



# info

No. 12

ibg-Talk



## High speed crack detection using ibg rotating heads

Eddy current crack detection requires a relative motion between test piece and crack detection probe.

If a crack or pore passes the sensitive area of the probe, the relating signal is displayed on the crack test instrument.

Hardly a week goes by without an article about a new far-reaching recall by an automobile producer.

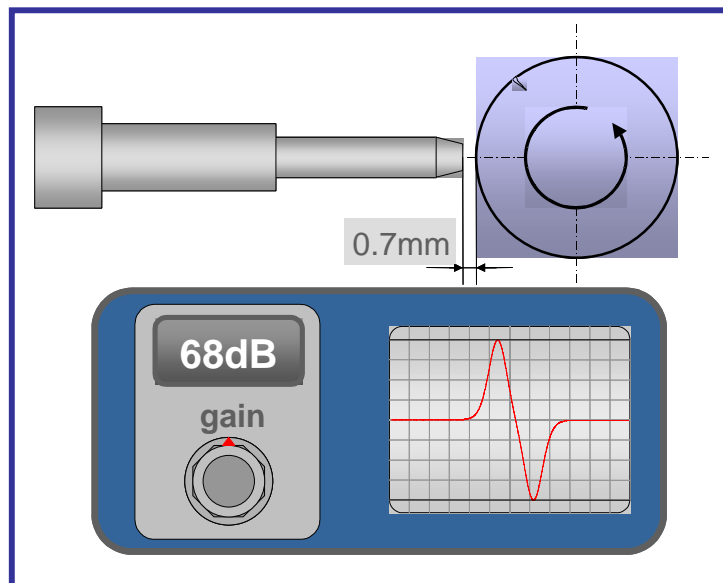
This means for the manufacturer apart from enormous costs, suffers a notable loss of reputation. The reasons for recall campaigns are always the same: starting with failures in design, unstable production processes or omissions in quality management.

In most cases recall campaigns can be prevented by using ibg technology, as our technology can realise 100 % testing of components for cracks and material parameters at production speeds.

The necessary investment is small when compared with the costs of a recall.

Our sales team and world-wide partners will be glad to show you the various potentialities.

*Yours  
Herbert Baumgartner*



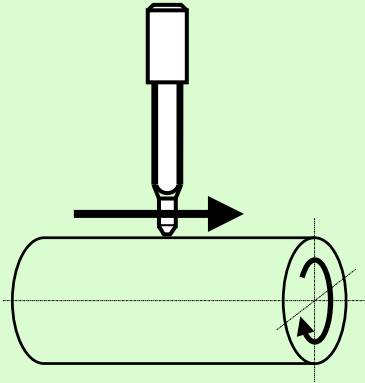
*Typical crack signal, generated by relative motion of probe & test piece. The probe distance is usually approx. 0.7 mm.*

*Visualisation of test results on eddyvisor<sup>®</sup>C as polar field and bargraph display.*

*Comfortable operation thanks to touch screen; up to 16 probes may be operated simultaneously.*



A rotation-symmetrical test piece is usually rotated while the crack detection probe scans the area to be tested. The advantages of this method are flexible application and relatively simple mechanics.



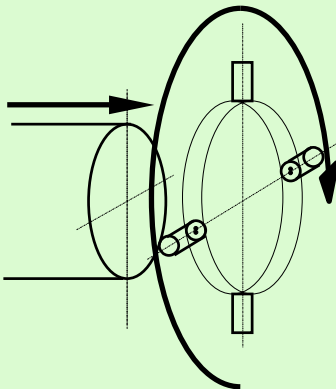
### Test part rotates

Probe or test part is moved parallel to axis

Advantage: simple mechanics

Disadvantage: speed is limited, thus less throughput

Another possibility is the rotating probe while the test piece is stationary resp. moving in axial direction. Although this goes at the expense of geometry flexibility, a huge advantage is the test time as the probe may rotate with up to 9,000 rpm.



### Probes rotate

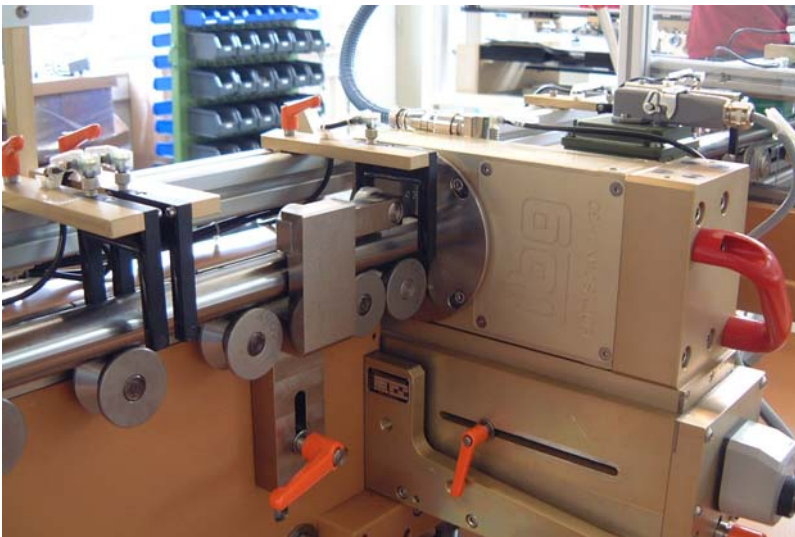
Test part is axially pushed

speed up to 9,000 rpm

up to 4 probes

at a trace width of 1 mm, a feed speed of 600 mm/sec. is achieved

In this case, so-called rotating heads are used, that means the probe is integrated in a rotating disk which is mounted to a rotor. The relating signals are transferred from rotor to crack test instrument by means of suitable transference technology.

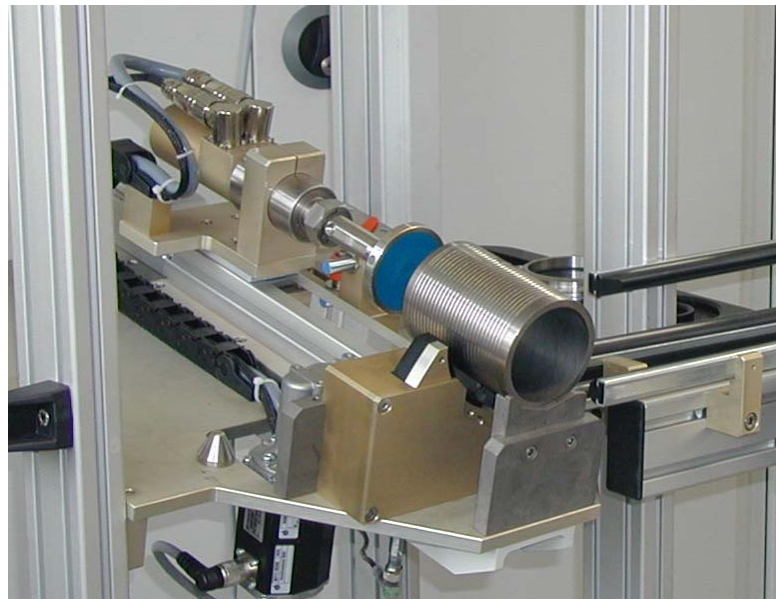


Rotating heads are most suitable when testing rotation-symmetrical and cylindrical parts, e.g. bearing rollers, piston rods, piston pins etc. where the outer diameter has to be scanned for surface-open defects.

View of a piston rod in a horizontal rotating head **eddyscan®H**.

Cylinder liners as well (single items or integrated in an engine block) or other types of borehole where the inner diameter has to be tested for cracks may be verified using a rotating head.

*Tentative assembly for testing cylinder liners for cracks on the inner diameter using a rotating head **eddyscan**<sup>®F</sup>.*



ibg supplies the rotating head family **eddyscan**<sup>®</sup> together with the crack detection instrument **eddyvisor**<sup>®C</sup>.

The **eddyscan**<sup>®H</sup>, suitable for testing outer diameters, is available in size up to 63 mm diameter. The four-channel version, i.e. four probes may be integrated on one probe disk, is able to achieve throughputs up to 800 mm/sec.



**eddyscan**<sup>®H30</sup> with adjustable probe disk



**eddyscan**<sup>®F50</sup> with probe disk

The **eddyscan**<sup>®F</sup> is applicable for testing cylindrical inner diameters, and customised designs even allow testing of conical shapes. The diameter range starts at approx. 3 mm, the upper limit is approx. 200 mm.

Please have a look at our website [www.ibgndt.de](http://www.ibgndt.de) where you can find many application examples. We would be pleased to assist you.



### ibg sales department in Germany announced

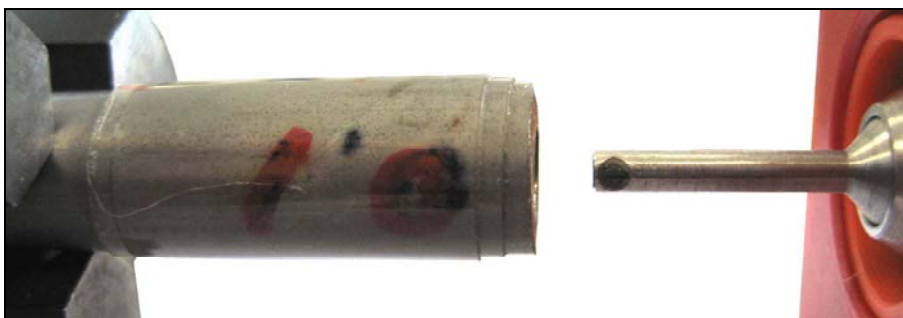
Customer proximity, individual consultation and high service quality are the heart of ibg's philosophy. Our sales team for the German market has been reinforced by two skilled salesmen in order to meet these requirements and to fulfil increasing demand.

Our German customers will get to know these "new faces" at one of the next onsite visits, fair or workshop events.

### Detection of surface defects on inner diameters of small boreholes

Crack detection on small inner diameters is a technical challenge as the crack detection probe requires a finite space for its sensing elements. Due to the combined efforts of the design group and application department ibg has succeeded to develop very small probes resp. rotating heads by utilising precision mechanics and medical technologies.

Testing of boreholes from approx. 3 mm in diameter for defects like cracks and pores is now possible. The photo below shows a crack detection probe entering a small rotating tube with an inner diameter of approx. 3 mm.



Corresponding solutions using the rotating heads (**eddyscan®F**) are also possible.



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IMPRINT  
 Publisher: ibg Prüfcomputer GmbH  
 Pretzfelder Straße 27  
 D-91320 Ebermannstadt  
 Editor: Jochen Iwan