FAILURE INFORMATION

PISTON SKIRT SEIZURE ON ONLY ONE SIDE

Description of the Failure

Whereas there are marks of seizure on one side of the piston contact surfaces, there are marks of normal operation on the counter pressure direction. (Figure 1)

There is no mark of seizure in piston ring areas. Marks of operation at the piston crown are normal.

There are marks of burnt on the piston rings, although they are not evident.

Figure 1

Causes of the Failure

The oil film on one side of the piston is lost and seizure occurs. This seizure especially occurs on the pressure dimension of the piston first. The reason is that the force applied on the pressure direction is higher than the counter pressure direction. The causes of corruption in the oil film on the pressure direction of the piston and unlubricated dry operation are as follows;

1 – Leakage of coolant water in the cooling system of the engine and emergence of air bubbles or inadequate level of coolant water circulation inside the engine block due to lime, dirt etc. causes local increase in heat, elimination of oil film, unlubricated dry operation and accordingly, seizure.

2 – Low oil level inside the engine and a short-term blockage in the bore of the oil-cooling spray, faulty assembly or failure of it results in engine failure.

3 – Faulty assembly of the shroud ensuring direction of the air onto the engine in air-cooled engines causes increase in engine heat and overheating of the engine.

4 – The oil used in the engine is not of a nature and quality to bear the engine loads. Dilution of the engine oil causes elimination of the oil film on the engine parts. Unlubricated dry operation occurs between the piston and the cylinder surfaces and piston seizure failure occurs.

Recommendations

1 – During the engine overhauling operation, the cooling system should be checked, the cooling channels of the block should be cleaned and the parts to cause leakage of the coolant water should be replaced.

2 – Oils recommended by the engine's manufacturer should be used inside the engine.

3 – It should be checked whether the oil bores in the connecting rod should be open and operating.

4 – The oil level inside the engine should continuously be checked and oil should be added whenever required.

5 – The oil pressure should be checked. The causes of low oil pressure are worn oil pump, high amount of dirt inside the oil filter, faulty high pressure valve and corrupted viscosity of the oil. These parts should be checked and replaced.

6 – Engine oil should be replaced without any delay in accordance with the oil replacement intervals.

7 – Fuel and ignition system should be checked for fuel spillage, which might cause dilution in the engine oil.