PVD Coating Technology

2023

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PVD Metallization of Plastics

- Combination of Design and Functionality
- Various Color Options
- Flexible Coating Technology

PVD Processes @ Techniplas

- DC Magnetron Sputtering
  → inert: metals, reactive: compounds, ITO

- Evaporation
  → thermal, e-beam

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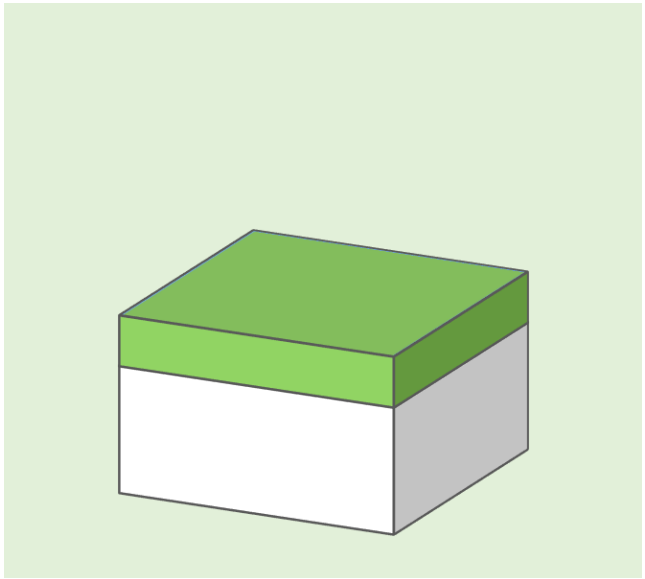
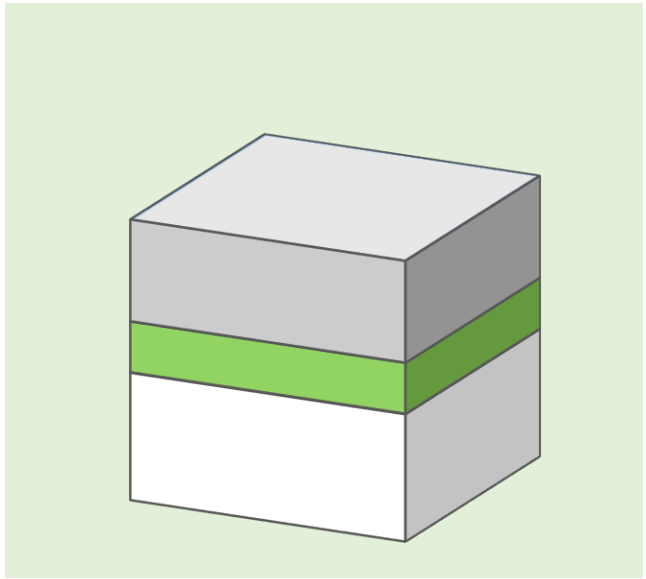
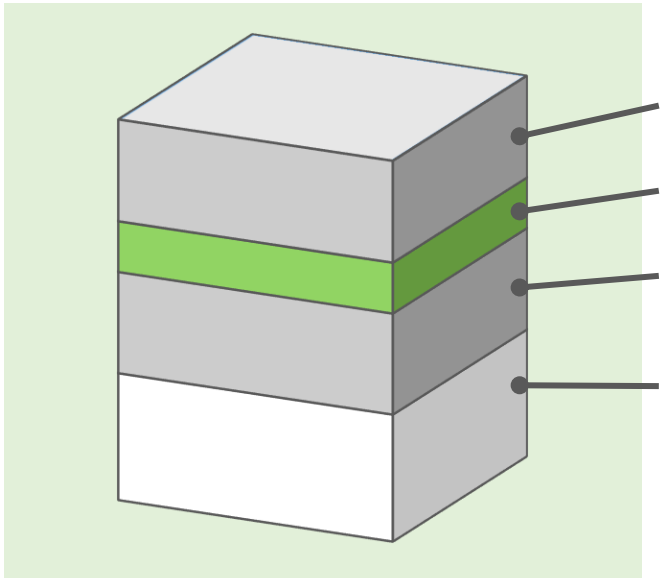
Coating layout

- 1- / 2- / 3-layer stack approach
- depending on assembly situation of part and customer requirements



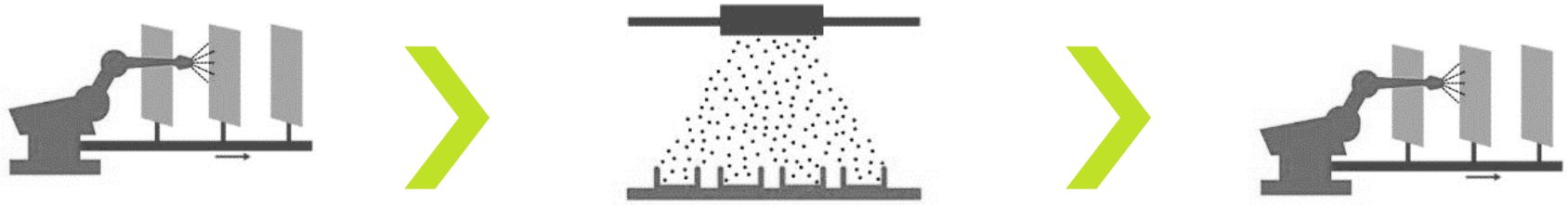




Application examples			
	Encased reflectors	Structured optics with exposed surface	High gloss design parts with exposed surface

PVD Technology @ Techniplas NIS

Metallisation of polymers by lacquer/PVD/lacquer: In-line series process



Spray-application of Basecoat

Application of metal layer in low pressure (DC Magnetron-sputtering)

Spray-application of Topcoat

PVD Systems – Properties and Functions

Day/night design – partial laser processing of the surface

Touch-sensitivity – integration of electronic applications

Radar permeability – permeability for incoming and outgoing radar beams

Translucency – for ambient or signal lighting

Environmentally friendly alternative to galvanization

Increased safety – no splintering in case of breakage

PVD Systems – Properties and Functions

PURE HG DARK CHROME HG

Interior/Exterior Application
PURE - High gloss or matt
LUX - High gloss or matt translucent
RADAR - High gloss or matt radar transparent, touch sensitive
DARK CHROME – High gloss or matt

Remarks

- Interior systems are resistant to abrasion, chemicals and high temperatures
- Exterior systems are resistant to weathering
- For the combination of LUX and RADAR, a dark translucent substrate material is necessary

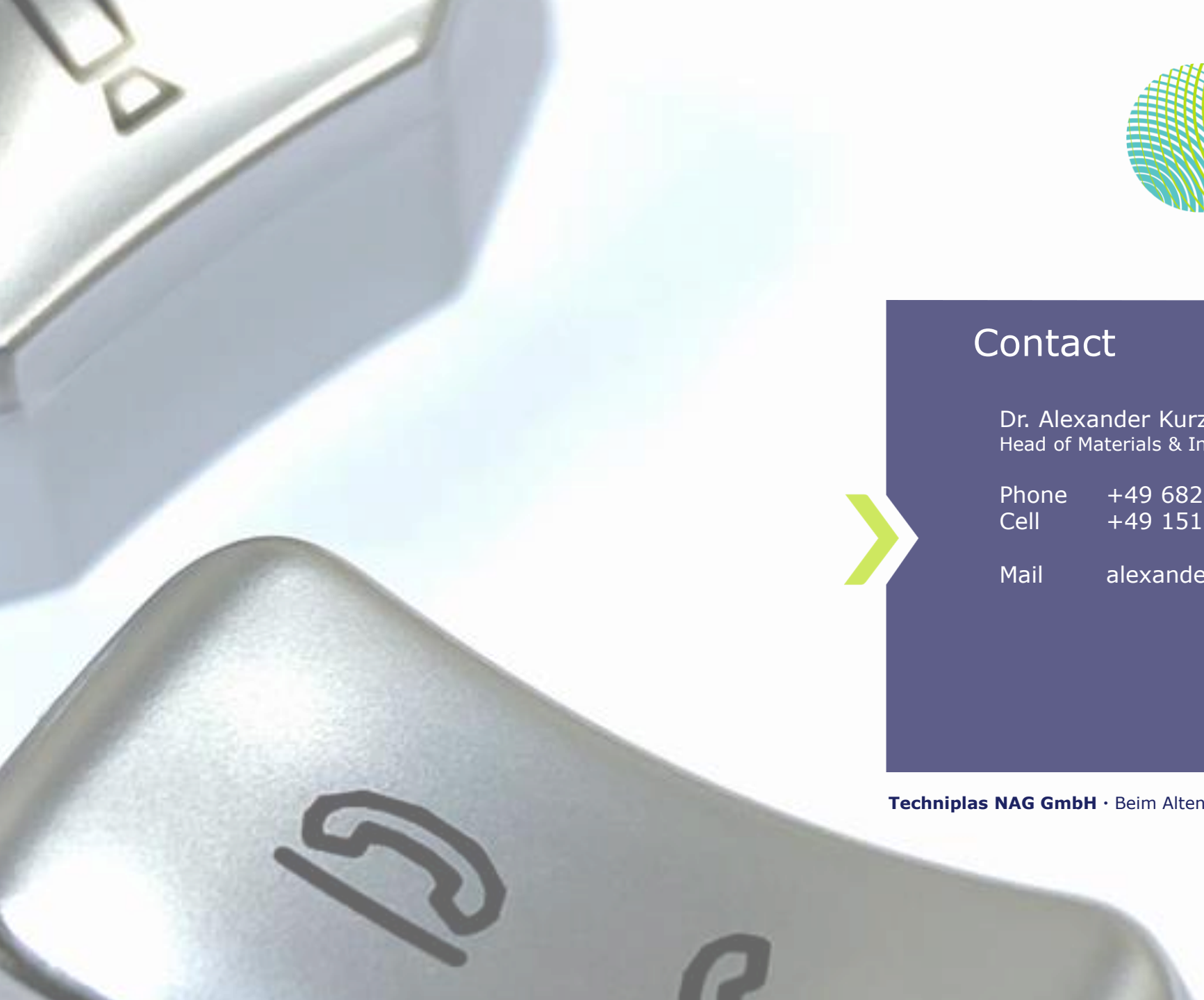
Performance of PVD Standard Systems

Coating performance (material: ABS, coating system: PURE exterior high gloss)

Pressure water-jetting	DIN EN ISO 16925-B-S / C	**Passed**
Water soak	70°C / 72 h	**Passed**
Condensed water test	40°C, 100% r. h., 240 h ≙ 10 cycles	**Passed**
Heat aging	240 h / 90°C	**Passed**
Environmental cycle tests	PV 1200 / PV 2005	**Passed**
Stone-chip resistance	DIN EN ISO 20567-1, method B	**Passed**
Accelerated artificial weathering	Kalahari, PV 3929, 3.000 h Florida, PV 3930, 3.200 h	**Passed**

Performance of coating system has to be evaluated on individual parts.

PVD Colour Variations



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Next generation products, systems and surface solutions