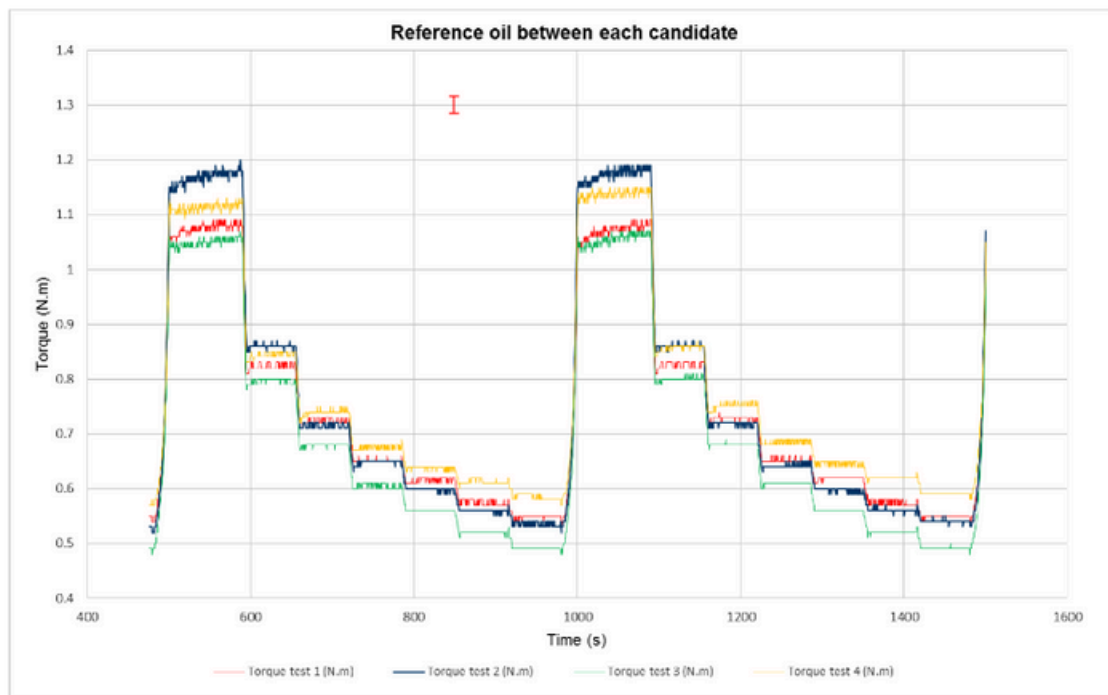


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*Typical results – Impact of lubricant formulations on friction losses
Performed on a cylinder head for passenger car engine*

UPGRADEABILITY – AVAILABLE OPTIONS

- Possibility to feed the tested components with aerated oil to study the impact of oil aeration – aeration rates up to 25% using our “Air-Mix” fluid conditioning unit
- Possibility to enclose tested parts in a climatic chamber
- Possibility to measure valve motion during testing with high-speed laser vibrometers
- Current test bench can be adapted to test: oil pumps, water pumps, chain drives, camshafts, crankshafts, fuel injection systems, etc.



Cylinder head test rig – rear view - the electrical motor is installed on a platform with adjustable height



Oil conditioning unit with accurate temperature and flow control (coriolis flowmeter)

SPECIFICATIONS

Standard version – other configurations available on request

Motoring capacity	Max power: 27 kW Operating speed ranging from 100 to 7500 rpm with +/- 2 rpm accuracy Max. torque of 65 N.m
High-accuracy torque transducer HBM T12	Up to 100 N.m 0,01 % full scale accuracy
Fluid conditioning capabilities	Oil and water temperature controlled within +/-0.5°C Oil conditioning from 35°C up to 155°C Oil pressure adjustable from 0 to 6 bars and controlled within +/- 0,1 bar Water conditioning from 35°C up to 120°C
Test bench management system	32 analogic inputs (Voltage, Current, Pressure and Thermocouple) 8 analogic outputs and 8 digital outputs Flexible and extendable
Software for data acquisition and control	Based on Labview (N.I.) or other, on request High-speed Data Acquisition Systems up to 30 KHz for torque measurement Measurement frequency of 100 Hz for all other parameters
Temperature control of test cell air	Yes
Flexible test geometry	Large space available on bench top (1200 x 2000 mm) Adjustable and movable driving motor on bench top (X-Y-Z)
Cylinder head supports	Designed to match oil and coolant circuit and to respect correct oil pressure and flow rate