

COTEC[®]

Materials | Vacuum | Coating

COTEC[®]

All About Coating Technology

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 Mitsui Chemicals
Group



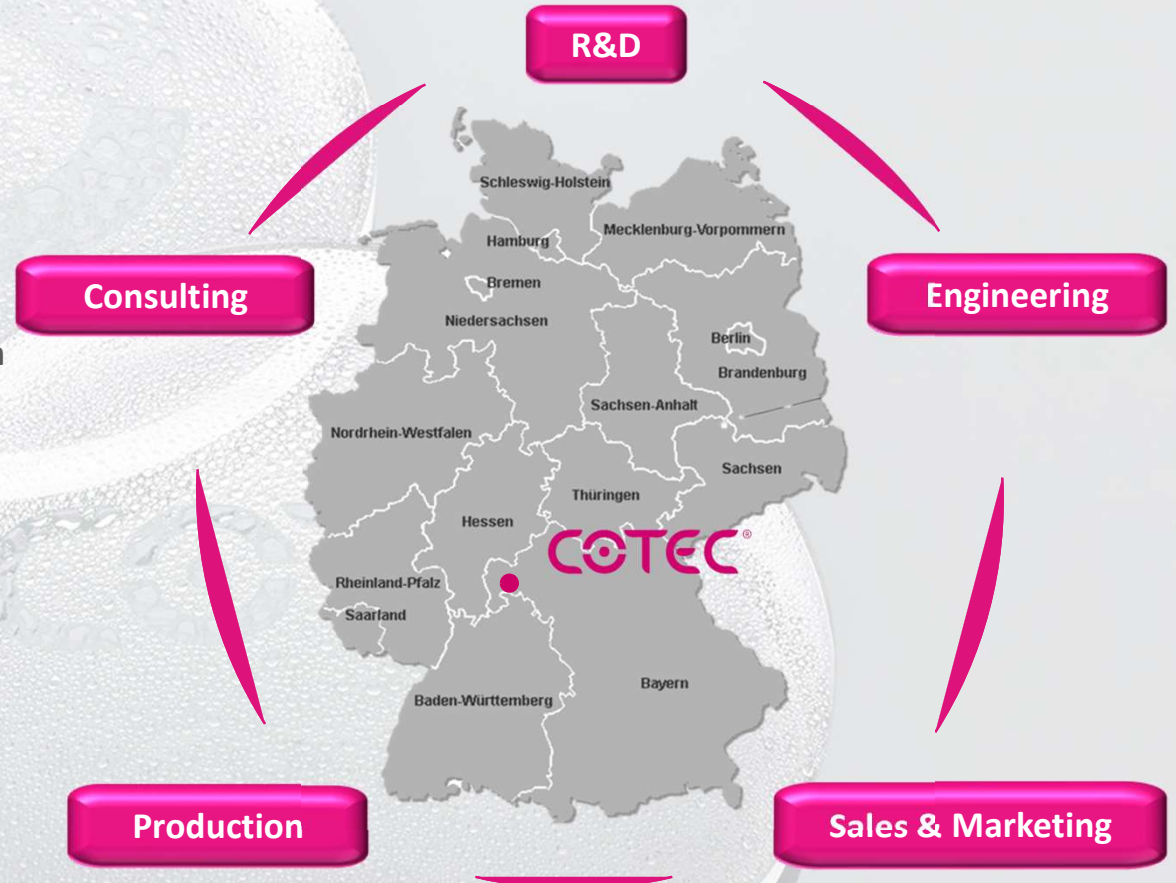
Company Profile

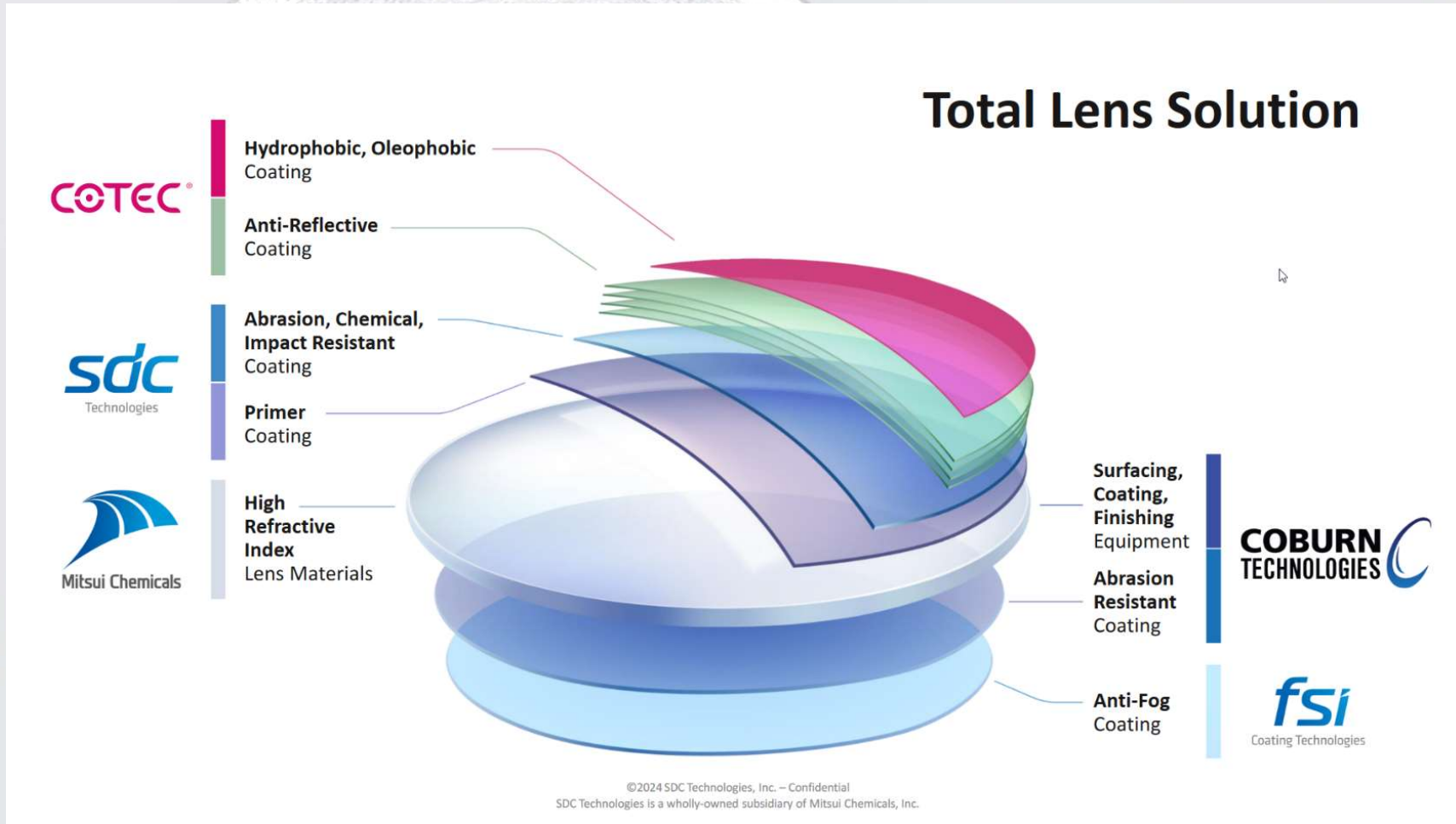


- Founded in 1997
- Vision: customer orientated solutions for coating material, -process and machinery
- Located close to Frankfurt airport, Germany
- In-house R&D and production
- Global business network
- Acquired by SDC Technologies, Inc. / USA in 2020 as part of Mitsui Chemicals Group (MCI) / Japan

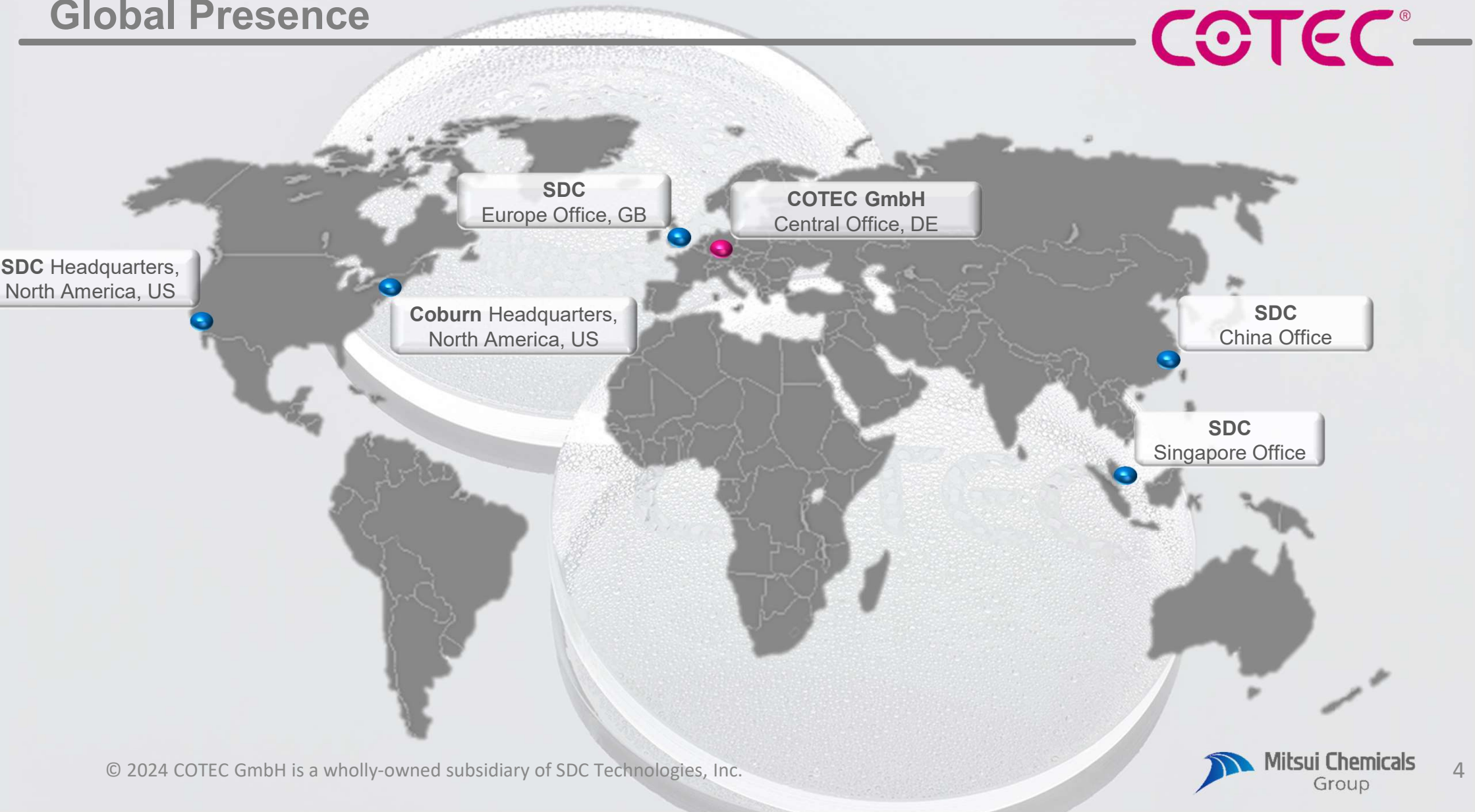


COTEC GmbH, Frankenstraße 19, 63791 Karlstein, Germany





Global Presence



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Served Business Fields



Main Product Groups



Hydrophobic Coating - DURALON



Hydrophobic Coating - DURALON

COTEC®

Topseller

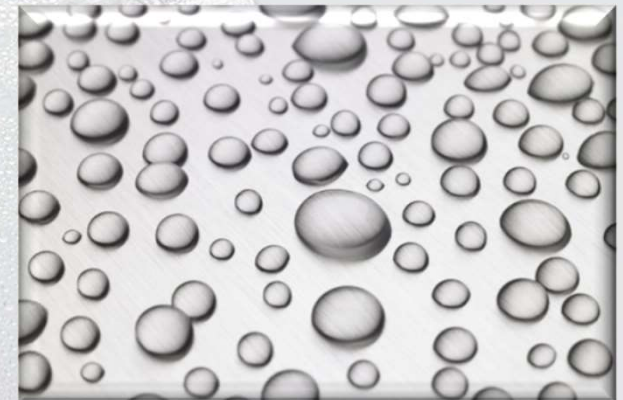
EXCELLENT PERFORMANCE OF OUR HYDROPHOBIC COATING MATERIAL

- **Hydrophobic** Improvement of contact angle against water up to 118°
- **Oleophobic** Improvement of oil repellency
- **Anti smudge** Reduction of dirt transfer to the surface
- **Easy to clean** Improvement of cleanability
- **Durable** Improvement of abrasion resistant and protection against micro- scratches
- **Low friction** Improvement of surface smoothness / sleekness
- **Low refractive index** Highly transparent in the visible spectrum
- **Nanocoating** ~ 10 nm – 25 nm thin

FURTHER ADVANTAGES OF OUR HYDROPHOBIC COATING MATERIAL

- Several performance levels
- Customized solutions possible (standard: tablets for PVD machines or HCS; customized: e.g. liquid for HCS 100 injection, liquid for dip or spray application)

-> High quality and superior coating results



Material Design

Development

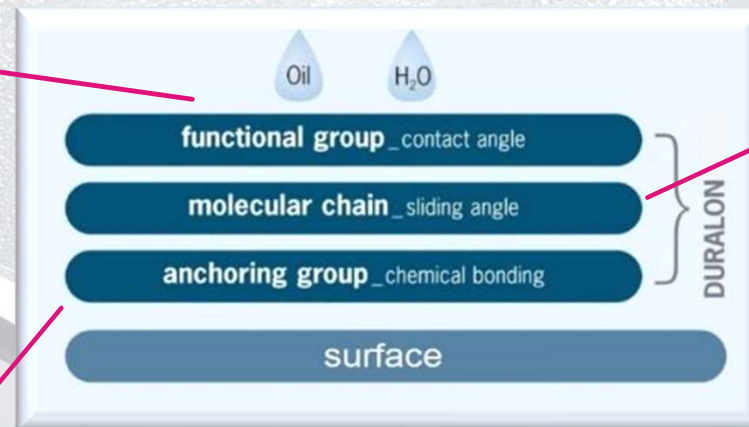
Upscaling

Production

FUNKTIONAL GROUP

contact angle,
surface energy, repellency

- Perfluorinated functions
- Hydro- and oleophobic
- Low surface energy



MOLECULAR CHAIN

haptics, surface energy,
stick-slip-performance

- Fluorinated polymer
- Free of „C8-source“ (PFOAS & PFOS)

ANCHORING GROUP

adhesion / abrasion resistance,
durability because of chemical
bonding with the surface





- Standard application: SiO_2 (e.g. glass, coating with final layer SiO_2)
DURALON UltraTec, AFP Pro, USF, ASF
- Other possibilities: oxide ceramics, aluminum, other metals...
ProTec 2

Product Family Comparison - DURALON



All values achieved with COTEC standard process in APS 904 in COTEC Lab.

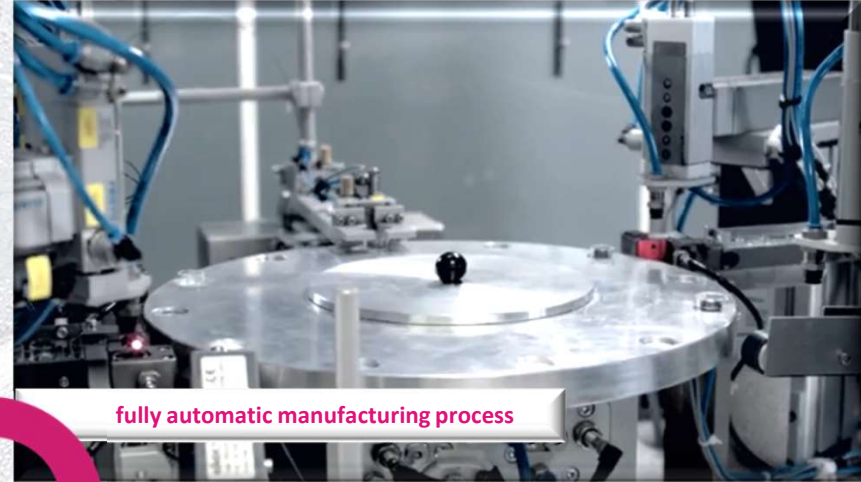
**Abrasion COTEC standard as per ISO 9211-4 (2,5 kg, 15 × 25 mm, cotton cloth) and CA-measurement with Krüss DSA 100 contact angle against water measured

CURRENT PRODUCTS	DURALON SPC	DURALON AFP Pro	DURALON USF	DURALON UltraTec
Contact angle against DI Water[°]	116	117	111	109
Abrasion resistance after 800 cycles[°]	113	116	110	108
Abrasion resistance after 6400 cycles[°]	109	105	106	102
Surface Energy [mN/m]	11	11	13	13
Friction factor μH	0,054	0,12	0,06	0,1
Picture packed Pill				

Inhouse R&D and Production – DURALON



R&D customized solutions



fully automatic manufacturing process

high quality

high production capacity



100% quality control



automatic packaging

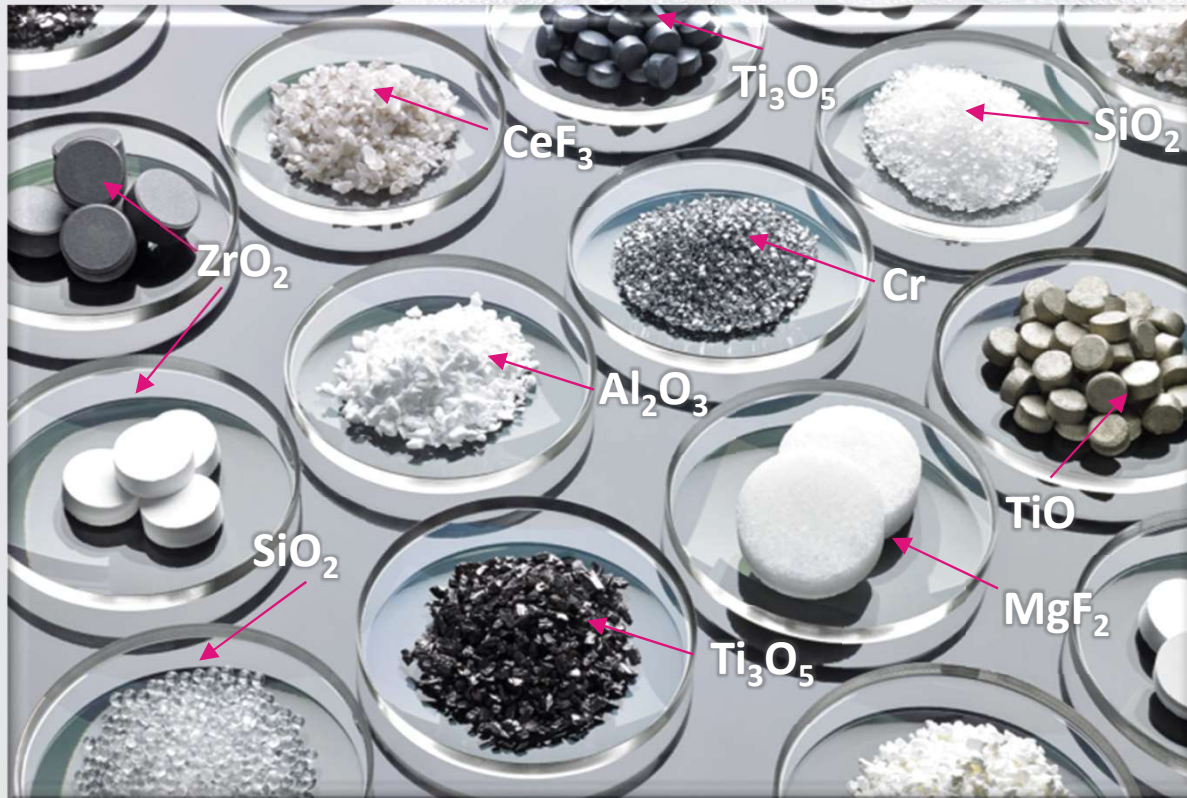
PVD Material



PVD Material



Some examples:



SEVERAL DIFFERENT COATING MATERIALS

- Oxides (e.g. SiO_2 , ZrO_2 , SiO , Ti_3O_5 , Al_2O_3 , HfO_2 , ITO...)
- Fluorides (e.g. MgF_2 , CeF_3 ...)
- Metals (e.g. Al, Cr, Ge, Si, Hf, Cu...)
- Others (like sulfides, selenides... on demand)

Topseller

SEVERAL DIFFERENT KINDS

- Granules
- Tablets
- Coils
- Others (like discs, powders, bars... on demand)

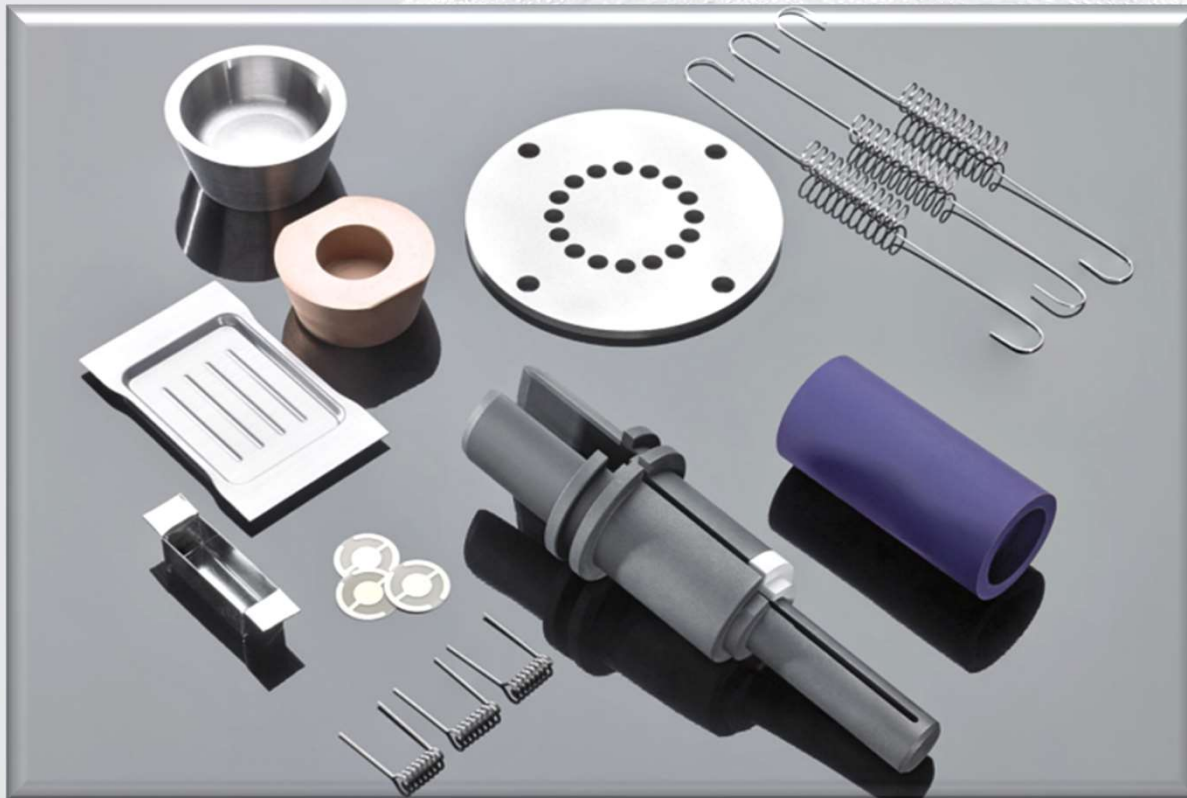
SEVERAL DIFFERENT SIZES (suitable for your PVD machine)

SEVERAL DIFFERENT PURITIES (3- 5 N)

Served business fields: Ophthalmics, Precision Optics, Automotive Suppliers, Foil Coating, Decorative Coating...

PVD Accessories





MEASURING OF LAYER THICKNESS

- Quartz crystals (suitable for your PVD machine)
 - Several material (gold, silver...)
 - Several frequencies
 - Several anchor (double anchor, single anchor...)

Topseller

DIFFERENT EVAPORATION SOURCES (on demand)

- Boats (for thermal evaporation)
- Liners and crucibles (for e-beam evaporation)
- Filaments (for thermal evaporation)

OTHER ACCESSORIES (on demand)

Machinery



Hydrophobic Coating System - HCS

COTEC®

Topseller

VERSIONS

- Standard: HCS 100 P- UH
 - Stand alone system
 - Two racks for substrates
 - Capacity of up to 110 substrates \varnothing 70 mm
 - Inner chamber size \varnothing 600mm x 540mm
 - Volume based process
 - No after-treatment
- Customization:
 - E.g. adaption to automated production possible

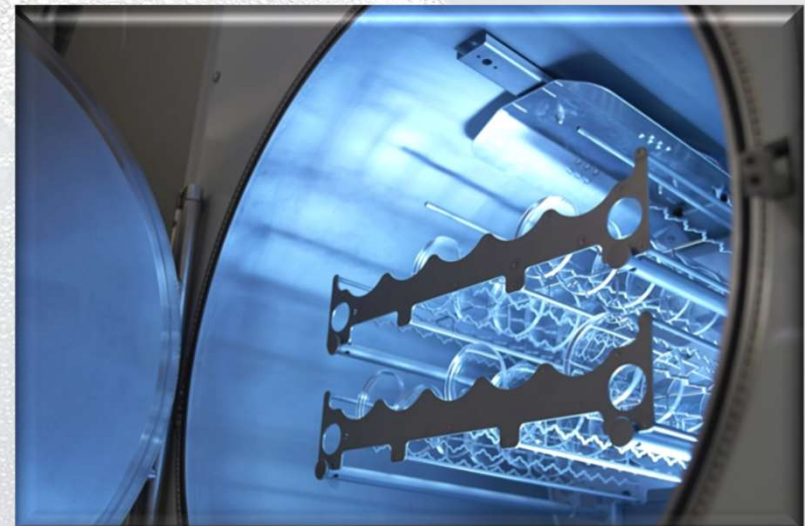


PROCESS SUPPORT

- Adaption to different surfaces
- Customized racks / carriers for your substrates possible

ADVANTAGES

- Easy to use
- Hydrophobic & oleophobic coating
- Ultra smooth coating
- Short cycle time of about 12 minutes (depending on process)
- Coating of 3D parts from all sides possible



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Digital Printing System - MATRIX



MAIN FEATURES OF THE MATRIX PRINTER

- Digital printing technology
- DoD printhead (Drop on demand)
- Solid ink (instant dry technology)
- Manual loading station for two lenses
- Flexible mounted touch screen

MACHINE CAPACITY (1 job = 2 lenses)

- | | |
|---|---------------|
| • Capacity (fast-eco print mode) | 16 secs / job |
| • Capacity (eco print mode) | 20 secs / job |
| • Capacity (fast print mode) | 20 secs / job |
| • Capacity (high resolution print mode) | 26 secs / job |

ADVANTAGES

- Easy operation and integration
- Green technology
- High printing quality and accuracy
- Automatic self maintenance
- Professional support

More details available (presentation, TDS, website, sales representative)





World's First Digital Hydrophobic Coating System For Automotive Display Panels

COTEC GmbH and CADIS Engineering GmbH have collaborated in developing the world's first digital printer for hydrophobic-coated automotive displays, a significant advancement in the automotive industry. COTEC's expertise in ultra hydrophobic and oleophobic coatings enhance the durability and surface quality of automotive displays. This partnership with CADIS, a specialist in digital printing machines, has led to the creation of an industrial printer specifically designed for efficiently applying hydrophobic coatings on automotive displays.

Features:

- Ultra-hydrophobic repels liquid
- Increased surface smoothness, water repellent
- Exceptional optical clarity
- Easy-clean anti-fingerprint/anti-smudge, oleophobic properties

Benefits:

- Ability to coat large complex shapes with optimal efficiency
- Environmentally friendly
- Superhydrophobic surfaces offers adhesion yet removable without leaving residue
- Ability to mask off coating prevents material waste
- Controlled application with highest application efficiency
- Precise application with complex geometries speeds up production process
- Clearer and safer driving experience, hydrophobic coating improves visibility, reducing smudges on the display

Aligned with global health, quality, and environmental standards:

- ISO 9001:2015 certified for quality
- ISO 14001:2015 environmental management standards
- Member of the European Society of Thin Films (EFDS)

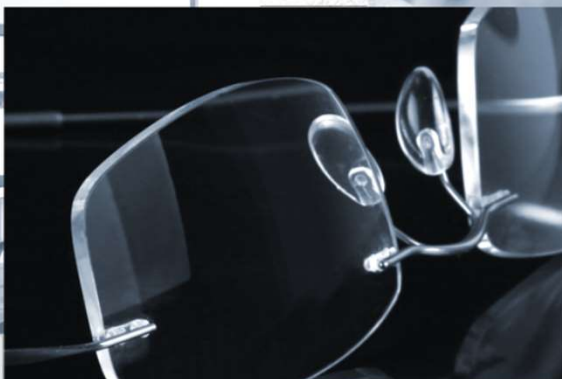
Contact your COTEC distributor today to request a product sample, or for additional information please reach out to sales@cotec-gmbh.com. Visit cotec-gmbh.com

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<https://sdctech.com/sdc-technologies-subsiary-cotec-gmbh-unveils-hydrophobic-coating-printer>

Thank you for your attention!



COTEC GmbH

COTEC GmbH | Frankenstraße 19 | 63791 Karlstein am Main | Germany
T: +49.6188.994 62-0 | F: +49.6188.994 62-62 | E: sales@cotec-gmbh.com

Contact us