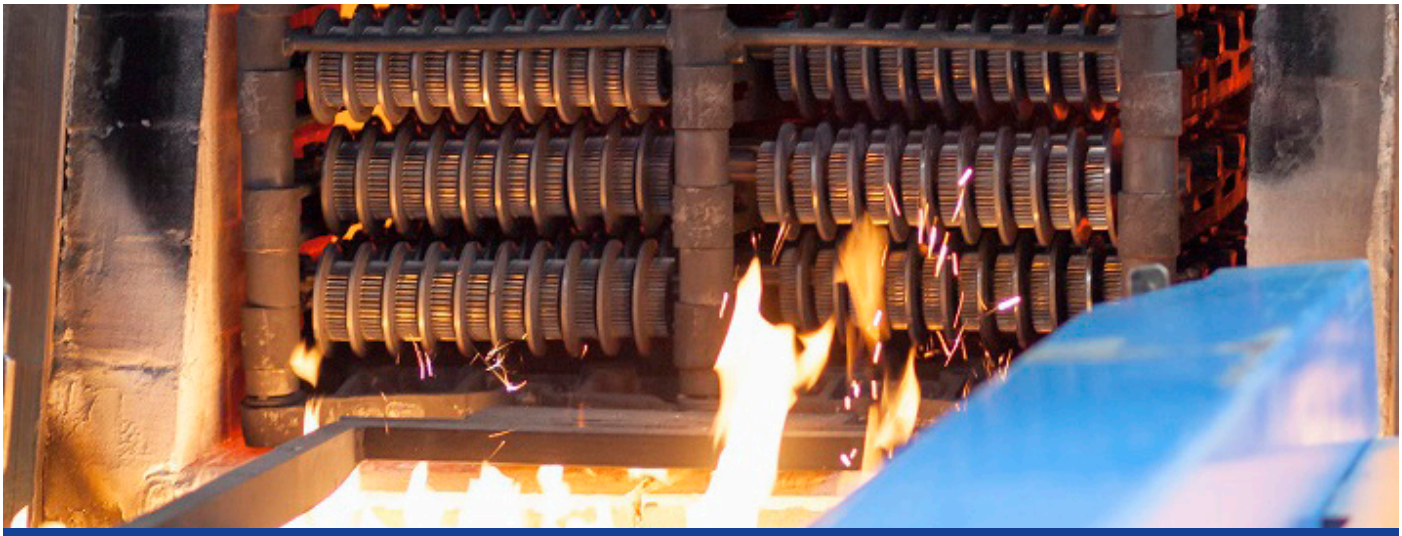


Case hardening R.CARB+®, Carbonitriding, Carburisation

Process description:

Case hardening R.CARB+®

Case hardening R.CARB+® is a combination of carburisation and hardening process including tempering. This results in a carburised marginal area with a carbon content of 0.6 - 0.8%. The carbon content decreases continuously towards the core. The result of the hardening process is a margin with a high hardness and a soft, tough core.

Carbonitriding

Carbonitriding differs from case hardening R.CARB+® in terms of the addition of nitrogen. The marginal zone is concentrated with nitrogen in addition to carbon. This is followed by a hardening process incl. tempering in order to achieve the desired characteristics. In comparison to case hardening R.CARB+®, the carbonitriding procedure provides the advantage that the hardenability is increased due to the nitrogen. Thus, unalloyed steels (construction steels) can also be treated. As is the case with the case hardening, a hard, wear resistant marginal surface with a high strength and a tough core is the result of the carbonitriding procedure.

Carburisation

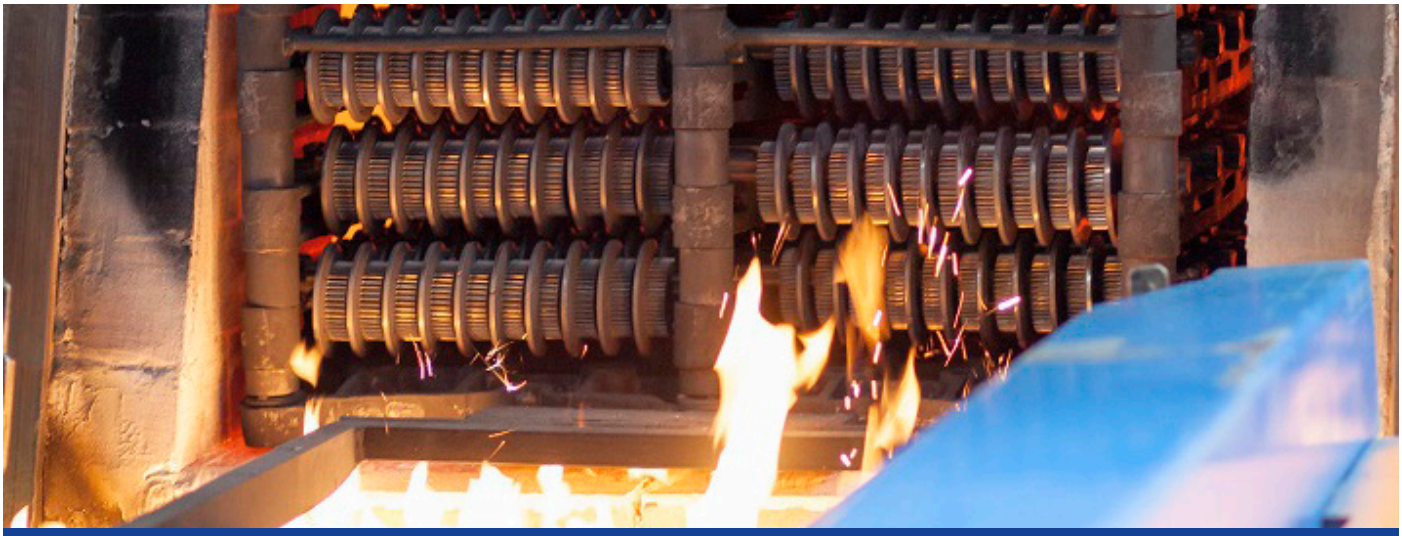
During the carburisation procedure, the marginal layer of a steel (usually case-hardened steels) is concentrated with carbon and subsequently slowly cooled in an inert gas atmosphere in order to not achieve an increased hardness. This method allows the components to be processed, which is then followed by the actual hardening process. An advantage of this procedure is that it is possible with this sequence to manufacture components with different case depths. Materials suited for the carburisation process are case-hardened steels with a carbon content below 0.25 w/w.

This is applied in the following sectors:

→ Tool manufacturing and mechanical engineering, agricultural machinery, aerospace, etc.

Materials:

→ Case-hardening steels with carbon contents below 0.25 % w/w



Case hardening R.CARB+®, Carbonitriding, Carburisation

Key characteristics:
→ Exact process control (thermocouples, online diffusion calculator, mass flow controller, quenching medium, etc.)
→ Process parameters adapted to materials

Maximum furnace area:
→ 1,050 × 690 × 700 mm (L x W x H)

Maximum batch weight:
→ 1,100 kg gross weight

What is the primary purpose of application of this method:
→ For adjusting the strength and toughness properties of the material
→ Increase in surface hardness
→ High wear resistance
→ Increased durability and reduced pressure requirements

Cycle duration:
→ See schedule list

Necessary information:
→ Material specifications
→ Required surface hardness
→ Subsequent processing steps (e.g. straightening, distortion control, burnishing)
→ Required hardness penetration depth, incl. machining allowance
→ Please indicate maximum warpage and/or reference points in case of possible straightening operations
→ Areas must be protected prior to carburisation (covering)

Observe the following in terms of the delivery condition of the components:
→ Component should be free from greases, oils, processing aids or drawing and casting marks
→ Preferably avoid sharp edges and/or large cross-sections

Important:
→ A uniform surface cannot be ensured in unalloyed case-hardening steels (e.g., C15).
→ Dimensional changes must be taken into consideration - please note that it must be manufactured with corresponding machining allowance

Contact:
RÜBIG Sales
+43 (0) 7242 / 660 60
ht.vertrieb@rubig.com

RÜBIG DRIVING SUCCESS