MAIN FEATURES

- PROCESS VACUUM CHAMBER WITH THERMAL INSULATION AND COOLING FACILITY
- NOVEL HOT RETORT DESIGN TO ENHANCE HEAT TRANSFER AND LOWER HEAT LOSS
- THREE ZONE HEATING WITH INDEPENDENT PID CONTROL PROVIDES THERMAL UNIFORMITY
- FULLY AUTOMATIC PLC / PC BASED CONTROL WITH SCADA PACKAGE TO PROVIDE RECIPE STORAGE, RECALL FOR PROCESS REPEATABILITY.
- CLOSED LOOP PID BASED PRESSURE CONTROL WITH CAPACITANCE MANOMETER AND MOTORIZED VALVE.
- PRECISION MASS FLOW CONTROLLERS PROVIDE EXCELLENT CONTROL OVER GAS PHASE CHEMISTRY FOR PROCESS CONTROL.
- PULSED DC POWER SUPPLY WITH ADVANCED ARC CONTROL AND SETTING OF PEAK VOLTAGE, PULSE FREQUENCY AND DUTY CYCLE
- ONLINE FINE TEMPERATURE CONTROL BY INTERACTIVE DUTY CYCLE CONTROL DURING NITRIDING
- PROCESS DATA BASE WITH PROCESS RECIPES FOR STANDARD NITRIDING STEELS.
- INTEGRATION OF DUAL PROCESS CHAMBER POSSIBLE TO ENHANCE PRODUCTIVITY.

MILMAN® towards the cutting edge in coating technology
WHAT IS PLASMA ION NITRIDING?

PLASMA ION NITRIDING [PIN] is a technique to diffuse Nitrogen in steels in the presence of Plasma to impart surface hardness; for a wide variety of Applications.

In this process, parts to be Nitrided are kept in a Vacuum Process Vessel at elevated temperatures, and pulsed DC voltage in the presence of Ionized Gases [Plasma] of $N_2$, $H_2$, Ar, $CH_4$ etc.

ADVANTAGES OF PLASMA ION NITRIDING

- Low Distortion and High Process Reproducibility
- Reduced Cycled Time
- Uniformity of Case Depth and Hardness
- Minimum or Elimination of Post Machining
- Control of Compound layer
- Variant Processes like Plasma Nitro carburizing and Plasma Oxidation
- Environmental Friendly: No Toxic Gases / Salts

WHAT STEELS CAN BE NITRIDED

- Alloy Steels containing (Cr, Al, Mo, V, W, Ti)
- Nitriding Steels
- Medium Carbon Chrome Steels
- Chrome, Chrome-Vanadium Steels
- Stainless Steels (300, 400, PH)
- Tool Steels

APPLICATIONS

- Tooling for Die Casting, Forging and Extrusions
- Plastic Molds
- Metal Working
- Composite Tooling
- Power Transmission Components
- Hydraulic System Hardware
- Bearings
- Gears
- Powdered Metal Components
PLASMA NITRIDERS FOR MILMAN

THE NOVEL HOT RETORT DESIGN

- Three zone heaters with Retort placed internally for fast heat transfer and energy saving.
- Independent PID controls in each zone with Retort temperature monitoring for Thermal uniformity.
- In-built advance Software for Temperature Control to achieve uniform heating.
- Optional Convective Fan for reducing initial heat up-time

ADVANCED PULSED DC POWER GENERATOR

- Independent voltage, Frequency and Pulsed width Control
- Active Arc Suppression Circuitry
- Pulsed Voltage upto 700V
- Maximum Pulsed Current: 120 Amp (p – p)
- Pulsed Frequency: 10 – 25 kHz
- Duty Cycle: 30 – 90%

AUTOMATION

- PLC-PC based Automation with SCADA Package and Touch Screen Control
- On-line changes in process parameters for fine control
- Recipe Storage, recall for standard jobs for Reproducibility
- Alarm and Maintenance Management
- Batch report Generation and Remote Connectivity Internet.
## MILMAN PLASMON SERIES

<table>
<thead>
<tr>
<th>MODELS</th>
<th>PLASMON 300</th>
<th>PLASMON 800</th>
<th>PLASMON 1000</th>
</tr>
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<tbody>
<tr>
<td>HOT ZONE (mm)</td>
<td>300 x 300</td>
<td>800 x 800</td>
<td>1000 x 1300</td>
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<tr>
<td>WORK LOAD (Kg)</td>
<td>100 – 200</td>
<td>500 – 700</td>
<td>1500 – 2000</td>
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<td>POWER SUPPLY (kW)</td>
<td>5</td>
<td>35</td>
<td>50</td>
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<tr>
<td>PULSED CURRENT (Amp)</td>
<td>20</td>
<td>80</td>
<td>120</td>
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<tr>
<td>PRESSURE (mbar)</td>
<td>5 – 10</td>
<td>5 – 10</td>
<td>5 – 10</td>
</tr>
<tr>
<td>GASES</td>
<td>Ar, N₂, H₂</td>
<td>Ar, N₂, H₂, C₂H₂, O₂</td>
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