

CamScan 500C

## STRESSTECH BULLETIN 5

# Grinding Quality Control of Camshafts

**Stresstech is a world leader in developing and manufacturing non-destructive inspection equipment for grinding burn detection and residual stress measurement.**

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Stresstech's instruments monitor the quality of key components such as camshafts which operate the air-fuel mixture inlet and exhaust gas poppet valves to the cylinders in the internal combustion engines. The trend for better fuel economy and lower emissions increase the quality control demands in camshaft manufacturing.

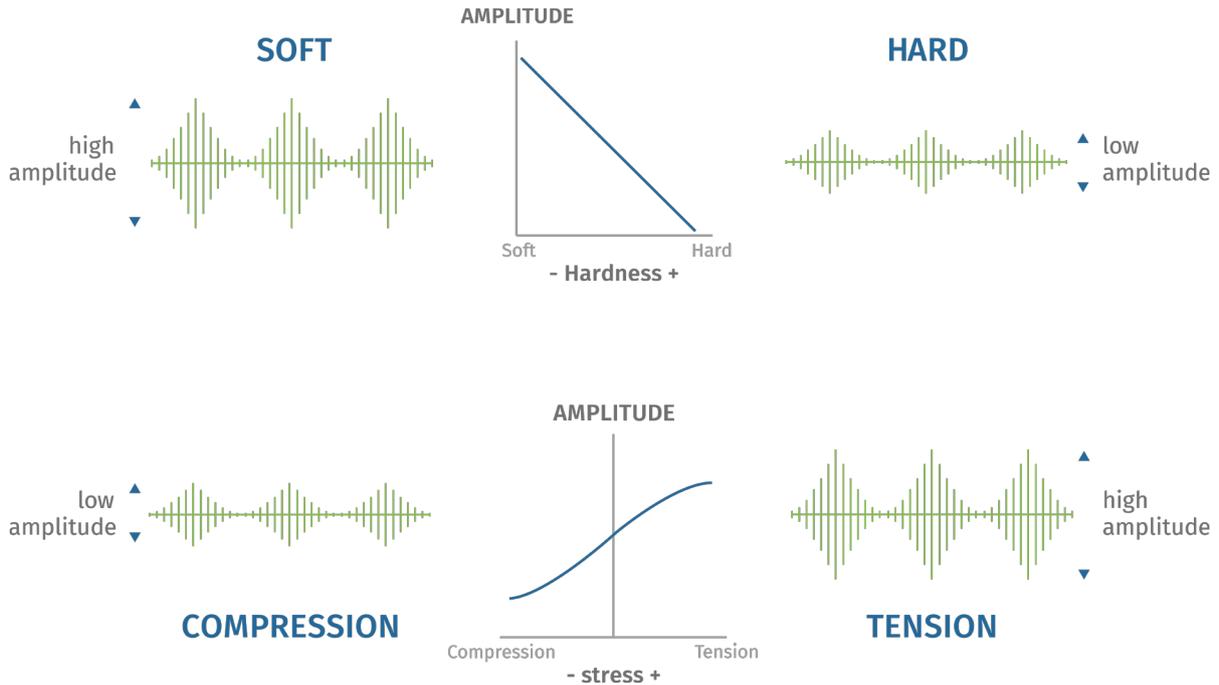
To meet the customers' quality demands, manufacturers try to eliminate problems such as grinding burns which are temperature induced thermal defects on the surface of the component that result in lower hardness and tensile residual stresses which cause shortened fatigue life.

To increase the traceability and repeatability of grinding process, a desired quality control method should be able to monitor and verify the process as

well. This desire makes non-destructive methods a vitally important approach in quality control of camshaft manufacturing.

### **Barkhausen Noise Analysis**

One of these non destructive methods is Barkhausen noise analysis. Barkhausen noise is a micro-magnetic measuring method that utilizes the differences in magnetic properties in steel for detecting differences in microstructure and residual stresses in the surface of the component. The Barkhausen noise method is very sensitive to changes in the grinding process, finding easily the grinding burns with lower hardness and tensile residual stresses. The method is fast and non-destructive, providing immediate feedback.



The response of Barkhausen noise to the changes in hardness and stress

Camshaft inspection by Barkhausen noise is short and simple, grinding burns can easily be detected and the operator can optimize the settings of the grinding machine. Barkhausen noise also provides feedback about the process and verify the repeatability of the grinding process' parameters.

Camshaft inspection by Barkhausen noise is readily available with fully customizable instruments to suit your operational needs. Barkhausen noise instruments for camshaft grinding quality control can be integrated to the production lines and instruments can notify the operator with pass/fail alerts during the damage detection.

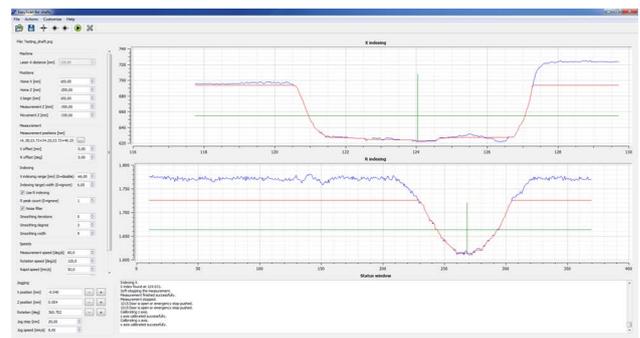
### CamScan 500C

Stresstech's CamScan 500C is an automated inspection system for fast and accurate inspection of grinding burns and grinding quality control of camshafts.

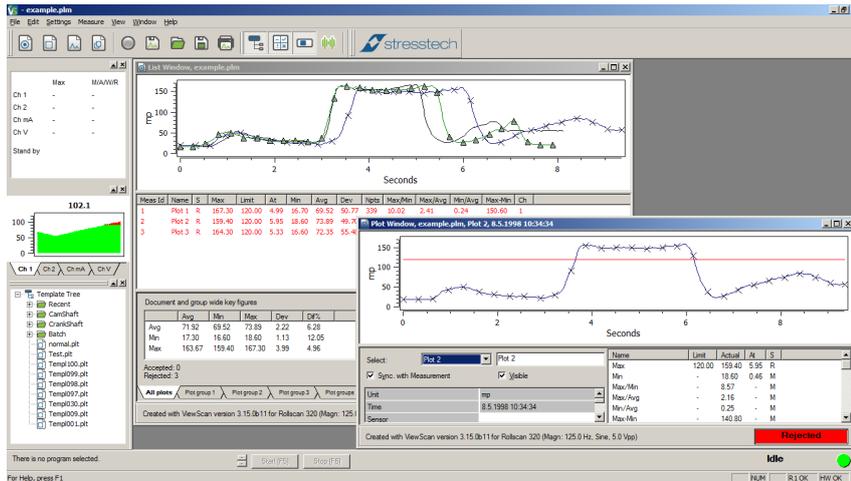
CamScan 500C system provides an automated part rotation with programmable measurement positioning via EasyScan software. With EasyScan, it is easy to make fast and accurate sensor movements which guarantee accurate and effective Barkhausen noise measurement.



CamScan 500C with the light curtain design



EasyScan software for indexing and positioning



ViewScan software for data acquisition and analysing

CamScan 500C measures the OD surfaces of the camshafts and detects the grinding burns via ViewScan software. With ViewScan, it is easy to view measurement results in several different forms; as numbers, dimensional graphs and as a 3-dimensional poly-surface graph. ViewScan records maximum, minimum, deviation, average and status values of the measurements and stores them in the Statistics document so that it is possible to monitor the grinding process, wear of grinding wheel or other parameters.

CamScan 500C can make the measurement of up to 850 mm length of camshafts. The system has two different designs, one is with the light curtain and the other is with the cabinet doors.

The CamScan 500C systems can be customized to meet the specifications within your operation, contact us today to learn more.

[www.stresstech.com](http://www.stresstech.com)



CamScan 500C with the cabinet doors design