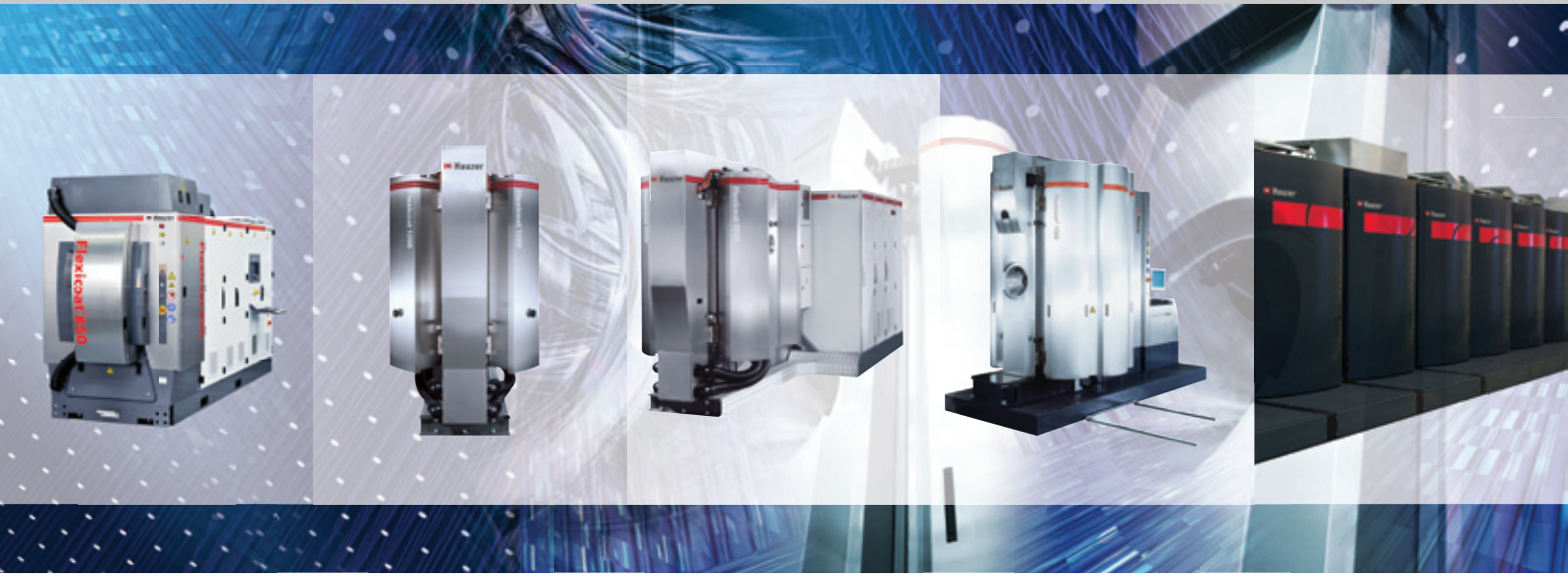
Hauzer® TECHNO COATING
PVD / PACVD TECHNOLOGY

Hauzer Product Portfolio



Model	Flexicoat® 850	Flexicoat® 1000	Flexicoat® 1200	Flexicoat® 1500
Load diameter	500 mm	650 mm	650 mm	900 mm
Load height (effective)	500 mm	650 mm	850 mm	1500 mm
Spindles - on table	8	6-12	6-16	9-18
- hanging	variable	-	-	-
Load mass	250 kg	500 kg	500 kg	1200 kg
Technologies	ACA, CARC, CARC+, UBM, DMS, Hybrid, PACVD, Laser arc, HIPIMS, HIPIMS+	ACA, CARC, UBM, DMS Hybrid, PACVD, Laser arc, HIPIMS, HIPIMS+	ACA, CARC, UBM, DMS Hybrid, PACVD, HIPIMS, HIPIMS+	ACA, CARC, UBM, DMS Hybrid, PACVD
Most popular applications	- Fast cycle tool coatings - Fast cycle automotive components - Fast cycle decorative coatings - R&D applications	- High volume tool coatings - Development - Medium volume automotive components	- High volume small automotive components - Medium size moulds, dies and broaches - Decorative coatings	- High volume decorative coatings - High volume larger automotive components - Large moulds, dies and broaches

These features are standard. Customized configurations and modifications are available on request.
For specific markets, development of special equipment is possible.

Properties of Several Functional Hard Coatings

Coating	Applications	Microhardness HV 0.025	Thickness [1] µm	Friction Coefficient vs Al_2O_3 (dry)	Deposition temperature range [2] °C	Maximum operating temperature °C	Technology	Coating systems code [3]
TiN	Tool	2500	1-6	0.6	< 600	600	CARC+/HIPIMS+	C
AlTiN	Tool	2500-3500	1-6	0.4	< 600	900	CARC+/HIPIMS+	C
AlTiN + W-C:H	Tool	2000-2500	1-6	0.2	150-450	450	HYBRID	A
AlTiN + Al_2O_3	Tool	2300	2-4		450-600	1100	HYBRID	B
AlCrN	Tool	3000	1-10	0.35	< 600	1100	CARC/HIPIMS+	B
TiSiN	Tool	3500	1-3	0.5	< 600	1500	CARC	A
TiCN	Tool	3000	1-4	0.4	< 600	600	CARC/HIPIMS+	A
TiAlN	Tool	2500-3500	1-6	0.4	< 600	800	CARC+	C
TiN/TiAlN (Multilayer)	Tool	2500-3500	1-6	0.4	< 600	800	CARC+	C
CrCN	Tool	2000-2200	1-4	0.4	450	600	ACA/CARC	A
CrN+W-C:H	Tool/Tribo	2000-2500	1-6	0.2	150-450	450	HYBRID/UBM	A
CrN	Tool/Tribo	1500-2500	1-30	0.5	150-450	700	ACA/CARC/UBM/HIPIMS+	A
Cr_2N	Tool/Tribo	1500-3000	1-5	0.5	200-600	700	UBM/HIPIMS+	A
Cr+W-C:H	Tool/Tribo	1200-2000	1-5	0.1-0.2	160-300	400	UBM	A
Cr+W-C:H+ DLC	Tool/Tribo	2000-4000	1-3	0.05-0.15	160-300	350	UBM/UBM+PACVD	A
CrN+W-C:H+ DLC	Tool/Tribo	2000-4000	1-3	0.05-0.15	160-300	350	UBM/UBM+PACVD	A
Cr+W-C:H+ Si-DLC	Tool/Tribo	1500-2500	1-5	0.02-0.1	160-300	450	UBM+PACVD	A
ta-C	Tool/Tribo	4000-7000	1-3	0.05-0.15	80-200	> 500	CARC	C
Ti / Cr / Zr Carbon Nitrides	Deco	Reproducible colours, e.g. polished brass, nickel, stainless steel, black and gold					ACA	A
Ti / Cr / Zr Carbon Nitrides	Deco	Reproducible colours, e.g. polished brass, nickel, stainless steel, black and gold with wide colour range (lower L values)					UBM	A
Multilayer coatings	Deco	Several basecoats possible, e.g. TiN, CrN, DLC to achieve total hardness of >650 HV on soft substrates. High gloss, also when thick layers are applied					UBM/PACVD/ACA	A
Metallization	Deco	Non-reactive PVD, deposition of pure metals					UBM	A

[1] *Thickness values are for standard applications. Alternative thicknesses available depending on application*

[2] *In Hauzer equipment process temperature can be controlled at any temperature below the maximum possible product temperature*

[3] *Coating systems code: A = All systems B = F850, F1000, F1200 C = F850, F1000*

Abbreviation	Technology	Explanation
ACA	Advanced Controlled Arc	Electromagnetically controlled arc on full, planar cathode
CARC	Circular Arc	Magnetically controlled arc on circular fine cathode
CARC+	Circular Arc Plus	Fast, smooth & reliable circular arc technology
UBM	Unbalanced Magnetron	Sputtering with extended and increased plasma density using coils in unbalanced closed magnetic field
DMS	Dual Magnetron Sputtering	Sputtering with increased plasma density, advantageous for Oxide coatings. Stable, robust process, very maintenance-friendly
HYBRID	Combined Arc and Sputtering	Arc coating for good adhesion and strong support layer, sputter coating for specific property
PACVD	Plasma Assisted Chemical Vapour Deposition	Deposition from gas phase with the aid of plasma
HIPIMS+	High Power Impulse Magnetron Sputtering Plus	Industrially viable technology for very high plasma density gives superior adhesion and highest layer density

Hauzer technologies are protected by several patents and patent applications.

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