NITREG® CONTROLLED NITRIDING

TAILORED TO YOUR NEEDS

If you wish to achieve perfect gas nitriding results that meet difficult and challenging specifications, and if you require consistency from load to load, NITREG® is the most likely solution for your needs.

NITREG® fully automated process control technology applies individually customized processes to different parts, applications and materials for ideal results.

It represents a unique approach, based on the nitriding potential as the principal controlling parameter. The nitriding potential, denoted by Kn, is a thermodynamical parameter directly linked to the surface concentration of nitrogen in steel. Nitrogen concentration is responsible for the properties of the nitrided surface.

THE ‘CORNER EFFECT’ PROBLEM

A common problem in traditional nitriding is the “corner effect”, an over-saturation of nitrogen in the white layer and in the diffusion layer which leads to spalling. NITREG® prevents this effect by appropriately reducing the nitriding potential (Kn) during treatment. The concentration of nitrogen in the corner will be lowered sufficiently to prevent over-saturation.

CONTROL OF NITRIDING

Superior case toughness of the nitrided layer is achieved by precise control of Kn (nitriding potential). This is shown by two 30 kg Vickers hardness indentations produced on a part nitrided without Kn control and on a NITREG® treated part. The part nitrided without Kn control is brittle as shown by the network of cracks. The NITREG® treated component is ductile with high white layer toughness, as evidenced by the absence of cracks.

Vickers indentations (load of 30 kg) on a 4340 steel, nitrided to the same specification
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NITREG® TECHNOLOGY
NITREG® is the trade name of our modern gas nitriding technology. It involves state-of-the-art equipment and a user friendly software program, allowing full automation of all functions, process stages, and safety procedures with closed-loop processing parameters.

EXAMPLE OF A NITREG® TURNKEY SYSTEM

WORRY-FREE OPERATION
NITREX delivers and installs computerized and fully automated, turnkey nitriding systems, developed and thoroughly tested worldwide over the past 30 years. As described earlier, control of nitriding potential (Kn) is the key parameter.

Our systems are capable of maintaining the preset values of Kn, as desired for each processing stage, by continuous self correction, taking into account such factors as load size and/or surface condition, which may differ from charge to charge. From start to finish, the process requires no manual adjustments.

COMPLETE PACKAGE
The NITREX controlled nitriding system complete with NITREG® technology is a comprehensive approach to solving all your nitriding problems. It includes:

→ A furnace
→ A control system
→ Software
→ An effluent gas neutralizer (optional)
→ Know-how
→ Support

NITREG® ADVANTAGE
→ Control of the thickness of the compound (white) layer and its properties
→ Elimination of closed nitride networks within the diffusion zone
→ Control of case depth
→ Control of surface hardness
→ No distortion, minimal and predictable growth
→ Fool-proof operation
→ Low operating costs
→ Supervision reduced to a minimum
→ No cleaning requirements after processing

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