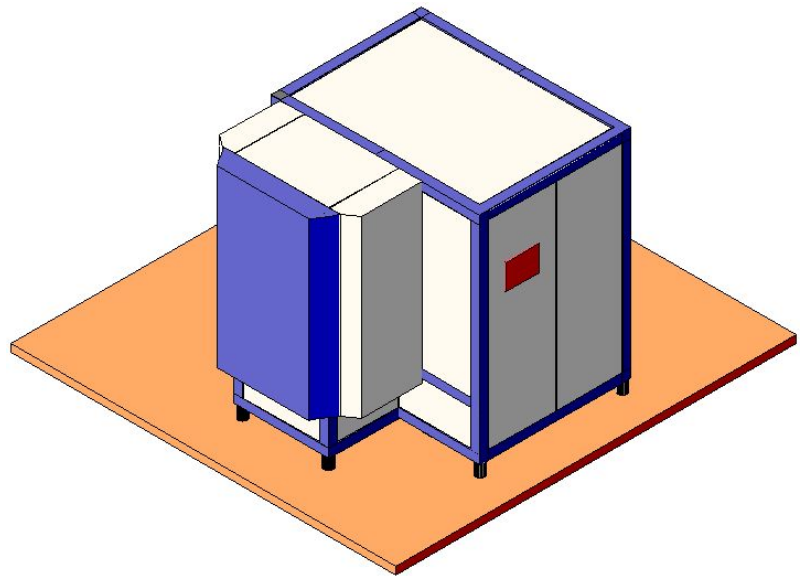


PVT M2/ARC



FROM IDEAS ...



TO...



INDUSTRIAL SOLUTIONS

The PVT M2/ARC is a medium size vacuum coating system specifically designed for the deposition of high performance metallurgical coatings, such as titanium nitride (TiN and Ti₂N), titanium carbonitride (TiC,N), aluminium titaniumnitride AlTiN and many others onto a variety of tools and wear parts by arc evaporation. Not interrupting the vacuum, a PLC (Polymer – Like – Carbon) coating can be deposited on top of such hard coatings to reduce the friction.

The PVT M2/ARC is characterized by:

- Robust system designed for the rigorous production environment using sophisticated vacuum coating technologies.
- Rugged construction marked by an extremely advanced highly refined design.
- Extreme reliability based on intelligent straightforward design and construction.
- The broadest spectrum of coatings and coating technology available in a single system at the lowest possible cost.
- Fully automatic, computer controlled, closed loop process control providing process repeatability, reliability and a user-friendly environment.
- The coatings industry's first „Plug and Play“ deposition system. No costly add-ons required
- The coating industry's broadest capabilities in the smallest footprint.
- Profitable runs available the same day the system arrives, quick and simple installation

TECHNICAL HIGHLIGHTS of the PVT M2/ARC

Patented magnetic arc confinement MAC

- Improved target utilization
- Drastically reduced macro-particle emission

Shorter process time

- Increased heating capabilities
- New and improved cleaning and etching cycles

Improved coating properties

- Advanced interface formation
- Extremely clean process environment

Improved multilayer technology

- Nanolayer technology using shutters

Multiple coatings in the same batch

- Different coatings possible on the same parts with out breaking vacuum or changing targets
- Hard and Soft coatings deposited sequentially in-situ

Improved part handling and fixturing

- Safest most maneuverable transport carts
- Easy to load and use carts with high load capabilities

Improved software design

- Extreme ease of use
- Highly reproducible runs through locked processes
- High level of flexibility for custom tailored coating solutions
- Remote control and diagnostics

Improved thermal management

- Improved intensive cooling
- Double walled construction

Most reliable components

- Brand name components
- Clever integration

SPECIFICATION PVT M2/ARC ARC-COATING SYSTEM

HARDWARE	PVT M2/ARC	pcs
Vacuum chamber	W800xD800xH1070 (interior dimensions) Volume: 700 l SS double wall jacket water cooled system Front loading/unloading door W800xH1070 (opening) Compact Unit including: Chamber, Chassis, Pumps, Control and Power Cabinet	1
Usable plasma volume	D=463 x H=727 mm, volume=122 l	
Plasma volume for high precision coating	D=463 x H=600 mm, volume=100 l	
Arc cathodes	Cathode with Ti targets: Active area: 727x178x18 mm	2
	Cathode with TiAl target (30/70 at.%, pm): Active area: 727x178x18 mm	1
	MAC control: (arc impedance control)	3
	Arc power supply: Type Mag'x 210, 0-210A/5-35V, Profibus DP	2
Shutters	Shutters on each cathode, 2 pcs/cathode	4
Pumping	Roughing pump: GEV one stage, 100 m ³ /h (one-way pump)	1
	Roughing pump: Edwards two stages, 5 m ³ /h	1
	Turbo drag pump, Type Pfeiffer TMH 1000 l/s	1
	Valve Turbo/Chamber VAT DN 200 Al	1
	Valves DN40 KF VAT	2
	Valves DN25 KF VAT	2
	Valves DN16 KF VAT	1
Vacuum monitoring	Piezo gauge 1600-30 mbar	1
	Pirani gauges: Edwards APG-M-NW 16 ST/ST	2
	Penning gauge: Pfeiffer IKR 251 DN 25 IDO-KF	1
	Baratron gauge for process control: MKS Type 628B 1MDF2B: DN 25 KF, 5 decades 1.0E-5 to 0.1 mbar	1
Bias supply	Bias supply with integrated arc detection, 20-1000V/30-10 A, 10 kW	1
Heating	Heaters each 18 kW, total 36 kW	2
Temperature control	Thermocouple devices (fixed position and fixed dummy on top, fixed position and variable size dummy on bottom)	4
Gas supply	Gas flow controllers (Ar/N ₂ /C ₂ H ₂): MKS 500/500/200 sccm Optional gas flow controller: MKS 200 or 500 sccm	3
System dimensions	Compact Unit: W1900xD2200xH2100 mm	
Control system	Pentium III based system	1
	Touch screen interface	1
	Completely menu driven	
	Modem	1
	Remote control, diagnostics and help	
	Datalogging	

HARDWARE	PVT M2/ARC	pcs
Loading capacity (with dedicated fixturing system)	Drills D 8xL117 mm WC inserts ¹ 12x12x6 mm Hobs D80xH180 mm Hobs D120x280 mm:	500 5000 18 12
Tool Loading weight (max.)	300 kg	
Carousel (standard-version)	D=463 mm, 3/6-spindles version (no tool holder plates included)	2
Approximate door-to-door cycle times, full load, 2 cathodes approx. 3 micron TiN on shank tools	Mills D16xL92 mm: Mills D25xL200 mm: Drills D12xL151 mm: WC inserts ¹ D20xH6 mm: Hobs D80xH180 mm: Hobs D120x280 mm:	~4.5 h ~5.5 h ~4.0 h ~3.5 h ~6.5 h ~7.0 h
Other	Carousel lift 1000 kg Cathode lift device 60 kg (to be used with carousel lift)	2 1
Coating processes included	TiN, TiCN TiAlN mono/multilayer Hard+Lubricant(PLC) in same process: on request	
Additional equipment	Spare part set (mechanical and electronic)	1
Training	Standard training on PVT M2/ARC Additional training on PVT M2/ARC Coating center support (set-up, auditing, failure analysis, reporting)	5 days on request on request

Media required (prepared by customer)	<ul style="list-style-type: none"> • Power: 3x400V, 50/60Hz, 3 P, G, N (+6%,-10%), 65 kW • Cooling Water: 25 l/min, 25-40 deg. C, particlefree, 4.5 bar • Process gases: Ar(99.999), N2(99.999), C2H2(99.6) • Venting/Cooling gas: N2 from liquid N2: 2 bar, 500 l/min • Exhaust pipe for rough pump 	
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Data are provisional and are therefore subject to change at any time.

¹ = Inserts with holes, put on rods