

WHY DO ENGINES FAIL?

PART 2



David Eszenyi.

David Eszenyi, Commercial Director of leading engine remanufacturer Ivor Searle, examines the primary causes of engine failure...

Head gasket failure

Head gaskets are designed to prevent unwanted oil and coolant from entering the combustion chamber. When a head gasket fails, oil mixes with the coolant, causing the pistons to compete against fluids that are not designed to combust. Left untreated, this will result in the cylinder head warping and damage to the pistons and piston rings.

Insufficient lubrication

Oil is essential for the smooth running of an engine, lubricating moving parts to reduce friction, as well as playing a key role in engine efficiency through its heat transfer properties. Oil degrades over time, with contamination in the form of sludge, varnish and lacquer building up in the crankcase. Over time, this contamination results in the lubrication pathways within the engine getting blocked, restricting oil flow to critical moving components. This creates a 'perfect storm' which can lead to engine failure.

Misfuelling

Despite the best efforts of the car manufacturers and oil companies, vehicle misfuelling

continues to be a major cause of engine failure. This is particularly dangerous for diesel engines that have been filled with petrol, as the gasoline effectively acts as a high-power solvent throughout the diesel injection system, stripping out the lubrication which is crucial for the operation of the high pressure direct injection systems which are now commonplace. These 'wet' common rail systems produce injection pressures of up to 1,800 bar with the latest technology allowing for up to seven injection events per combustion stroke. With systems of this complexity, removing the lubrication results in the common rail pump heating up and metal on metal contact, leading to metal particles being drawn throughout the entire injection system.

Overheating

Engines are generally designed to operate in a temperature range of between 60-90 °C. This deliberately wide range considers the environments and climates for most mass market vehicles, as well the thermal stresses in the light weight alloys used in engine construction. Cooling system problems, such as blocked hoses, low coolant

or radiator damage, can result in overheating beyond the maximum range and the cylinder head and engine block warping.

About Ivor Searle

Ivor Searle is a leading independent producer of remanufactured engines with an enviable reputation for producing high quality products for more than 70 years. In addition to a market-leading

range of engines, the company's remanufactured product portfolio also includes cylinder heads, gearboxes and turbochargers.

For more information:
01353 720531 or
www.ivorsearle.co.uk

