



Competitive Benchmarking

Engine teardown and different cost models for estimation

Challenge



Client asked RSC to provide cost estimation for engines produced in USA, china, Europe and India. Client had asked to assess the manufacturing cost of the ford 5.0L V8 DOHC gasoline engine. There was a need to engine teardown, BoM buildup, parametric benchmarking efforts and market assessment of base engine parts. Engine received from the client and need to disassemble and technology descriptions of all components. Cost analysis was based on market volume and north American manufacturing location.



Approach

- Three key tasks to assess engine cost across all base engine components; task-1 as Teardown and BoM Benchmarking, task-2 as Detailed Cost assessment on 5C components i.e. cylinder block, cylinder head, crankshaft, conrod and camshaft and task-3 as detailed cost assessment of remaining components
- Compared engine price with exiting Ricardo parametric engine cost models. Ricardo documented 160+ components including weight, size, material type, quantity, part number and supplier code



Recommendation

- Analysis suggested that 5.0L engine should cost \$2,398 and that compared with Ricardo parametric engine cost model and project cost were based on peak production volume assumptions of 300,000 upa
- Cam-torque-assist phaser were used to increase operating range and speed while minimizing oil pump requirements. Cam torque actuated borgwarner morsecam phaser with mid position lock for intake and exhaust



Results

Assembly labor, depreciation & overhead at engine plant was estimated to be \$262.35 per unit. Large cast piston crown in the engine which was noted unusual for that engine type also cylinder block and cylinder head featured unusually high level of burrs and sharp edges