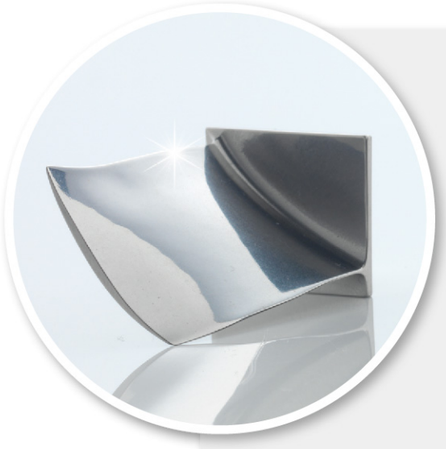
Ideal for demanding turbine blade machining – high oxidation resistance

加工涡轮叶片的理想方案—高抗氧化性

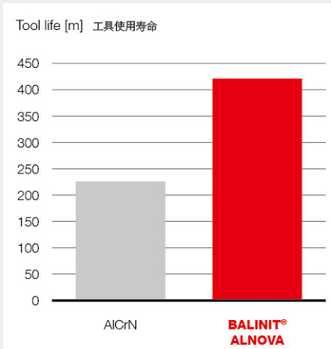
Machining operations in the energy production market are becoming more challenging all the time. For example, materials must withstand increasingly higher temperatures. Consequently, the machining tools for these tasks need to be equipped with a wear-protection coating that is able to meet these high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

能源制造领域的机械加工一直都存在很大的难度，例如，材料必须忍受不断升高的温度。因此，此类加工的切削工具需要应用耐磨涂层来满足这些要求。BALINIT® ALNOVA因其红硬性、高抗氧化性以及非常光滑的表面，是理想的解决方案。



BALINIT® ALNOVA for rough milling of turbine blades

BALINIT® ALNOVA用于涡轮叶片的粗铣



Tool 工具	CC end mill D = 20 mm Z = 4
Workpiece 工件	Turbine blade 涡轮叶片 Steel 钢 1.4021 (AISI 420, SUS420J2)
Cutting data 切削参数	Cut 1: v_c = 300 m/min Cut 2: v_c = 100 m/min Emulsion (5-8%) 润滑(5–8%)
Source 来源	User 用户

Benefit from the BALINIT ALNOVA high-performance coating
Contact us now!

体验BALINIT ALNOVA高性能涂层
即刻与我们联系!

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BALINIT ALNOVA

More from your cutting edge

BALINIT ALNOVA

好的切削刃，为您带来更多

Reliable milling of the most demanding materials

难加工材料的可靠铣削

Cutting Tools

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，就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，您一切尽在掌握。这款针对铣刀的高端涂层是铬铝基涂层的系统化精炼；这款涂层针对难加工材料具有出众表现。这意味着：给您带来优势。

Optimal coating properties you can bank on
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 平衡剩余应力和涂层硬度	**High thermal shock stability** 热冲击稳定性高 **For wet and dry machining** 适用干、湿加工
Dual layer structure 双层结构	**Increased oxidation resistance** 提高抗氧化性
High abrasion-resistance and improved hot hardness 提高耐磨性和红硬性	**Significantly lengthened tool lifetimes as compared to common high-performance coatings** 相较其他高性能涂层，显著增加工具使用寿命
Durable and very smooth surface 持久、光滑的表面	**Extremely high tool cutting-edge stability** 极高的工具切削刃稳定性 **Good chip removal and minimization of built-up edge formation** 排屑顺畅，尽可能减少刃口堆积

BALINIT® ALNOVA
More productivity, manufacturing reliability and efficiency in milling
在铣削加工中，生产力、工艺稳定性和效率均得到提高

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化组合铣刀

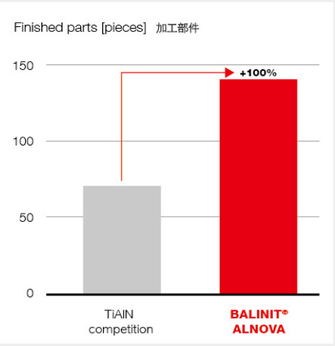
- Tool steel > 1,000 N/mm² – 工具钢
- Hardened steel, 45-52 HRC – 淬火钢
- Stainless steel, heat-resistant steels – 不锈钢、耐热钢
- Cast iron – 铸铁
- Titanium, titanium alloys – 钛和钛合金

For HSS end mills
用于高速钢铣刀

- Stainless steel – 不锈钢
- Cast iron – 铸铁
- Titanium, titanium alloys – 钛和钛合金

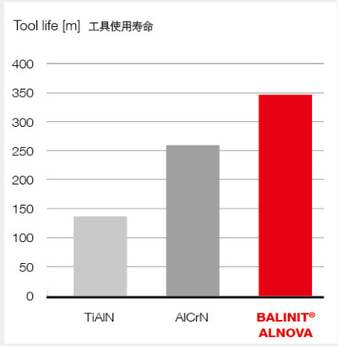
First-class performance and productivity for your highly demanding machining processes
在高难度加工工艺中，也能达到顶级性能和产量

Rough milling, wet
粗铣加工，湿切



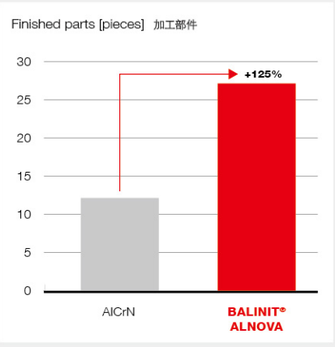
Tool **工具**	Carbide end mill 硬质合金铣刀 Ø 16 mm
Workpiece **工件**	Steel 钢 1.7131 (~AISI 5120, ~SMnC 420(H))
Cutting data **切削参数**	v_c = 181 m/min f_t = 0.03 mm Emulsion 5% 润滑油5%
Source **来源**	Tool manufacturer Germany 德国工具制造商

Finish milling, dry
精铣加工，干切



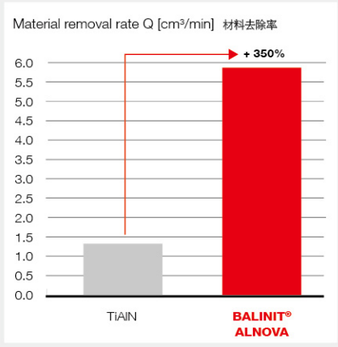
Tool **工具**	Carbide end mill 硬质合金铣刀 Ø 10 mm , Z = 4
Workpiece **工件**	Steel 钢 1.2344 (AISI H13, SKD61) 45 HRC
Cutting data **切削参数**	v_c = 250 m/min f_t = 0.12 mm a_e = 0.5 mm a_p = 10 mm VB_{max} = 0.12 mm dry 干切
Source **来源**	Oerlikon Balzers 欧瑞康巴尔查斯

Rough milling of titanium
粗铣钛加工



Tool **工具**	Milling cutter 铣刀
Workpiece **工件**	Steel 3.7165 (AISI R56400, TAP6400H) 钢
Cutting data **切削参数**	v_c = 70 m/min a_p = 25 mm a_e = 7.5 mm Emulsion 8% 润滑油8%
Source **来源**	Oerlikon Balzers France 欧瑞康巴尔查斯法国

Milling stainless steel
不锈钢铣削



Tool **工具**	Carbide endmill Z4 硬质合金铣刀
Workpiece **工件**	Stainless steel > 700 N/mm² 不锈钢 1.4571 (SUS 316Ti, AISI 316Ti)
Cutting data **切削参数**	Coating 1 (TiAlN): v_c = 65 m/min f_t = 0.03 mm a_p = 8 mm a_e = 0.8 mm wet 干切 Coating 2 (BALINIT® ALNOVA): v_c = 120 m/min f_t = 0.07 mm a_p = 8 mm a_e = 0.8 mm wet 干切
Source **来源**	Tool manufacturer Germany 德国工具制造商