



Wall Thickness Measurement on Cast Camshafts

Ultrasonic Application Solutions

Application

A nondestructive method is required to detect “core mismatch” - a common casting defect.

As a consequence of this mismatch, reduced wall thicknesses occur leading to a failure of the camshaft in operation because of its lean geometry and due to the extreme dynamic load.



Figure 1: Cast camshaft

Solution

The recommended solution is to measure the wall thickness on the bearing points. The annular geometry of these points makes it possible to carry out the test on the as cast shaft. Further unnecessary processing of any defective parts is thus excluded. This method makes it possible to recognize the core mismatch by a changing wall thickness around the circumference. The waterflow (squirter/bubbler) technique is applied according to the arrangement shown in Fig 3. This ensures constant coupling in the area of the bearings around the entire circumference during camshaft rotation.



Figure 2: Probe used for camshaft inspection

The ultrasonic flaw detector USM 36 & probe H 2 KF

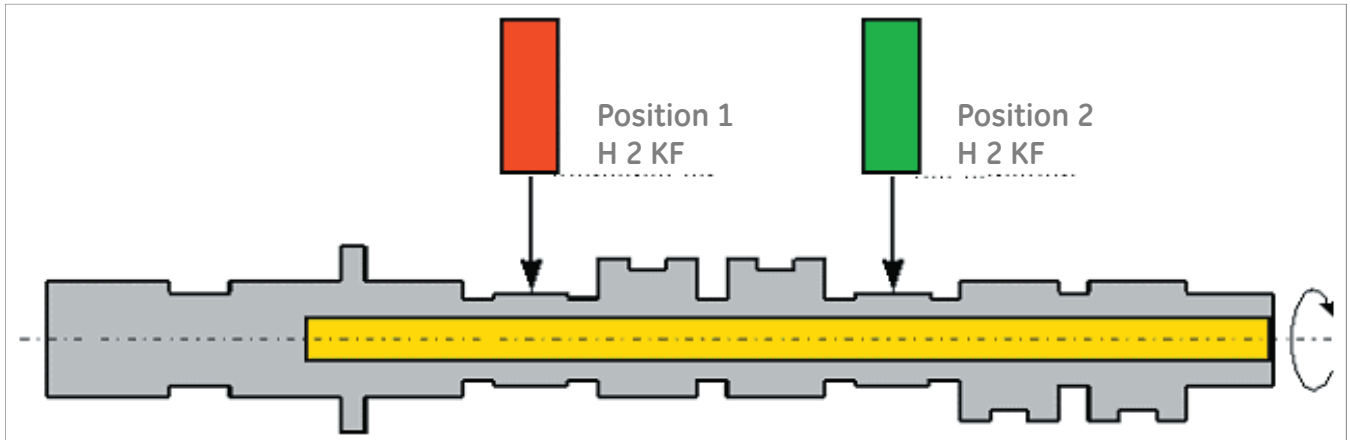


Figure 3: Circumferentially developed view

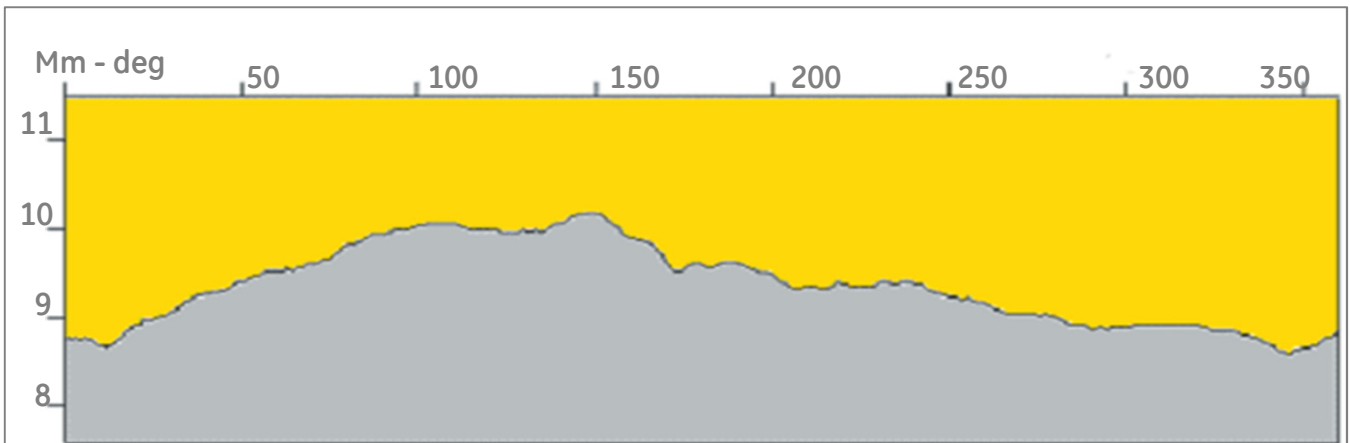


Figure 4: Typical linear scan, varying wall thickness: $\Delta d \sim 2.6$ mm

General solution information

- Flaw detector: USM 36
- Probe: H 2 KF
- Software UltraMAP

Your benefit

- Ensure high quality
- Reduce field failures and potential liability
- Save money by eliminating destructive testing and by improving your process

Part numbers

USM36	0037400	UltraMAP	0100073
H 2 KF	0067704	MUX D	0034784

Contact the GE European Solutions Center
for your individual inspection problems: