ultraRS

Measurement of Depth of Nitriding, by Ultrasounds

- *Fast*

- *Cost efficient*

- *High accuracy*

- *Mobile*

- *Non destructive*

Ultra RS

Tailored to specific application

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 Nitriding on surface improves fatigue performance of metallic components. It is however difficult to have good control of the process and assure that the desired depth of treatment is achieved, A new device developed by Ultra RS allows to measures depth of nitriding accurately which enables our customers to improve their processes and gain valuable knowledge of the quality of their products.

The device is easy to apply along the production line efficiently and allow the operator to achieve 100% QC and eliminate uncertainties in quality that arise from Nitriding.

Depending on the nature and volume of our customers' activities, we can perform the measurements at their sites or tailor make and train their staff to carry out the measurements themselves. If desired, Ultra RS can analyze results of our measurements and provide advice on ways to improve the quality for our clients.
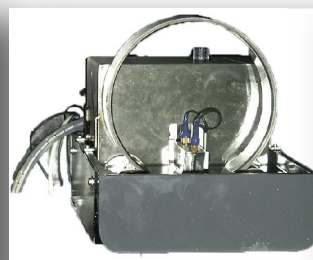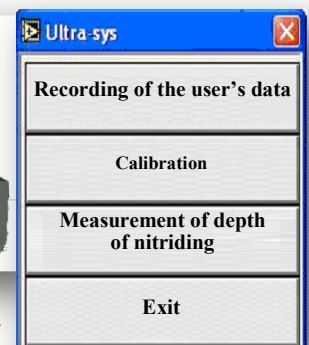
Example of device of measurement of depth of nitriding of bearing

Ultra-sys

| Recording of the user's data |
| Calibration |
| Measurement of depth of nitriding |
| Exit |

Ultra-nit software

Measurement of Depth of Nitriding, by Ultrasounds

Principal of Measurement

§The chemical composition in the nitrided layer is different from that of the base material

§The velocity of the propagation wave depends on the structure and composition of the material in which it propagates. So this velocity in the base material is very different from that in the nitrided zone.
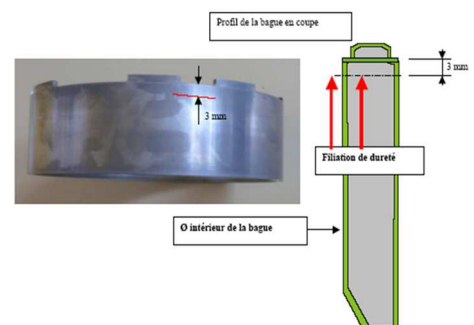
§During measurement, the wave is propogated deeper than the Nitrided layer to study its velocity change compared to that of base metal.

Combination layer

Diffusion layer

Nitrided zone

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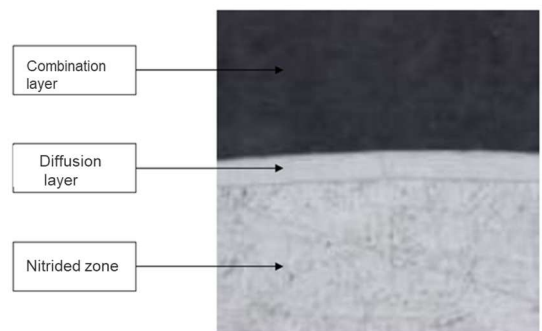
- *Non destructive*

Comparisson Between Ultrasounnd vs Destructive Method Results

SNR 97 batch 29-2004	Destructive method	Ultrasound		*	Accuracy (%)
SNR 97 lot 29-2004 (Ring)	Snecma (LaboCCL)	UltraRS	Accuracy (%)	SNR (estimation)	% de différence
Repère 6 Position 6	0,65	0,67	3,08%	0,6	7,69%
Repère 8 Position 8	0,66	0,67	1,52%	0,6	9,09%
Repère 10 Position 10	0,632	0,67	6,01%	0,6	5,06%
SKF E 8722 (Ring)	Snecma (Labo.Vernon)	UltraRS		SKF (estimation)	
	0,575	0,576	0,17%	0,556	3,30%
SKF E 8390/1 (Ring)	Snecma (Labo.Vernon)	UltraRS		SKF (estimation)	
Bague Etalon n°8 Internal ring 8	0,585	0,574	1,88%	0,558	4,62%
SKF E 7516 (Ring)	Snecma (Labo.Vernon)	UltraRS		SKF (estimation)	
	0,585	0,61	4,27%	0,552	5,64%
SKF E 8390 (Ring)	Snecma (Labo.Vernon)	UltraRS		SKF (estimation)	
	0,607	0,59	2,80%	0,575	5,27%

* Measurement realised by destructive method (hardness measurement) on a flat specimen treated at the same time as the bearing rings.

Profil de la bague en coupe

3 mm

3 mm

Filiation de dureté

Ø intérieur de la bague

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