

## ZY-1185 Cutting Tools Multi-arc Ion Vacuum Coating Machine



### Overview

ZY-1185 multi-arc ion vacuum coating machine is designed for depositing hard and super hard PVD coatings on cutting tools and wear components, it is characterized by easy operation, low energy consumption and high production capability.

### Introduction

ZY-1185 multi-arc ion vacuum coating machine provide hard and superhard protective film for high speed steel and carbide tools to make them suitable for various processing requirements and workpiece materials. It adopts PLC program as master control system and the man-machine interface (touching type) as operating system, so that the controllability is extremely good. The vacuum process realizes manual, semi-automatic and fully-automatic operation, and ZY-1185 multi-arc ion vacuum coating machine has the fault alarm and security protection function as the PLC can record every detailed production process. It is also rationally equipped with a number of newly developed cathode arc, which effectively guarantees the stability and uniformity of arc source sputtering. Moreover, the machine uses advanced multi-channel intake system to accurately control the gas flow and then meet the needs of various compound films. In order to greatly improve the energy of the plasma and obtain excellent adhesion as well as smoothness of the film, the machine loads high-power pulse bias power source.

ZY-1185 multi-arc ion vacuum coating machine can be used for coating hard and superhard functional film on a variety of metal and alloy surface, the standard coating are TiN, CrN, TiCN, TiAlN, AlTiN, TiAlCrN, TiAlCN, AlCrN, etc. These superhard wear-resistant protective films are widely used in drills, milling cutter, gear cutter, broach, taps, blades, automotive wear-resistant parts and medical devices to improve the hardness, wear resistance, corrosion resistance, machining precision, to extend service life and lower the cost. Also, IKS allows users to customize various parameters to obtain the specific surfaces of the required tools.

Thanks to its strong applicability and universality, ZY-1185 multi-arc ion vacuum coating machine has withstood the test of mass production and long-term use, also, its excellent stability and high cost performance gained popular praises from our customers.

## Specification

|                                      |   |                          |   |
|--------------------------------------|---|--------------------------|---|
| Vacuum Chamber                       | φ 1100 × H850   | Effective Coating Space  | φ 550 × H500  |
| Voltage/Hz                           | 380V/50Hz   | Actual Power             | 50KW  |
| Max Diameter of Work-Piece × Quality | φ 150 × 8PCS  | Arc Source               | 12PCS   |
| Technology                           | HCD+ARC   | Target                   | 12PCS   |
| Ultimate Pressure                    | 5.0×10 <sup>-4</sup> Pa   | Leak Rate                | <10 <sup>-3</sup> Pa.L/s  |
| Pump Down Time                       | (from atm. to 4X10 <sup>-3</sup> Pa) ≤20 mins   | Occupation Space         | L4000×W3200×H2200MM   |
| Work-Piece Turntable                 | Lower Frame Structure   | Vacuum Chamber Structure | Vertical Single Open  |
| Standard Coating                     | TiN, CrN, AlTiN, etc  | Optional Coating         | TiAlCrN, etc  |
| Power Source                         | Arc Power Source, Pulse-Bias Power Supply, Gun Power Supply                                 | Vacuum System            | Molecular Pump, Roots Pump, Rotary Vane Pump  |
| Coating Cycle                        | 3-5 Hours/Furnace   | Working Gas              | Ar, N <sub>2</sub> , O <sub>2</sub> , C <sub>2</sub> H <sub>2</sub> , etc                                 |
| Output/Furnace                       | Milling Cutter φ 10×70 680<br>Blade φ 18×6 5000<br>Hobbing Cutter φ 80×80 48<br>Mould 500KG | Necessary Conditions     | Circulating Water Pressure: 2-3KG/CM <sup>3</sup><br>Flow: 10T/H<br>Compressed Air: 4-6KG/CM <sup>3</sup> |
| Operationl Mode                      | Manual + Semi-Auto<br>+ Full-Automatic/Torch Screen + PLC                                   | Application              | Tools PVD Plating   |
| Remarks                              | The Furnace, Outlook and Other Parameters Can be Customized According to Your Requirement   |                          |   |

## Features

- The arc moves rapidly on the whole surface of the target to ensure the target surface be etched uniformly, which optimizes the adhesion of the film and makes coating surface smooth and dense.
- Faster batch turnover efficiency and coating production efficiency.

- The machine can ensure the uniformity of thickness in the available coating range.
- High quality hard coatings give cutting tools higher cutting and feeding speeds, and help extend service life to reduce the replacement time of tools, thereby reducing the total processing cost.
- The great friction and hardness of the coating ensure less lubrication and cooling to gain high quality surface of the machined parts.

## Characters of Functional Coatings

| Coating Material | Coating Color           | Microhardness (Hv 0.05) | Coefficient of Friction | Thickness (Um) | Max Service Temperature °C | Structure                     | Features   |
|------------------|-------------------------|-------------------------|-------------------------|----------------|----------------------------|-------------------------------|--|
| Tin              | Gold                    | 2400                    | 0.40                    | 1-4            | 500                        | Monolayer                     | Excellent Hardness and Anti-Adhesion                   |
| Crn              | Silver Gray             | 2000                    | 0.40                    | 1-4            | 700                        | Monolayer                     | Excellent Anti-Corrosion and Anti-Adhesion             |
| Ticn             | Blue Gray               | 3000                    | 0.20                    | 1-4            | 400                        | Gradient Composite Membrane   | Low Friction Coefficient and Excellent Hardness        |
| Tiain            | Aubergine               | 3500                    | 0.40                    | 1-4            | 850                        | Monolayer Composite Membrane  | Excellent Hardness and Anti-Oxidation                  |
| Aitin            | Purple Black            | 3800                    | 0.45                    | 1-4            | 900                        | Multilayer Composite Membrane | Excellent Superhardness and Anti-Oxidation             |
| Tiaicrn          | Gray                    | 3300                    | 0.70                    | 1-3            | 800                        | Multilayer Composite Membrane | Excellent Hardness, Anti-Oxidation and Anti-Impact     |
| Tiaicn           | Rose Red                | 3500                    | 0.20                    | 1-4            | 800                        | Gradient Composite Membrane   | Excellent Superhardness and Anti-Oxidation             |
| Aicrn            | Ash Black/<br>Dark Gray | 3200                    | 0.35                    | 1-4            | 1100                       | Monolayer                     | Ultra-High Anti-Oxidation Temperature and Red Hardness |

## Sample Pictures

