



For more than 30 years now, ibg develops and produces eddy current test instrument for testing components and worked out for an excellent reputation during that time.

Our instruments are specially designed for the requirements in components production environment, which means testing must be quick, reproducible, efficient and plain to operate - four features not easy to combine. ibg supplies successful and in practice frequently proven solutions.

Thanks to the Preventive Multi-Filter Technology developed by ibg it is now feasible to strike out in a new direction regarding grinding burn. The traditional methods for grinding burn detection are very const-intensive and subject to restrictions regarding automation. Whereas PMFT offers utter new chances as parts handling is effected according to the traditional eddy current crack detection.

Find out more about that topic on the next pages. Our sales partners and our offices are glad to assist you.

*Ihr
Herbert Baumgartner*

Grinding burn detection with Preventive Multi-Filter Technology by ibg

During the grinding process, sometimes incidental or methodic damages on the surface occur due to machining with irregular cutting geometry. Those spot-like up to large-size thermal damage is usually called "grinding burn" and reaches from simple oxidation up to massive structure mutations which later on may cause a breakdown of the part. Traditional methods for grinding burn detection like e.g. nital etching or grinding burn test by means of Barkhausen Noise are cost-intensive and partially rather inefficient.

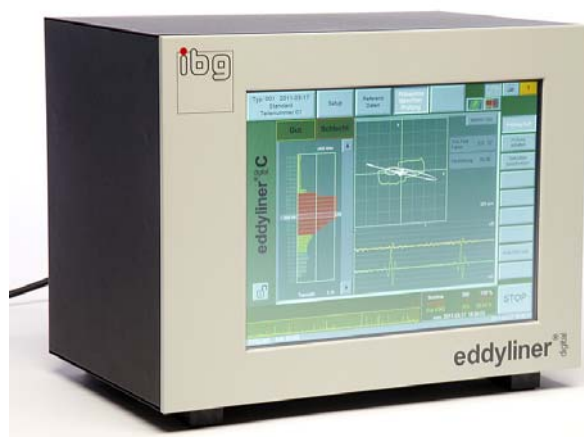


Source:
img-Ingenieurbetrieb GmbH,
Crimmitschau

Now, the Preventive Multi-Filter Technology (PMFT) developed by ibg offers a test method which is vast superior to the conventional grinding burn detection method on rotation-symmetric parts. PMFT can well be automated so that test parts may be scanned at

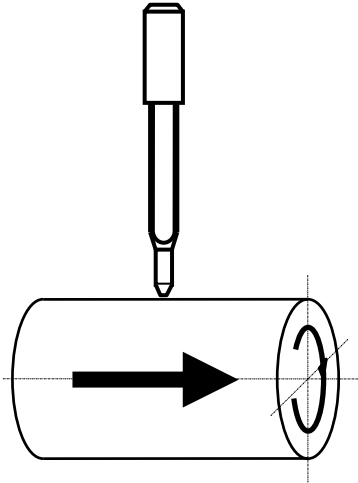
production speed to 100 % non-destructive for grinding burn.

The decision good / bad is made by the instruments **eddyliner®C** resp. **eddyvisor®C**. Chemical auxiliaries are not needed at that method.

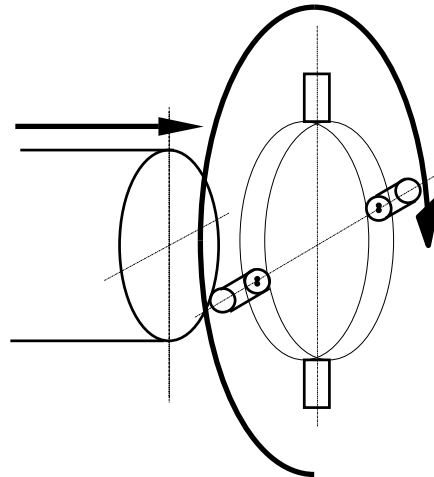


Grinding burn with PMFT: Test sequence

Detection of surface defects using eddy current means a relative movement between probe and test part, i.e. either the test part rotates or the probe rotates (refer to the sketches) - the same is applied for grinding burn detection with PMFT.

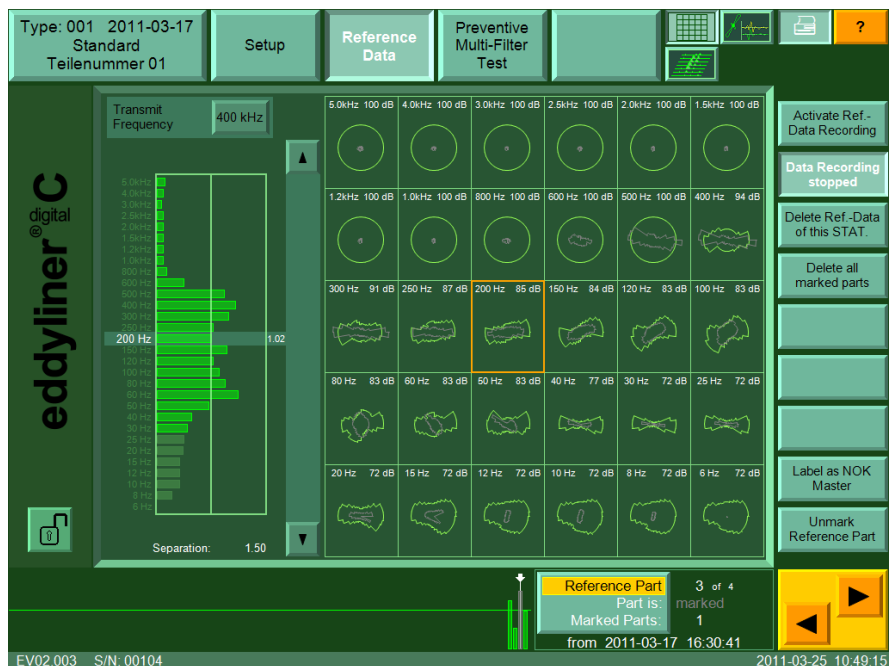


part rotates, probe or test part are moved linearly



probes rotate, test part is moved linearly

In calibration mode of the Preventive Multi-Filter Technology (PMFT), the magnetic features are simultaneously recorded with 30 different band pass filter settings of the "good" parts and 30 corresponding tolerance zones are generated. In test mode, the signals are compared with the generated tolerance zones and test parts with discrepancy are sorted out. Contrary to the traditional eddy current test method where always one setting only is used for testing (i.e. one filter setting, one gain, one phase angle as well as one crack threshold per channel), PMFT queries simultaneously 30 tolerance zones generated of polar fields. Testing for grinding burn, cracks and pores with one setting and one channel is thus feasible.



30 tolerance zones

Grinding burn with PMFT: Applications

Example 1:

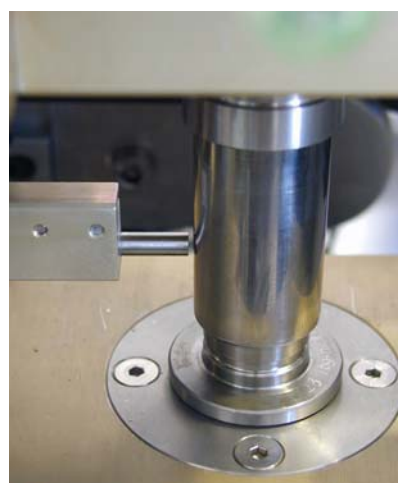
Grinding burn test on rollers (cylindrical rollers, spherical rollers, tapered rollers)



Depending on customer requirements, concepts with rotating heads (**eddyscan[®]H**) as well as concepts with standard sensors may be realised. Rotating heads are preferably used for high-speed testing of cylindrical rollers and depending on diameter and length of test part up to 10 parts per second are managed. Different machine designs enable testing of a diameter range of 1.5 - 63 mm.

Options like e.g. automatic master part run, testing of both front faces, marking station etc. according to customer specification can be realised.

Larger or non-cylindrical rollers (tapered or spherical rollers), however, are individually clamped, rotated and scanned with a standard probe. Feeding and discharging of the test parts is effected by gripper systems, conveyor belt or robots.



The ibg-technology fulfils the requirements of the new DIN-EN 12080 "Railway applications - axle boxes - rolling bearings" which defines the quality requirements of all railway axle boxes and roller bearings and which among others includes the crack and grinding burn detection.

ibg offers customised solutions as per customer's request.



ibg Technical Meetings

In Detroit, Peking and at the ibg headquarters in Ebermannstadt Workshops for our sales partners took place in the beginning of 2012.

Topic:
harmonic analysis and grinding burn.

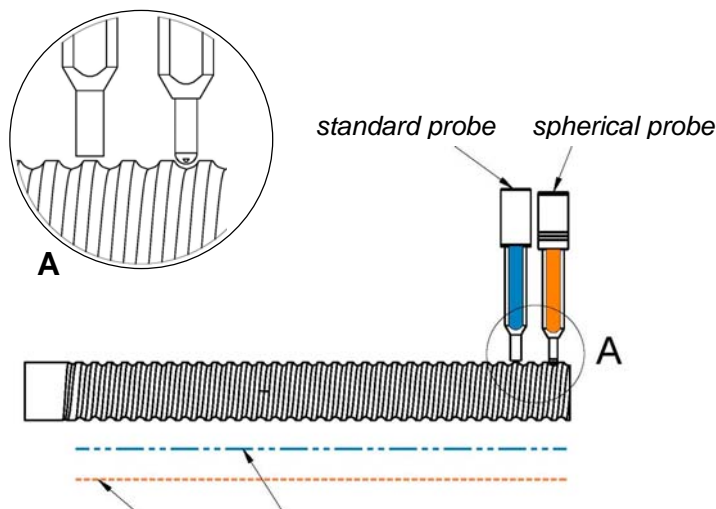
Participants of totally 16 countries could be welcomed to the two-day meeting.



Example 2:

Grinding burn test on steel ball races of nuts and rods

The risk of grinding burn on ground steel ball races is extremely high. Due to a huge production quantity of such ball race modules (e.g. the newly developed EPS Electronic Power Steering in the automotive branch) it is very important that the testing procedure can properly be integrated into the automated production process. ibg offers suitable solutions and concepts.



*Threaded area incl. runouts:
Spherical probe tests the complete gothic profile for grinding burn and cracks, pitch of probe trace 7 mm*

*Threaded area incl. runouts:
standard probe tests the outer diameter of thread for cracks, pitch of probe trace 7 mm*



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