

Increasingly stringent emission standards are changing the conditions that valve systems in heavy duty engines are exposed to. Increased pressures and temperatures are challenging system endurance. It was found that there was some mechanical lapse in proper sitting of the valve, which had been responsible for unwarranted overheating especially at thinner sections. Microstructure examination revealed that overheating had been responsible for a creep-rupture failure accentuated by precipitation of undesirable constituents at grain boundaries. A consequence of these changing conditions is a reduction in the levels of soot production that had formerly generated protective films.