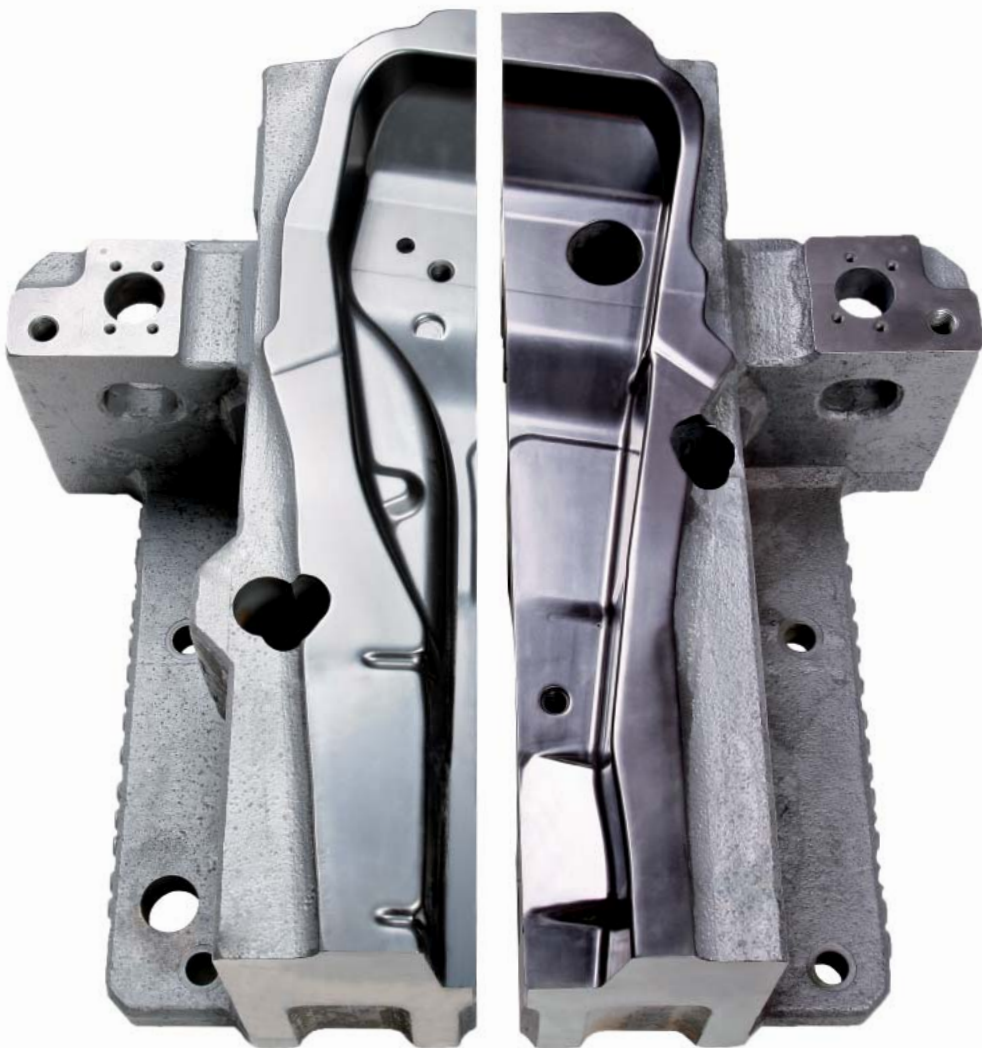


# **BALINIT<sup>®</sup> ADVANCED Series: Good times for round edges**



# Optimised adhesion, improved surface support and resistance to abrasive wear

Punching and forming tools as well as pressure die-casting moulds are exposed to complex stress profiles, particularly in edge zones. Moreover, significant stress gradients occur between the surface and the remaining volume of the tool.

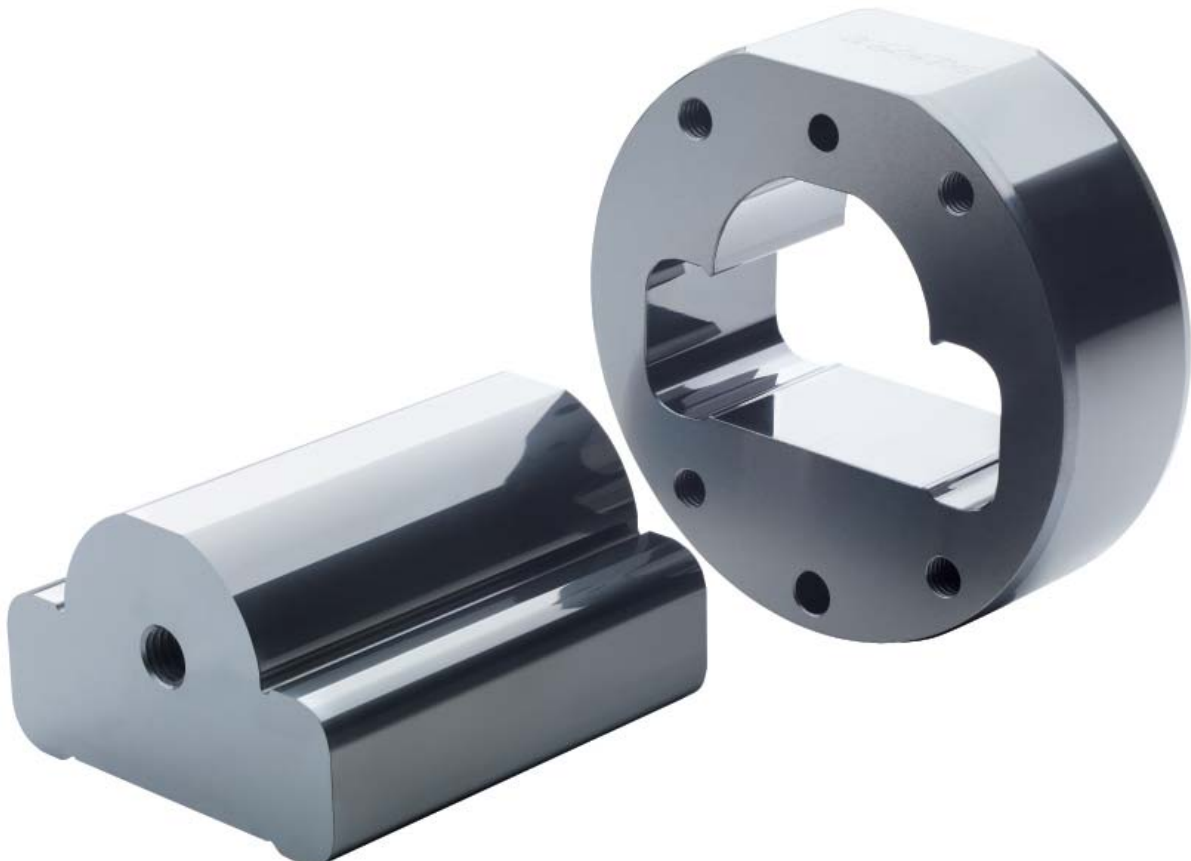
**Balzers' solution** The ADVANCED Series coatings developed by Oerlikon Balzers enhance the support effect of the tool surface and substantially improve the performance potential of the hard coating. Tool service life is prolonged by as much as 100%.

The ADVANCED Series is also an alternative for tools that so far have been treated with CVD or TD (Toyoda Diffusion) because of service life considerations. The PVD ADVANCED technology prevents geometrical and dimensional changes and delivers equivalent or better results.

Oerlikon Balzers' BALINIT® FUTURA NANO ADVANCED, BALINIT® LUMENA ADVANCED, and BALINIT® ALCRONA PRO ADVANCED are optimised PVD coatings with perceptibly enhanced performance. Additional advantages of this series of coatings also include greater surface hardness and homogeneous hardness profiles.

## Advantages

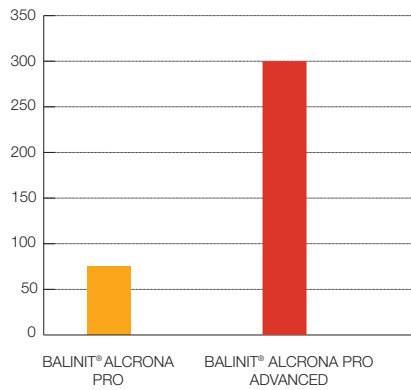
- Improved coating adhesion
- Higher load capacity
- Greater resistance to abrasive wear
- Less tendency to heat checking
- Greater resistance to crack initiation and propagation
- Optimised critical load



# Greater performance potential due to optimised parameters

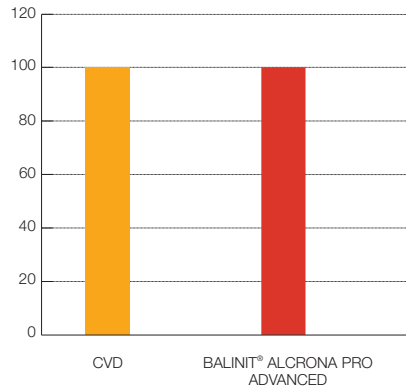
## Success stories with BALINIT® ALCRONA PRO ADVANCED

Produced parts [x 1'000]



**Application:** Press forming  
**Component:** Bolt head  
**Tool:** Press forming punch  
**Material:** CPM1V (PM Steel)  
**Coating:** BALINIT® ALCRONA PRO ADVANCED  
**Advantages:** Longer service life  
 Less machine downtime  
 Less scrap

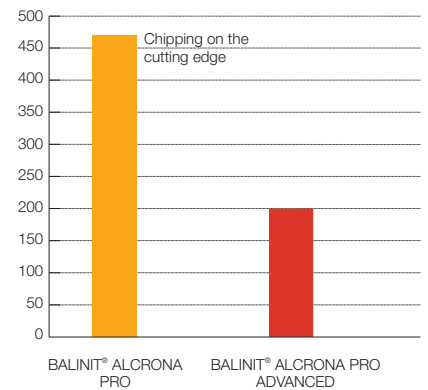
Produced parts [x 1'000]



**Application:** Blanking of 10-mm sheet steel  
**Component:** Pedal parts  
**Tool:** Blanking punch  
**Material:** 1.2379 (~ AISI D2), 61 HRC  
**Coating:** BALINIT® ALCRONA PRO ADVANCED  
**Advantages:** Same service life as with CVD

## Wear comparison

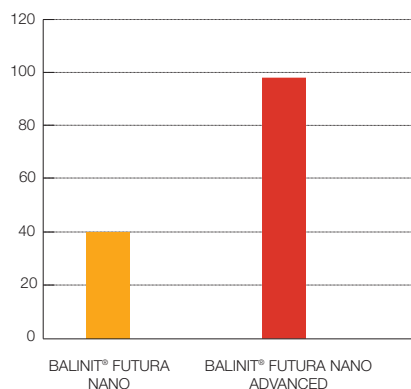
Lateral surface wear [µm] after 25'000 strokes



**Application:** Blanking of 4-mm sheet steel  
**Component:** Steering part  
**Tool:** Blanking punch  
**Material:** 1.2379 (~ AISI D2), 62 HRC  
**Coating:** BALINIT® ALCRONA PRO ADVANCED  
**Advantages:** Improved service life

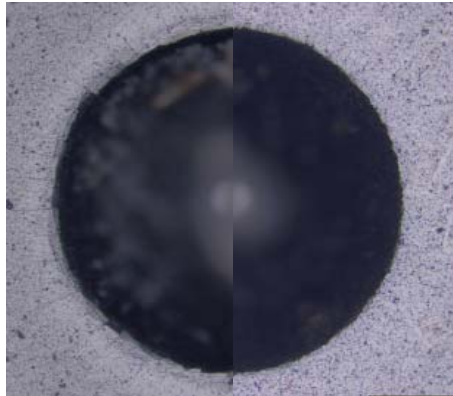
## Improvement of critical load

Load [N]



**Application:** Press forming  
**Component:** Bolt head  
**Tool:** Press forming punch  
**Material:** CPM1V (PM Steel)  
**Coating:** BALINIT® FUTURA NANO ADVANCED  
**Advantages:** Longer service life  
 Less machine downtime  
 Less scrap

## Hardness indentation



BALINIT® ALCRONA PRO versus BALINIT® ALCRONA PRO ADVANCED: Less plastic deformation due to greater substrate surface hardness.

# We are at your service. Worldwide.

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