Physical Vapor Deposition (PVD)

COATING SYSTEMS

VaporTech®

Vapor Technologies, Inc.
(VaporTech®)

Physical vapor deposition (PVD) coatings improve your product's appearance, durability, and functional performance.

VaporTech has been manufacturing PVD equipment for more than 30 years. Our corporate parent, Masco, is a Fortune 500 company, and our sister companies include Delta Faucet, Behr Paint, and other leading brands.

We're based in Longmont, Colorado, USA, where we design and assemble every VaporTech PVD system. We sell and service VaporTech systems worldwide via locations in Europe and Asia.

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VaporTech®

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The flexible, efficient, cost-effective V.MAX1500 batch coater is ideal for industrial product manufacturers and service providers. Applications include cutting and forming tools, precision-engineered components, automotive/aerospace parts, medical devices, and other industrial products that benefit from lower friction, enhanced durability, and product longevity.

V.MAX1500 FEATURES

- Up to 6 cathodic arc or magnetron sputtering sources deposit binary, ternary, and quaternary metal-based and DLC coatings.
- Maximum throughput in a compact, easy-to-install system.
- Parts turntable is easily removed for loading and maintenance.
- Duplex process for PVD and plasma nitriding.

V.MAX1500™ SYSTEM

SPECIFICATIONS

System dimensions:
4.8m L x 2.1m W x 2.7m H
Coating zone: 80cm x 88cm Ø
Number of racks: 6 or 12
Rack size: 80cm x 25.4cm Ø
(6 rack option)
Maximum load: 600kg

TECHNOLOGIES

- Cathodic arc vapor deposition
- Magnetron sputtering

PROCESSES

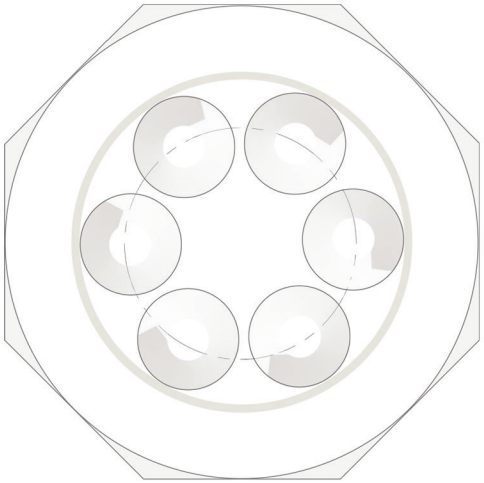
- Physical vapor deposition (PVD)
- Plasma nitriding
- Plasma-enhanced chemical vapor deposition (PECVD) to create diamond-like carbon (DLC) coatings

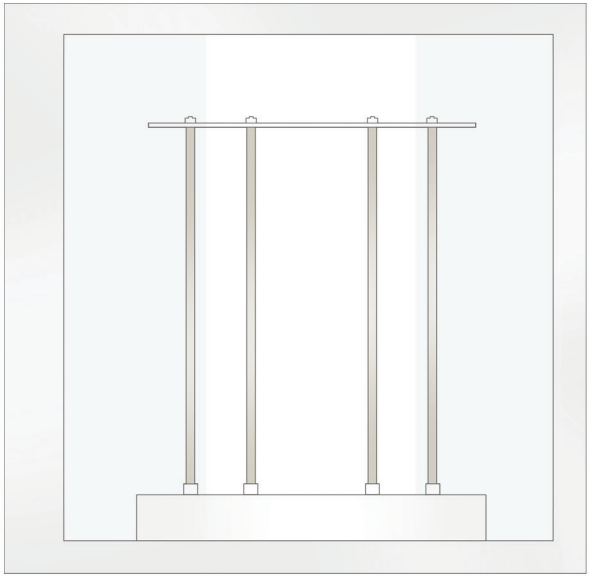
AVAILABLE COATINGS

Pure, alloyed, or reacted zirconium, titanium, chromium, carbon

HMI

- User-friendly graphic interface
- Built-in automated recipes
- Remote diagnostics






VaporTech
V-MAX1500

Our smallest VaporTech i-Series™ machine, the VT-1000i system offers a compact 6-rack design perfect for limited manufacturing space. This system is ideal for manufacturers who previously considered vacuum coating systems too complicated or expensive.

i-SERIES FEATURES

- Deposits both PVD and DLC coatings in the same chamber.
- Lower temperature cathodic arc process coats metal and plated plastic.
- Excellent color uniformity throughout the chamber.
- Simple maintenance and a low coating cost per batch.

VT-1000i™ SYSTEM

SPECIFICATIONS

System dimensions:
3.4m L x 1.3m W x 2.5m H
Coating zone: 100cm x 87cm Ø
Number of racks: 6
Rack size: 100cm x 25.4cm Ø
Maximum load: 225kg

TECHNOLOGIES

- Low-temperature cathodic arc vapor deposition (LTAVD®)

PROCESSES

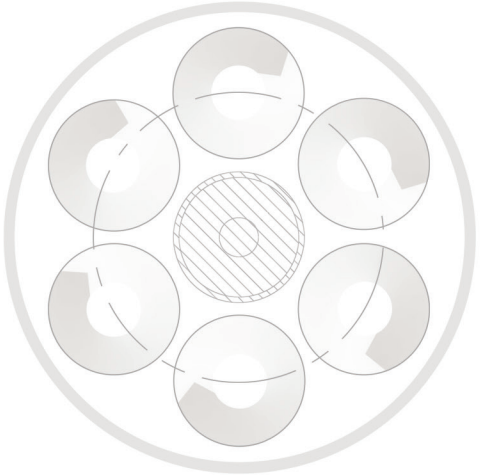
- Physical vapor deposition (PVD)
- Plasma-enhanced chemical vapor deposition (PECVD) to create diamond-like carbon (DLC) coatings

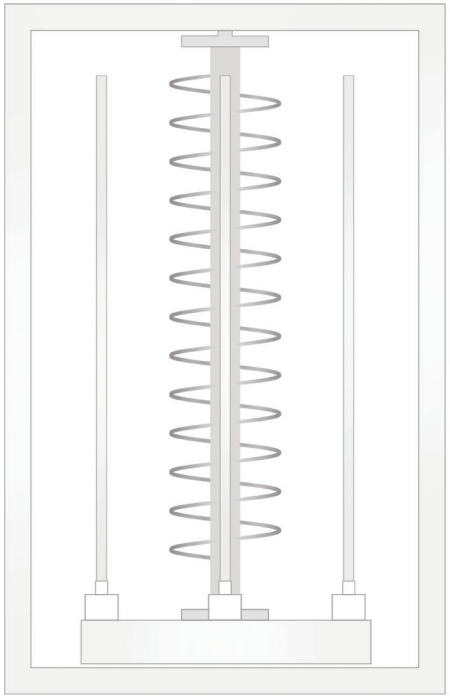
AVAILABLE COATINGS

Pure, alloyed, or reacted zirconium, titanium, chromium, carbon

HMI

- User-friendly graphic interface
- Built-in automated recipes
- Remote diagnostics






VaporTech VT-1000i

The VT-1500i system, our mid-sized i-Series machine, has 67% more capacity than the VT-1000i system. Its compact footprint is perfect for limited manufacturing space. The system combines cathodic arc and magnetron sputtering technologies in a single machine. This system is ideal for larger manufacturing operations and coating service providers.

i-SERIES FEATURES

- Deposits both PVD and DLC coatings in the same chamber.
- Lower temperature cathodic arc process coats metal and plated plastic.
- Excellent color uniformity throughout the chamber.
- Simple maintenance and a low coating cost per batch.
- Optional single or dual rotary magnetron sputtering sources.

VT-1500i™ SYSTEM

SPECIFICATIONS

System dimensions:
4.0m L x 1.3m W x 2.7m H
Coating zone: 100cm x 119cm Ø
Number of racks: 10
Rack size: 100cm x 25.4cm Ø
Maximum load: 375kg

TECHNOLOGIES

- Low-temperature cathodic arc vapor deposition (LTAVD®)
- Magnetron sputtering

PROCESSES

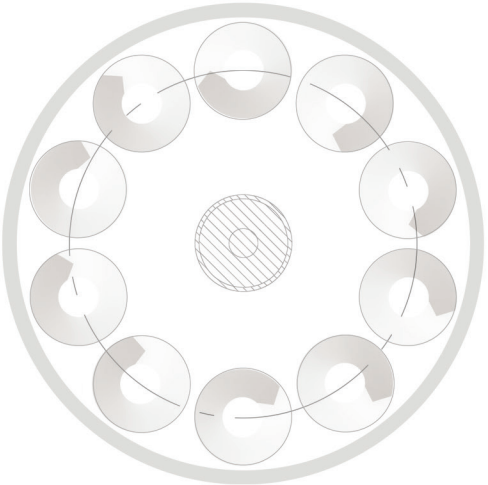
- Physical vapor deposition (PVD)
- Plasma-enhanced chemical vapor deposition (PECVD) to create diamond-like carbon (DLC) coatings

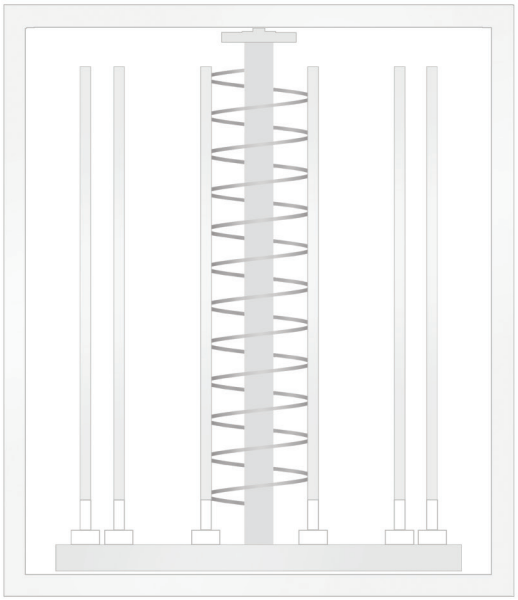
AVAILABLE COATINGS

Pure, alloyed, or reacted zirconium, titanium, chromium, carbon

HMI

- User-friendly graphic interface
- Built-in automated recipes
- Remote diagnostics






VaporTech VT-1500i

The streamlined 3000i system features the largest i-Series chamber in a smaller footprint than other industrial coaters. It offers high throughput and accommodates larger parts. It is ideal for large-scale operations and is used by leading manufacturing operations worldwide.

i-SERIES FEATURES

- Deposits both PVD and DLC coatings in the same chamber.
- Lower temperature cathodic arc process coats metal and plated plastic.
- Excellent color uniformity throughout the chamber.
- Simple maintenance and a low coating cost per batch.

VT-3000i™ SYSTEM

SPECIFICATIONS

System dimensions:
4.3m L x 3.6m W x 3.8m H
Coating zone: 122cm x 143cm Ø
Number of racks: 16
Rack size: 122cm x 20.3cm Ø
Maximum load: 600kg

TECHNOLOGIES

- Low-temperature cathodic arc vapor deposition (LTAVD®)

PROCESSES

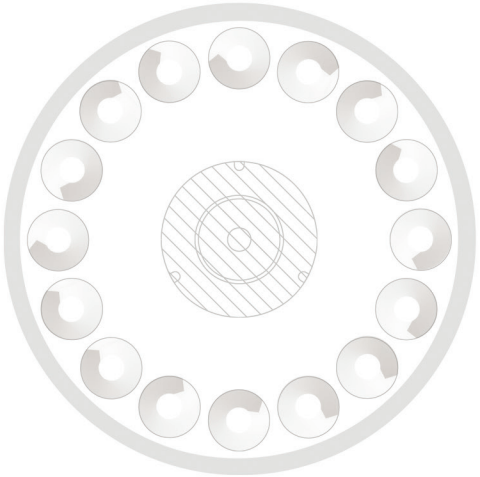
- Physical vapor deposition (PVD)
- Plasma-enhanced chemical vapor deposition (PECVD) to create diamond-like carbon (DLC) coatings

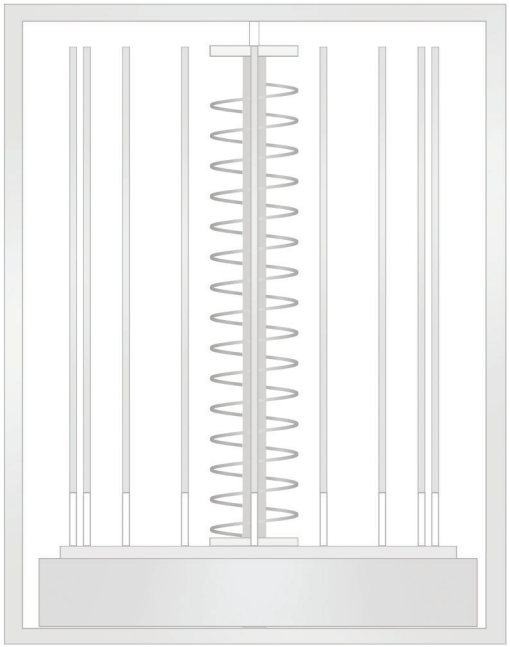
AVAILABLE COATINGS

Pure, alloyed, or reacted zirconium, titanium, chromium, carbon

HMI

- User-friendly graphic interface
- Built-in automated recipes
- Remote diagnostics






VaporTech VT-3000i

CADENCE® SYSTEM

The Cadence system's proprietary RAAMS® (Remote Anode Assisted Magnetron Sputtering) technology enhances coating structure, hardness, and wear resistance. It's ideal for industrial tooling, medical devices, and other precision components.

SPECIFICATIONS

System dimensions:
3.8m L x 1.0m W x 2.4m H
Coating zone: 45.7cm x 20.3cm Ø
Number of racks: 1
Maximum load: 16kg

TECHNOLOGIES

- Remote Anode-Assisted Magnetron Sputtering (RAAMS™)
- Magnetron sputtering

PROCESSES

- Physical vapor deposition (PVD)

AVAILABLE COATINGS

Pure, alloyed, or reacted zirconium, titanium, chromium

HMI

- User-friendly graphic interface
- Built-in automated recipes
- Remote diagnostics

COLOR PVD COATINGS

Choose from our rainbow of PVD color coatings to enhance your product's appearance and durability.

Deep Black

Cool Graphite

Graphite

Chrome

Stainless Steel

Nickel

Gold

Rose Gold

Dark Copper

Light Bronze

Bronze

Dark Bronze

Blue Black

Vivid Blue

Purple

FUNCTIONAL COATINGS
for industrial products

Find the tribological coating that works best for your application.

Chromium Nitride (CrN)

Color: Metallic silver

Characteristics:
- Excellent hardness
- Excellent toughness
- Lubricity (reduces friction)
- Resistant to sliding & impact wear
- Corrosion-resistant, prevents oxidation
- Good release properties

Ideal for:
- Forming tools
- Machining tools (Cu/Al)
- Engine components
- Pump parts
- Replacement for functional plated hard chrome.

Specifications:

Coating hardness:
- 14-25 GPa
- 1400-2500 HV

Thickness range:
- Typically, 1–6 microns

Coefficient of friction (CoF):
- 0.5-0.7 (dry; against alumina)
- 0.5 (dry; against steel)

Max temp: 700° C

Titanium Nitride (TiN)

Color: Metallic gold

Characteristics:
- Excellent hardness
- Excellent toughness
- Biocompatible and non-toxic
- Lubricity (reduces friction)
- Compatible with acids, bases, and solvents.

Ideal for:
- Forming tools
- Machining tools
- Cutting/punching tools
- Rotating shank tools
- Machining iron alloys
- Medical devices and surgical tools

Specifications:

Coating hardness:
- 20-30 GPa
- 2000-3000 HV

Thickness range:
- Typically, 1–4 microns

Coefficient of friction (CoF):
- 0.5-0.6 (dry; against alumina)
- 0.4-0.6 (dry; against steel)

Max temp: 600° C

Diamond-Like-Carbon (DLC)

Color: Graphite to black

Characteristics:
- Very low friction, high hardness
- Resistant to sliding wear
- Biocompatible

Ideal for:
- Automotive components
- Medical devices
- Forming tools
- Cutting tools

Specifications:

Coating hardness:
- 15-23 GPa
- 500-2300 HV

Thickness range:
- Typically, 1–4 microns

Coefficient of friction (CoF):
- 0.08-0.11 (dry; against alumina)
- 0.1-0.2 (dry; against steel)

Max temp: 300° C

W-DLC

Color: Various grays

Characteristics:
- Very low friction
- Good hardness
- Low deposition temperature
- Biocompatible

Ideal for:
- Bearings
- Engine and transmission components
- Durable consumer goods

Specifications:

Coating hardness:
- 8-15 GPa
- 800-1500 HV

Thickness range:
- Typically, 1–4 microns

Coefficient of friction (CoF):
- 0.2 (dry; against steel)

Max temp: 300° C

Titanium Carbonitride (TiCN)

Color: Gray

Characteristics:
- High hardness
- Excellent abrasive wear-resistance
- Biocompatible

Ideal for:
- Cutting/punching tools
- Dies for plastic injection molding
- High-pressure, low-speed machining

Specifications:

Coating hardness:
- 25-28 GPa
- 2500-2800 HV

Thickness range:
- Typically, 1–5 microns

Coefficient of friction (CoF):
- 0.3 (dry; against alumina)
- 0.2-0.3 (dry; against steel)

Max temp: 400° C

Zirconium Nitride (ZrN)

Color: Nickel to pale gold

Characteristics:
- High hardness
- High toughness
- Good wear resistance
- Excellent corrosion resistance
- Biocompatible

Ideal for:
- Cutting/punching tools
- Tooling for machining Al & Ti
- Medical devices and dental instruments

Specifications:

Coating hardness:
- 25-27 GPa
- 2500-2700 HV

Thickness range:
- Typically, 1–5 microns

Coefficient of friction (CoF):
- 0.3-0.4 (dry; against alumina)

Max temp: 600° C

Zirconium Oxy-Carbide (ZrOC)

Color: Dark gray to black

Characteristics:
- Moderate hardness, toughness, and wear resistance
- Excellent corrosion resistance

Ideal for:
- Automotive components
- Medical devices
- Forming tools
- Cutting tools

Specifications:

Coating hardness:
- 17-21 GPa
- 1700-2100 HV

Thickness range:
- Typically, 1–4 microns

Coefficient of friction (CoF):
- 0.3-0.4 (dry; against alumina)

Max temp: 600° C

Titanium Aluminum Nitride (TiAlN)

Color: Brown to blue-black

Characteristics:
- High hardness
- Excellent wear resistance at high temperatures

Ideal for:
- Automotive components
- Medical devices
- Forming tools
- Cutting tools

Specifications:

Coating hardness:
- 25-30 GPa
- 2500-3000 HV

Thickness range:
- Typically, 1–4 microns

Coefficient of friction (CoF):
- 0.6 (dry; against steel)

Max temp: 800° C

Contact us for more information.

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