

## **Development testing and performance demonstration**

BEML will carry out all / some of the following test pertaining to mechanical development, combustion development, engine calibration and performance demonstration requirements on need basis.

- 01.0 Engine running-in & Functional testing.
- 02.0 Development of piston / bore interface (including min clearance piston scuff test, blow by, Lube oil consumption, high temperature seizure test).
- 03.0 Lubrication system (running oil level, oil pressure static and dynamic (main gallery), hot idle test, verification of function of valves, pump priming test, oil deterioration).
- 04.0 Breather system (crankcase pressure map, oil carry over).
- 05.0 Cooling system (heat balance, cooling system pressure build up / cavitations analysis, pressure and flow distribution, verification of thermostat function).
- 06.0 Temperature survey (piston, fire deck, exhaust manifold).
- 07.0 Crank-train / TV Damper detailed testing.
- 08.0 Engine resonance analysis.
- 09.0 Intake port swirl adjustments.
- 10.0 ECU off-line calibration.
- 11.0 Engine instrumentation (measuring points, sensors etc.,).
- 12.0 Combustion related hardware development.
- 12.2 Turbocharger optimization
- 12.3 Combustion system development (bowl shape, nozzle geometry, swirl level etc.,)
- 12.4 Nozzle tip protrusion etc.,
- 13.0 Engine calibration in view of steady state requirements.
- 14.0 Combustion system performance evaluation and engine fine tuning.
- 15.0 Soot in oil investigations.
- 16.0 Engine Performance Testing.
- 16.1 Simulated engine testing at different operating points (standard, & +55 Deg C ambient)
- 16.2. Engine part load optimization is to be carried out during simulation and to be demonstrated in the test bed for the selected speed and load ranges.