Heat Treatments

QUALITY • SERVICE • EXPERTISE

Nitriding

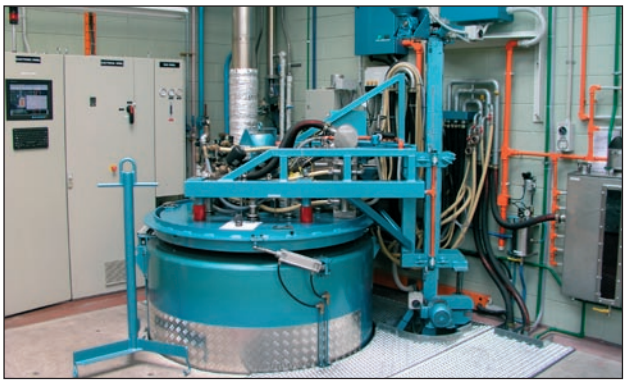
HTL Fact Sheet 16

Nitriding is a surface hardening treatment that introduces nitrogen into the surface of steel at relatively low temperatures of about 520 °C. At this temperature, nitrogen reacts with the alloying elements in the steel and forms a hard compound know as 'Nitride'. Because of the low processing temperatures and the absence of a quenching requirement, nitriding is a very low distortion process in comparison to conventional heat treating.

The nitrogen can be introduced by a number of different methods such as liquid (salt bath), gaseous or plasma. The Nitreg nitriding system that HTL use is a highly refined variation of gaseous nitriding with computer controlled nitriding potential (concentration). Control of the nitriding potential allows the nitrided properties to be improved significantly over the more conventional nitriding techniques.

Advantages of the Nitreg Process

- Lower distortion levels.
- Results are predictable and repeatable.
- No brittleness of the white layer.
- Process times are reduced.
- Better uniformity of layer, regardless of geometry.
- With the Nitreg system the recipe is adjusted to optimise case properties depending on the material and application or requirements.



Commonly Nitrided Materials

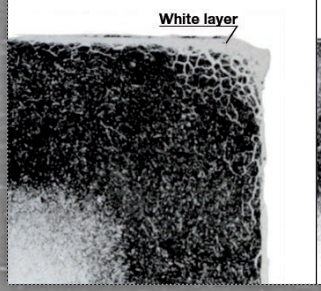
P20, H13, D2, O1, 4140, 4340, 1040, 1045.

Maximum Sizes

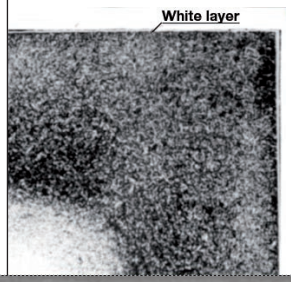
Nitrider #1	Nitrider #2	Nitrider #3
780 mm diameter	520 mm diameter	850 mm diameter
1,200 mm deep	2,900 mm deep	1,250 mm deep
1,000 kg max load	1,000 kg max load	1,500 kg max load

Corner Effect in Nitriding

CONVENTIONAL NITRIDING



NITREG© NITRIDING



Turnaround Times

Most common items are normally processed overnight, extraordinarily large pieces or deep case depths may take longer. Urgent jobs should be arranged in advance.

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