

oerlikon
balzers

PPD™ TECHNOLOGY

Wear protection
for large tools



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PPD™ - Pulse Plasma Diffusion

Over 40 years experience in the industrialisation of plasma technology processes and close relationships with automotive pressshops has given the initiative to develop improved treatment concepts for large press tools. The aim is not only to treat the largest bodyside tools, but also to raise the quality and strength of outer skin tools to a new level, thereby improving wear resistance, reliability, productivity and consequently part quality and press efficiency.

Focussing on materials and typical manufacturers requirements for large tools provided the design concept for the new large scale **PPD™ TECHNOLOGY (Pulse Plasma Diffusion)** with simplified, shorter process times for the ultimate in safe tool treatment.



PPD™ TECHNOLOGY

Charge weight: max. 40 t
 Weight per piece: max. 25 t
 Charging area: max. L x W ≤ 10.0 x 2.7 m

PPD™ - Surface Composition:

Compound Layer (CL):

This inter-metallic layer (ca. 900-1200 HV) provides high abrasion resistance and very good sliding properties even under reduced lubrication conditions.

Diffusion Depth (DD):

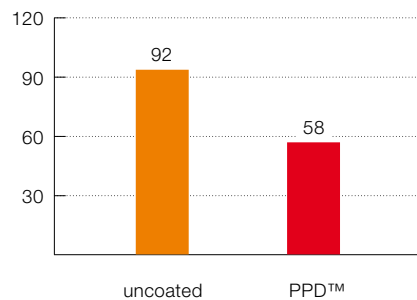
Finely dispersed precipitations (developed primarily from N and C elements) strengthen the microstructure and increase hardness creating an ideal foundation for the compound layer.

Examples of treatable base materials:

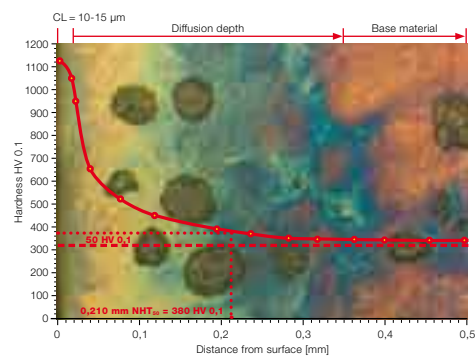
- EN-GJS-700 (GGG 70)
- EN-GJS-HB265 (GGG70L)
- EN-GJL-250 (GG25)
- EN-GJL-HB (GG25 CuCrMo)
- 1.7140 G47CrMn6
- 1.2320 G60CrMoV10-7
- 1.2333 G59CrMoV18-5
- Cold and hot work steels
- Nitriding and plastic moulding steels
- Quenched and tempered steels
- FCD 700
- FCD 600
- FCD 540
- GM241
- 800IS
- 800I

Drawing operation skin tool

Downtime/5000 parts [min]



Tool:	Body side EN-GJS-HB265 (GGG70L)
Work piece:	Skin panel St 15.04, 0.8 mm thickness
Parts produced:	420,000 panels
Savings:	Downtime: -37%
	Rework: -4%
	Production costs/part: -1.17 €
	ROI
	(Return on Investment): 2 months



Cross section through surface of EN-GJS-700 (GGG70) after treatment

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