

**oerlikon**  
balzers

# **BALINIT ALNOVA**

## **More from your cutting edge**

Reliable milling of the most demanding materials



**Cutting Tools**



# BALINIT ALNOVA

## The high-performance coating combination for difficult-to-cut materials

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.

## Optimal coating properties you can bank on

### OPTIMIZED PERFORMANCE

The latest in etching technology



**Optimized coating adhesion results in high-level reliability**

Balancing of residual stress and coating hardness



**High thermal shock stability  
For wet and dry machining**

Dual layer structure



**Increased oxidation resistance**

High abrasion-resistance and improved hot hardness



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

Durable and very smooth surface



**Extremely high tool cutting-edge stability  
Good chip removal and minimization of built-up edge formation**

### BALINIT® ALNOVA

**More productivity, manufacturing reliability and efficiency in milling**

## Rely on a broad application range

### For carbide end mills and modular milling cutters

- Tool steel > 1,000 N/mm<sup>2</sup>
- Hardened steel, 45-52 HRC
- Stainless steel, heat-resistant steels
- Cast iron
- Titanium, titanium alloys

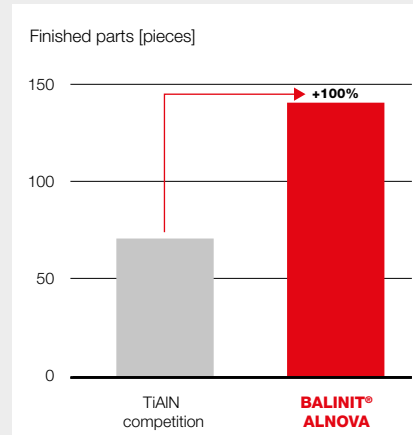
### For HSS end mills

- Stainless steel
- Cast iron
- Titanium, titanium alloys

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



## Rough milling, wet



### Tool

Carbide end mill  
Ø 16 mm

### Workpiece

Steel 1.7131  
(~AISI 5120, ~SMnC 420(H))

### Cutting data

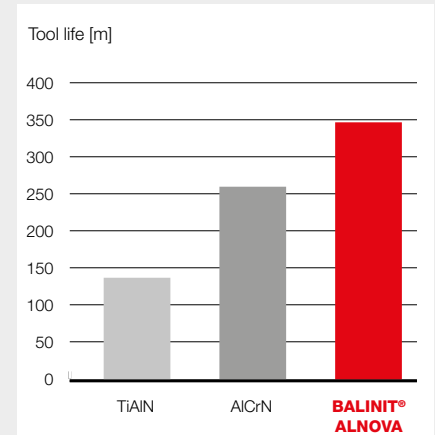
$v_c = 181$  m/min  
 $f_t = 0.03$  mm

Emulsion 5%

### Source

Tool manufacturer Germany

## Finish milling, dry



Carbide end mill  
Ø 10 mm , Z = 4

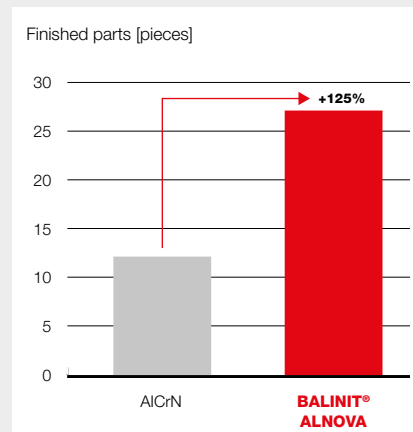
Steel 1.2344 (AISI H13, SKD61)  
45 HRC

$v_c = 250$  m/min  
 $f_t = 0.12$  mm  
 $a_e = 0.5$  mm  
 $a_p = 10$  mm  
 $VB_{max} = 0.12$  mm  
dry

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## Rough milling of titanium



### Tool

Milling cutter

### Workpiece

Steel 3.7165 (AISI R56400, TAP6400H)

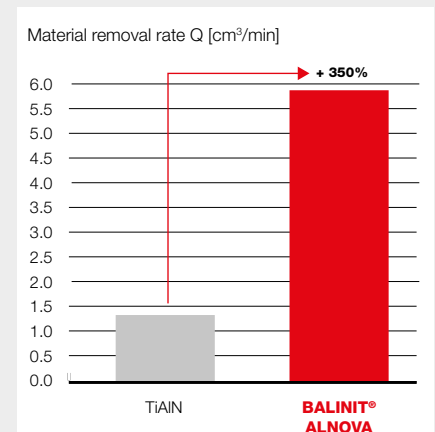
### Cutting data

$v_c = 70$  m/min  
 $a_p = 25$  mm  
 $a_e = 7.5$  mm  
Emulsion 8%

### Source

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## Milling stainless steel



Carbide endmill Z4

Stainless steel > 700 N/mm²  
1.4571 (SUS 316Ti, AISI 316Ti)

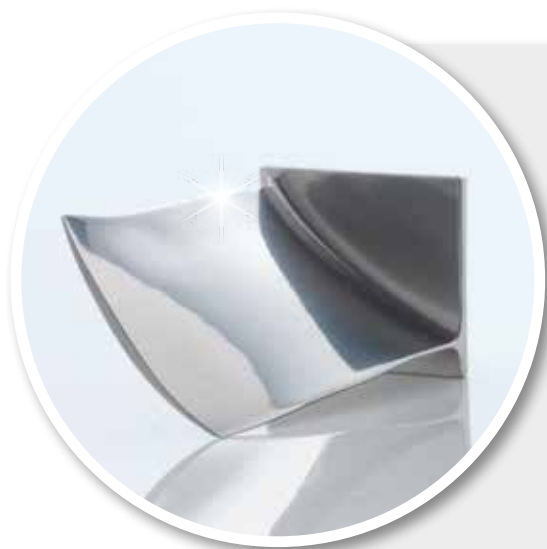
Coating 1 (TiAlN): $v_c = 65$ m/min $f_t = 0.03$ mm $a_p = 8$ mm $a_e = 0.8$ mm wet	Coating 2 (BALINIT® ALNOVA): $v_c = 120$ m/min $f_t = 0.07$ mm $a_p = 8$ mm $a_e = 0.8$ mm wet
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Tool manufacturer Germany

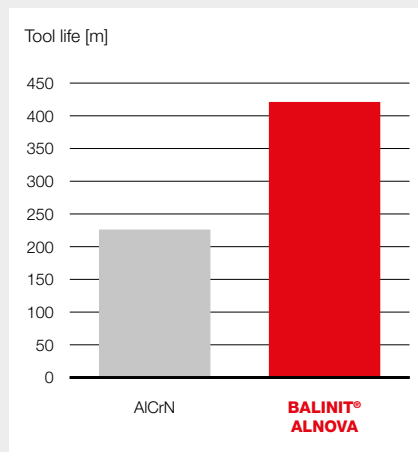
# Ideal for demanding turbine blade machining – high oxidation resistance

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 for rough milling of turbine blades



<b>Tool</b>	CC end mill D = 20 mm Z = 4
<b>Workpiece</b>	Turbine blade Steel 1.4021 (AISI 420, SUS420J2)
<b>Cutting data</b>	Cut 1: $v_c = 300$ m/min Cut 2: $v_c = 100$ m/min Emulsion (5-8%)
<b>Source</b>	User

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

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