Ideal for demanding turbine blade machining – high oxidation resistance

Machining operations in the energy production market are becoming more challenging all the time. For example, materials must withstand increasingly higher temperatures. Consequently, the machining tools for these tasks need to be equipped with a wear-protection coating that is able to meet these high demands. BALINIT® ALNOVA is the ideal solution due to its improved hot hardness, high oxidation resistance and very smooth surface.

BALINIT® ALNOVA is a highly ductile, high oxidation-resistance coating that reduces friction and allows the tool to be used in higher temperatures, leading to a more efficient machining process.

**BALINIT® ALNOVA for rough milling of turbine blades**

<table>
<thead>
<tr>
<th>Tool Index</th>
<th>CC and mill</th>
<th>0 = 20 mm</th>
<th>Z = 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workpiece</td>
<td>Turbine blade</td>
<td>Steel 1.4921 (40CrNiMo)</td>
<td></td>
</tr>
<tr>
<td>Cutting data</td>
<td>Cutting speed</td>
<td>$v_c = 300$ m/min</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Feed rate</td>
<td>$f = 0.100$ mm/rev</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cutting depth</td>
<td>$a_p = 2.50$ mm</td>
<td></td>
</tr>
</tbody>
</table>

**Source**

- **User**

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**Benefit from the BALINIT ALNOVA high-performance coating**

Contact us now!

**Experience BALINIT ALNOVA high-performance coating**

立即与我们联系！

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BALINIT ALNOVA
The high-performance coating combination for
difficult-to-cut materials

难加工材料的高性能涂层组合

The only way to secure a competitive advantage is by
keeping the quality, productivity and the resulting value
creation in your processes at the highest level. With
BALINIT® ALNOVA, you have all the trump cards in
your hand. As a high-end coating for end mills, it
represents the systematic refinement of the AlCrN basis
and stands out due to its impressive coating properties
for the machining of the most demanding materials. And
that means: You have the advantage.

如果想要保持竞争力，需要保证质量和生产力，并且保证所创造的价值处于最高水平。通过使用BALINIT® ALNOVA涂层，您已经手握所有王牌。这款用于端铣刀的高端涂层

represents the systematic refinement of the AlCrN basis
and stands out due to its impressive coating properties
for the machining of the most demanding materials. And
that means: You have the advantage.

值得依赖的理想涂层性能

**OPTIMIZED PERFORMANCE**

优化性能

The latest in etching technology

最新的蚀刻技术

Optimized coating adhesion results in high-level reliability
优化涂层结合力，可靠性高

Balancing of residual stress and coating hardness

平衡残余应力和涂层硬度

High thermal shock stability

耐热冲击性能高

For wet and dry machining

适用于干湿加工

Increased oxidation resistance

提高抗氧化性

Significantly lengthened tool lifetimes as compared to common high-performance coatings

相比较常见高性能涂层，具有显著延长的使用寿命

Extremely high tool cutting-edge stability

极其高的刀具切削刃稳定性

Good chip removal and minimization of built-up edge formation

良好的切屑去除，极小的积屑层形成

More productivity, manufacturing reliability and efficiency in milling

在铣削加工中，生产率、工艺稳定性和效率得到提高

Rely on a broad application range

广泛的应用领域

For carbide end mills and modular milling cutters

用于硬质合金铣刀和模块式铣刀

- **Tool steel > 1,000 N/mm²**
- Hardened steel, 45-52 HRC
- Stainless steel, heat-resistant steels
- Cast iron
- Titanium, titanium alloys

- **工具钢**
- **淬火钢，45-52 HRC**
- **不锈钢，耐热钢**
- **铸铁**
- **钛及钛合金**

For HSS end mills

用于高速钢刀

- **Stainless steel**
- **Cast iron**
- **Titanium, titanium alloys**

- **不锈钢**
- **铸铁**
- **钛及钛合金**

First-class performance and productivity for your highly demanding machining processes

在高难度加工工艺中，也能达到顶级性能和产量

Rough milling, wet

粗加工，水冷

Finish milling, dry

精加工，干式

Rough milling of titanium

钛的粗加工

Milling stainless steel

不锈钢削

Finish milling of titanium

钛的精加工

Finish milling of stainless steel

不锈钢的精加工

Material removal rate G [mm³/min]

材料去除率 G [mm³/min]

Source

来源

Tool manufacturer Germany

工具制造商 德国

Oerlikon Balzers France

欧瑞康巴尔兹法国