



**SUBJECT: SUPPLY OF EQUIPMENT AND SYSTEMS FOR PVD VACUUM COATING nr. 000 12974.1 brand new series 2023**

Production: CLEAN PVD COATING accessories and components OEM

• **KOLZER MK34" PVD 2.0 Metal coating Machine**

consisting of :

- Vertically set, Vacuum Coating chamber diameter 865mm \_ heigth 1400mm
- 2 (two) Doors vertical configuration for easyloading/unloading
- 2 (two) Rotating satellite-holders systems multiposition
- Multi-Loading holder: 1 Ø 720mm\_ 4 Ø 280mm\_ 6 Ø 220mm\_height 1100mm
- 1 (one) Plasma system AC, Mid frequency for cleaning, etching and activation
- 2 (two) Shuttered PVD Sputtering sources 1200mm lenght \_120mm wide
- 2 (two) PVD Sputtering 2.0 Power Generators
- 1 (one) Hi-Power BIAS
- 5 (five) Gas in-let systems, Digital MFC's + Gas Management safety system
- **CVMP™ PRO** equipment (Constant Vacuum\_Multisteps Process)
- 1 (one) Vacuum Dry Pump KX750/4200 FAST DRY EDWARDS + Silencer
- 1 (one) High-Vacuum Diffusion Pump DN800, BALZERS Autojet 30.000.liters/sec
- Valve pack SMC Japan , Vat Switzerland
- Digital Vacuum and High-Vacuum instrumentation
- "Air-cooled" temperature-controlled generators options panel
- **Industry 4.0 ready**: automation system with controls, options and supervision for the MK34"station with PC operating Windows® software 2023, complete of mouse, Internet LAN connection, control and assistance , Skype toll-free number to Kolzer
- Soundproofed-absorption integrated system
- 1 (one) Set of Targets
- Transfer of Know-How and Technology
- 2 (two) Removable stainless steel shields
- 1 (one) Year warranty from testing date
- New Brand Machine
- CE mark

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### **Specifications**

The MK34" is a very fast PVD machine which comes with all facilities, control systems and auxiliary appliances for the deposition of any metals or alloys with PVD Sputtering. Pretreatment and activation take place by means of cold Plasma. Through Plasma, the adhesion of the coating on the parts is improved, ensuring maximum uniformity. The machine has been designed to give the highest priority to ergonomics and process flexibility: to adapt in any case to the variations of the various types of material to be treated, to the color change, to the duration and quality of the coatings. The machine is suitable to be shared with different projects, geometries, production references. Designed for solutions of different metal coatings and for a quick adjustment of process parameters / conditions. The automatic software and the deposition system guarantee maximum uniformity and rapid operation.



### **Description of the Machine**

The coating chamber, in steel, is set on a rigid frame. It is composed out of:

- Two front doors with side hinges that allow them to be opened by rotation. Each door has a viewing window to check the deposition. At the rear of the chamber is a high current feed-through for the Plasma system. High vacuum rotary feed-through for the work holding carriage drive.
- Two rotating multi-positions holders, onto which the tools are fixed. Rotational speed can be set from the operator interface.

- Two side connecting vacuum lines: the first to the rotative pumping group, the other to the diffusion pump, as described below. The pumping system is robust enough to take on the normal out gassing issues.
- Four sidelong inox gas inlet systems. All process gas components will be positioned to allow for easy inspection and maintenance. A common process gas manifold inside the chamber will distribute gases to provide for uniform plasma and coating thickness.
- Quick disconnects will be used for the water and power connections to the sources and will be enclosed to provide the necessary safety interlocks for the operators.
- A stainless steel liner (shield) is an additional protection for the vacuum coating chamber. The removable liner can be cleaned easily ensuring that the coating chamber always remains uncontaminated. Removal and replacement time is targeted at 10 minutes.



**Technical features of the coating chamber :**

- Internal diameter	mm	865
- Internal depth	mm	1400
- Variable reducer speed	rpm	40

**High-Vacuum Equipment:**

**nr. 01 Dry Vacuum Pumping System, Backing Pump and ROOTS**

- Nominal Capacity	m3/h	3450
- Full load power at peak pumping load	kW	40
- Full load power at ultimate pressure	kW	12
- Capacity of lubricating oil	lt	4
- Ultimate Pressure	mbar	$4 \times 10^{-4}$

**nr. 01 High-Vacuum Diffusion Pumps Jet auto DN800**

- Capacity	lt/s	30.000
- Heating power	kW	17
- Heating time	min	30
- Silicone 702 fluid capacity	Kg	10

**Electric energy consumption data :**

- PVD 2.0	kW	40
- Bias	kW	20
- Plasma	kW	10
- Heating of diffusion pumps	kW	17
- Running of motors (including drum rotation)	kW	30
- Installed power	kW	117
<b>- Electric energy consumption</b>	<b>kW</b>	<b>59</b>
(coefficient of utilization 50%)		

**Working parameters :**

- Production of vacuum in the chamber when empty (residual humidity 50% at 20° C.)	min.	7,0
- Vacuum for working	$1 \times 10^{-4}$ Mbar	
- Vacuum for testing	$1 \times 10^{-5}$ Mbar	

**Automatic control panel**

The MK34" is the third generation of Kolzer's Vacuum Machines. It is the first commercial Machine to have a Windows® based operating system.

The Machine has an automated cycle for the Metal Deposition and the whole process is controlled by a Windows based user friendly program.

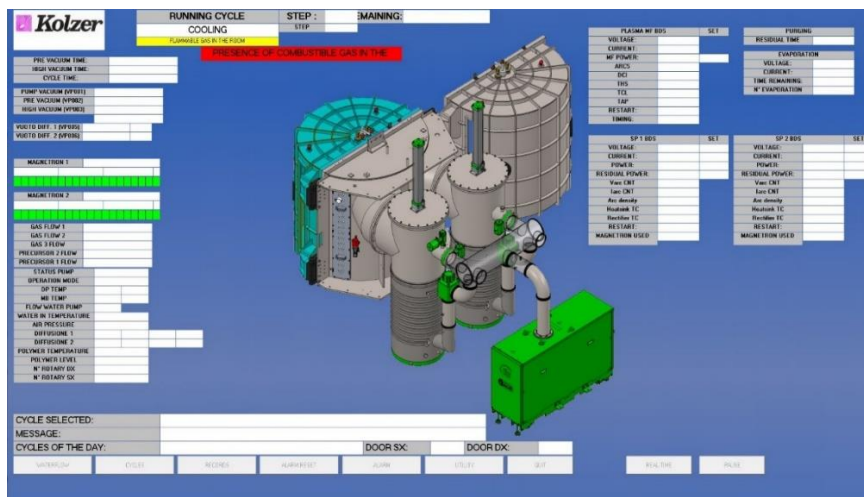
This computerization of the automated cycle ensures maximum efficiency and consistency of the coating process.

Each cycle specification can be stored by the computer and reproduced as required.

In the event of any specific production needs, we can access to your Machine on-line to control and analyse your production process and customize it to your requirements. We run a 24 hour help-line 7 days a week.

On the main page of the program, it is possible to view and inspect the following parameters :

1. Cycles in the Day : number of cycle runs during the working day.
2. Total Cycle Time : length of the last working cycle.
3. Vacuum range in process chamber scan by the TC1 (Pirani):mbar.
4. Vacuum range in process chamber scan by the IG (Penning):mbar.
5. Pre-Vacuum Time.
6. High-Vacuum Time.
7. Range of the Vacuum of the mechanical pumps scan by the TC2 Pirani sensor.
8. Polymer Temperature (option).
9. Inlet Water Temperature.
10. Control Voltage for Deposition and Plasma.
11. Required Power for Deposition and Plasma
12. Monitoring of the Gas Flow.
13. Identification of the selected cycle.
14. Dialogue Area for the users.



## Warranty

Kolzer guarantees that all equipment to be delivered is made of suitable material and free of construction or design faults. The Machine is guaranteed for one year from the date of testing. Installation and testing at the customer's facility will be at Kolzer's care, whereas the customer will pay for the costs of travel, board and lodging for two technicians per working day.

During the warranty period, the parts which may prove to be defective to our judgement, will be replaced free of charge if you report the defect in written form within 8 days from the detection. Replaced parts are property of Kolzer and have to be sent to Kolzer on its request. In so far as Kolzer is not manufacturer of the accessories, the warranty conditions of our subcontractors are valid.

Wear and tear parts are excluded from any warranties and the same applies to the results of operations, to impacts on production and anything arising from working imperfections previously indicated, being therefore excluded any liability for damage except the limit referred to in art. 1229 of the C.C. In any case no defect of the equipment even if under warranty, can be invoked by you, also in court of justice, if you haven't settled the payments. The price of transport and packaging, will be paid by the purchaser, who undertakes to return the defective parts. The parts which may be damaged for negligence or tampering will be responsibility of the customer. We recommend a preventive maintenance once a year; Kolzer guarantees a regular and continuous service on payment, provided on request.



The described machine respects all the safety and health directive requirements concerning production, and its manufacturing is in accordance with the European Community **2006/42/CE** directive. The technical description reported above in the supply proposal are indicative. Kolzer reserves the right to give more details regarding the applied know-how and researched vacuum components during equipment manufacture or once this proposal has been accepted. This quote is strictly confidential and intended exclusively for the above recipient. Kolzer is considered exempt from liability as a result of an improper use of this quote. It is forbidden to use, copy or release its content. **All Rights Reserved** ®

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