Innovative solutions for large machine parts

Efficient, environmentally-friendly, productive: surface treatment with BALITHERM IONIT

Open a new world of possibilities with BALITHERM IONIT
Contact us today!

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Improved performance: The surface hardening solution for large machine parts

The surface treatment of high-performance machine components is a critical process step. Oerlikon Balzers has the solution: The advanced low-temperature heat treatment process IONIT. The low-temperature heat treatment process creates a wear-resistant and durable surface on the component’s material in a solution, like annular and ring gears for wind turbines, marine gear units, or large parts found in the high-performance materials segment. IONIT is the environmentally-friendly and efficient alternative to conventional nitriding methods. It allows for the increase of mechanical properties and a reduction in emissions. It also supports the circular economy and enhances the sustainability of the metal industry.

Component shipping and subsequent application

A component manufacturer requires a delivery date for the IONIT component. The component could be a bearing or a gear. The delivery date is crucial for the manufacturer’s production schedule. The IONIT process ensures a high-quality surface finish, reducing wear and tear on the component.

The decisive advantage for more efficiency: The service process

Decision-making in the service process is crucial for maintaining high efficiency. The process can be divided into several stages:

1. Component delivery: The manufacturer receives the IONIT component at the agreed delivery date.
2. Cleaning: Before the component can be used, it must be cleaned to remove any residual IONIT material.
3. Component shipping: The cleaned component is shipped to the customer.
4. Subsequent application: The component is applied to the final product.

Additional application recommendations

The IONIT process is suitable for a wide range of applications, including:

- High-speed machine parts
- Automotive components
- Railway components
- Wind turbine components
- Marine components
- Aerospace components

Top notch material properties!

The materials used in the IONIT process are selected based on their superior material properties. The IONIT process enhances the material properties, making them suitable for high-performance applications.

<table>
<thead>
<tr>
<th>Material group</th>
<th>Material number</th>
<th>Material number</th>
<th>ASTM / SAE / AISI</th>
<th>Hardness 0.1</th>
<th>Hardness HRC</th>
<th>max. NCD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grey cast iron</td>
<td>EN-JS2070</td>
<td>0.7070</td>
<td>100-70-03</td>
<td>&gt; 800</td>
<td>&gt; 64</td>
<td>0.3</td>
</tr>
<tr>
<td>Tempered steel, alloyed</td>
<td>40NiCrMo4</td>
<td>1.6585</td>
<td>4340</td>
<td>800 - 900</td>
<td>64 - 67</td>
<td>0.8</td>
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<tr>
<td>Tempered steel, alloyed</td>
<td>34CrNiMo6</td>
<td>1.6582</td>
<td>4207</td>
<td>800 - 900</td>
<td>64 - 67</td>
<td>0.7</td>
</tr>
<tr>
<td>Tempered steel, alloyed</td>
<td>42CrMo4</td>
<td>1.7225</td>
<td>4140</td>
<td>800 - 900</td>
<td>64 - 67</td>
<td>0.8</td>
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<tr>
<td>Tempered steel, alloyed</td>
<td>30CrMo9</td>
<td>1.7707</td>
<td>4540</td>
<td>800 - 900</td>
<td>64 - 68</td>
<td>0.7</td>
</tr>
<tr>
<td>Tempered steel, alloyed</td>
<td>31CrMo9</td>
<td>1.5919</td>
<td>–</td>
<td>800 - 950</td>
<td>64 - 86</td>
<td>0.7</td>
</tr>
</tbody>
</table>

Complete list available on request.

The values for the materials shown are guide values. The values may vary depending on the specific material and production process.