



## CSIR-NATIONAL METALLURGICAL LABORATORY

[COUNCIL OF SCIENTIFIC & INDUSTRIAL RESEARCH, CSIR]

BURMA MINES, JAMSHEDPUR, JHARKHAND - 831007

Ph.: 0657-2345132, website: <http://www.nml.res.in> E-mail: [spo.nml@csir.res.in](mailto:spo.nml@csir.res.in)

### PURCHASE ORDER

<b>To,</b> <b>MILMAN THIN FILM SYSTEMS PVT. LTD.,</b> <b>Vishwachhaya Industry Road,</b> <b>Gat No. 322/A/1, 2 &amp; 3, Pirangut,</b> <b>Tal. Mulshi, Pune – 412 115</b> <b>Tel. :- +91 7888085401 / 4 / 5</b> <b>Mobile :- +91 98224 09634</b> <b>Email – milind.acharya@milmanthinfilms.com,</b> <b>milmantfs31995@gmail.com,</b> <b>mandar.ashtikar@milmanthinfilms.com,</b> <b>info@milmanthinfilms.com</b>	P.O. No.	<b>P/NC/835/SP/SM/OTE/23-24</b>
	Date	<b>14.01.2026</b>
	Subject	<b>Award of Contract</b>
	Ref.:-	1. NML Enquiry No. <b>P/NC/835/SP/SM/OTE/23-24</b> dt. 10.02.2025 2. <b>Tender floated on GeM-CPP</b> <b>Portal bearing Tender ID :-</b> <b>2025_CSIR_226280_1</b> 3. Quotation Ref. No. MTS/ENQ- 1151/M/24-25/QUOT-166/187 dt. 19.02.2025 and subsequent emails dt. 03.06.25, 28.07.25 and Discount offered after Price Negotiation meeting vide bidder's email dt: 09.09.2025

Dear Sir,

I am directed to inform you that after evaluating the bid documents submitted by you as referred above, The Director, CSIR-NML, Jamshedpur is pleased to inform you that you have been selected as the successful bidder for the **Supply, Installation and Commissioning of Bipolar Power Supply with Micro Arc Oxidation**. The total purchase price including AMC Charges shall be **₹ 98,32,833.00**, as indicated in your financial bid submitted on the GeM-CPP Portal and your revised offer submitted through email on 09.09.2025, in accordance with the procedures intimated in the relevant bid documents.

Accordingly, you are requested to kindly arrange for execution of the Contract for **Supply, Installation and Commissioning of Bipolar Power Supply with Micro Arc Oxidation**. Please apply for refund of EMD if deposited by you with proper documentary evidence.

### COST OF EQUIPMENT

Sl. No.	Description	Quantity	Total Price/ INR
1.	Basic Price of Bipolar Power Supply with Micro Arc Oxidation Model MM-PEO-BP-130A <b>(Technical Specifications &amp; Drawing are attached at Annexure-A)</b>	01 (One) No.	79,87,826.00
2.	Packing, forwarding and freight charges	01 (One) No.	Inclusive
3.	Installation & Commissioning Charges	01 (One) No.	Inclusive
4.	Price of Bipolar Power Supply with Micro Arc Oxidation including charges towards Packing, forwarding, Installation & Commissioning		79,87,826.00
5.	<b>Discount offered after Price Negotiation meeting vide bidder's email dt: 09.09.2025</b>		<b>(-) 4,37,826.00</b>
6.	<b>Discounted Price of Bipolar Power Supply with Micro Arc Oxidation including charges towards Packing, forwarding, Installation &amp; Commissioning</b>		<b>75,50,000.00</b>
7.	GST on Basic Price of Bipolar Power Supply with Micro Arc Oxidation	@ 18%	13,59,000.00
<b>Total FOR NML Jamshedpur in INR including Installation &amp; Commissioning Charges</b>			<b>89,09,000.00</b>

## **CHARGES TOWARDS ANNUAL MAINTENANCE CONTRACT**

Sl. No.	Description	Quantity	Total Price/ INR
1.	Basic Rate for Non-Comprehensive AMC for 1 <sup>st</sup> . Year (Discount offered after Price Negotiation meeting vide bidder's email dt: 09.09.2025)	01 (One) No.	3,23,761.00
2.	Basic Rate for Non-Comprehensive AMC for 2 <sup>nd</sup> Year (Discount offered after Price Negotiation meeting vide bidder's email dt: 09.09.2025)	01 (One) No.	4,59,148.00
3.	GST on Basic Rate for Non-Comprehensive AMC for 1 <sup>st</sup> . Year	@ 18%	58,277.00
4.	GST on Basic Rate for Non-Comprehensive AMC for 2 <sup>nd</sup> Year	@ 18%	82,647.00
<b>Total Non Comprehensive AMC Charges for 2 Years</b>			<b>9,23,833.00</b>

## **TOTAL CONTRACT VALUE**

Sl. No.	Description	Quantity	Total Price/ INR
1.	Total Price of Bipolar Power Supply with Micro Arc Oxidation Model MM-PEO-BP-130A on FOR NML Jamshedpur in INR including Installation & Commissioning Charges	01 (One) No.	89,09,000.00
2.	Total Non-Comprehensive AMC Charges for 2 Years	@ 18%	9,23,833.00
<b>TOTAL CONTRACT VALUE</b>			<b>98,32,833.00</b>

This Contract/Purchase Order shall be governed by:-

(1) General Conditions of Contract and Special Conditions of Contract as detailed in the **Bid Document Ref. No. P/NC/835/SP/SM/OTE/23-24 dt. 10.02.2025 floated on CPP Portal bearing Tender ID :- 2025\_CSIR\_226280\_1** and

(2) Special Conditions of Contract enclosed with this Purchase Order.

**The Technical Specifications and other allied features of the ordered goods shall strictly conform to those specified in the aforesaid CSIR-NML Tender Document and complied by the Bidder / Supplier in their Quotation submitted on GeM-CPP Portal and all communications exchanged between CSIR-NML and the Bidder / Supplier.**

The Order Acknowledgement must be submitted immediately and in any case, within 07 days from the date of placement of this Purchase Order. The Order Acknowledgement shall be made on letterhead of the firm mentioning detailed technical specifications as per the Purchase Order and shall also contains declaration towards acceptance of all the terms & conditions of the Purchase Order.

 14.01.26

Stores & Purchase Officer

For & on behalf of the Council of Scientific & Industrial Research

Encl:

1. Technical Specifications



## Explanations

The following words and expressions used in this Award of Contract shall have the meanings hereby assigned to them:

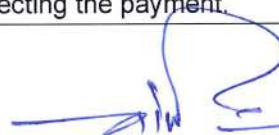
<b>Purchaser</b>	means CSIR-NATIONAL METALLURGICAL LABORATORY, BURMA MINES, JAMSHEDPUR, JHARKHAND - 831007
<b>Manufacturer/Supplier</b>	Means Milman Thin Films Systems Pvt. Ltd, Pune
<b>Indian Agent</b>	Means Milman Thin Films Systems Pvt. Ltd, Pune

1.	Delivery Term	FOR NML Jamshedpur (Door delivery at Warehouse, CSIR-NML, Jamshedpur)
2.	Purchase Order Value / Contract Price	<b>₹ 98,32,833.00 (INR NINETY EIGHT LAKHS THIRTY TWO THOUSAND EIGHT HUNDRED THIRTY THREE ONLY)</b>
3.	Transportation / Despatch	The ordered goods shall be delivered by Supplier at Warehouse of CSIR-NML, Jamshedpur and duly insured by Supplier on warehouse to warehouse basis covering all the risks including SRCC.
4.	Payment	<p><b><u>Payment shall be made in currency of the Contract in the following manner:</u></b></p> <p>(a) <b>Net 70 percent (Seventy percent) of the Contract Price</b> shall be paid through RTGS within 30 days after delivery and inspection of the materials in good condition duly certified by the end user. At the time of taking delivery of the ordered goods, Purchaser reserves the right to ask for a joint inspection in presence of Supplier's representatives for verification of the goods delivered. <b>The Seventy percent of contract price shall mean to be Seventy Percent of the basic cost of goods and related services (excluding AMC Charges) plus 100% taxes [GST] less TDS-GST at the applicable rates.</b></p> <p>(b) <b>The remaining 30 percent (Thirty percent) of the Contract value</b> shall be paid through RTGS upon installation and commissioning (including training) of all the ordered Goods and upon submission of the documents specified in the Purchase Order by the Supplier within thirty (30) days after the date of the acceptance certificate issued by the Purchaser subject to submission of Performance Security.</p> <p><b><u>Payment terms of AMC for 02 Years (Non-Comprehensive in nature):-</u></b></p> <p><b>AMC Charges shall be paid on Yearly basis</b> through RTGS within 30 days <b>after completion of each AMC year</b> subject to satisfactory service certificate given by the concerned user and against submission of bills.</p> <p>a. <b>Payment on completion of 1<sup>st</sup> year AMC Period = ₹ 3,23,761.00 + ₹ 58,277.00 (GST @18%) = ₹ 3,82,038.00</b> shall be paid subject to rendering of satisfactory performance.</p> <p>b. <b>Payment on completion of 2<sup>nd</sup> year AMC Period = ₹ 4,59,148.00 + ₹ 82,647.00 (GST @18%)= ₹ 5,41,795.00</b> shall be paid subject to rendering of satisfactory performance.</p>
5.	Banking Charges	All bank charges abroad shall be to the account of the beneficiary i.e. supplier and all bank charges in India shall be to the account of the purchaser.
6.	Performance Security	The Supplier shall furnish Performance Security for 3% of the contract price excluding AMC Charges, i.e. <b>₹ 2,67,270.00</b> before claiming payment. Other details of Performance Security are detailed at GCC Clause 2.13 of our tender document.
7.	Country of Origin	INDIA



8.	Port of Shipment	By Road.
9.	Road Permit / eWaybill	Will not be provided.
10.	Pre-Dispatch Inspection (PDI)	Not Applicable.
11.	Delivery period	<p><b>10 (TEN) WEEKS from date of issue of Purchase Order.</b></p> <p>At the time of taking delivery of the ordered goods, Purchaser reserves the right to ask for a joint inspection in presence of Supplier's representatives for verification of the goods delivered.</p> <p><b>Denial Clause</b> (over and above levy of Liquidated Damage): any increase in statutory duties and / or upward rise in prices due to the PVC (Price Variation Clause) clause and / or any adverse fluctuation in foreign exchange are to be borne by the seller during the extended delivery period, while the purchaser reserves the right to get any benefit of a downward revisions in statutory duties, PVC and foreign exchange rate.</p> <p>Except as provided under the Force Majeure clause, a delay by the Supplier in the performance of its delivery obligations shall render the Supplier liable to the imposition of penalty pursuant to Penalty Clause unless an extension of time is agreed upon pursuant to above clause without the application of penalty clause.</p>
12.	Warranty	<b>02 (Two) Years on-site Comprehensive Warranty</b> from the date of completion of successful installation & commissioning and completion of all contractual obligation to the entire satisfaction of buyer.
13.	AMC	<p>Consecutive <b>02-years Non-comprehensive AMC (Minimum 02 preventive + 02 breakdown visit annually visit annually)</b> for equipment to be started immediately after expiry of <b>warranty period of 02 Years</b>.</p> <p>The services towards minimum 2 nos. of Preventive Maintenance are to be carried out with a time period difference of 5 months</p>
14.	Pre-installation visit	Firm's engineer will make the inspection for site readiness prior to shipment to expedite the installation.
15.	Installation & Commissioning	<p>Installation &amp; Commissioning will be the sole responsibility of the Supplier. Installation &amp; Commissioning will have to be done by the supplier.</p> <p>The Supplier will complete the Installation &amp; Commissioning including Training and acceptance test at site within <b>30 days</b> from the date of supply of equipment to CSIR-NML.</p> <p><b>Firm must submit copy of Installation Certificate on Supplier's letterhead duly signed &amp; stamped by both the firm's engineer and user of CSIR-NML indicating specific start date and completion date of Installation. The firm must also submit Acceptance Certificate Form (Attached) on completion of commissioning of the items.</b></p> <p><b>Delay beyond the prescribed period in completion of contractual obligations will attract the imposition of Liquidated Damage Clause as mentioned in this tender document.</b></p>
16.	Training	It should be imparted to <b>Three (03) person(s) for Seven (07) day(s)</b> to the purchaser at purchaser's premises. It should be completed as per schedule mentioned under installation and commissioning.
17.	Acceptance	Supply of goods as per PO.
18.	LD Clause	It will be applicable for delay in delivery / shipment, installation, testing, commissioning and completion of all contractual obligations beyond deadlines as mentioned in our Bid Document GCC 2.27 read with the relevant SCC.

19.	Certificate for effecting payment	Firm will submit the installation and acceptance certificate indicating the completion of Installation, Commissioning & Training as well as duly signed by the user of CSIR-NML alongwith Invoice for effecting the payment.
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For & on behalf of the Council of Scientific & Industrial Research

### **SPECIAL CONDITIONS OF CONTRACT (SCC)**

The following Special Conditions of Contract (SCC) shall supplement and / or amend the General Conditions of Contract (GCC). Whenever there is a conflict, the provisions herein shall prevail over those in the GCC.

SCC 1	The Purchaser is: Director, CSIR-NATIONAL METALLURGICAL LABORATORY, BURMA MINES, JAMSHEDPUR, JHARKHAND - 831007
SCC 2	The Supplier is: M/s. Milman Thin Films Systems Pvt. Ltd, Pune
SCC 5	<b>Final Destination:</b> CSIR-NATIONAL METALLURGICAL LABORATORY, BURMA MINES, JAMSHEDPUR, JHARKHAND - 831007
SCC 6	<b>Order Acknowledgement/Confirmation:</b> The Order Acknowledgement must be submitted immediately and in any case, within 07 days from the date of placement of this Purchase Order. The Order Acknowledgement shall be made on letterhead of the firm mentioning detailed technical specifications as per Quotation and shall also contains declaration towards acceptance of all the terms & conditions of the Purchase Order.
SCC 7	<b>Performance Security:</b> The Supplier shall furnish Performance Security for <b>3% of the contract price excluding AMC Charges</b> , i.e. <b>₹ 2,67,270.00</b> before claiming payment of the equipment. Other details of Performance Security are detailed at GCC Clause 2.13 of our tender document.
SCC 8	<b>Delivery / Shipment :</b> <b><u>10 WEEKS</u> from date of issue of Purchase Order.</b>  Denial Clause (over and above levy of Liquidated Damage): any increase in statutory duties and / or upward rise in prices due to the PVC (Price Variation Clause) clause and / or any adverse fluctuation in foreign exchange are to be borne by the seller during the extended delivery period, while the purchaser reserves the right to get any benefit of a downward revisions in statutory duties, PVC and foreign exchange rate. Except as provided under the Force Majeure clause, a delay by the Supplier in the performance of its delivery obligations shall render the Supplier liable to the imposition of penalty pursuant to Penalty Clause unless an extension of time is agreed upon pursuant to above clause without the application of penalty clause.
SCC 9	<b>Part supply will not be accepted.</b>
SCC 10	The <b>country of origin</b> of the Goods is INDIA
SCC 11	The <b>port of shipment</b> of the Goods is By Road.
SCC 12	The <b>mode of shipment:</b> By Road.
SCC 15	<b>Pre-installation visit</b> Firm's engineer will make the inspection for site readiness prior to shipment to expedite the installation.  <b>Installation &amp; Commissioning:</b> Installation & Commissioning will be the sole responsibility of the Supplier. Installation & Commissioning will have to be done by the supplier.  The Supplier will complete the Installation & Commissioning including Training and acceptance test at site within <b><u>30 days</u></b> from the date of supply of equipment to CSIR-NML.  <b>Firm must submit copy of Installation Certificate on Supplier's letterhead duly signed &amp; stamped by both the firm's engineer and user of CSIR-NML indicating specific start date and completion date of Installation. The firm must also submit Acceptance Certificate Form (Attached) on completion of commissioning of the items.</b>  Delay beyond the prescribed period in completion of contractual obligations will attract the imposition of Liquidated Damage Clause as mentioned in this tender document.

SCC 16	<p><b>Training:</b> It should be imparted for <b>Three (03) person(s) for Seven (07) day(s)</b> to the purchaser at purchaser's premises. It should be completed as per schedule mentioned under installation and commissioning.</p>
SCC 16	<p><b>Inspection and Tests:-</b> The Inspection tests prior to shipment of goods and at final acceptance at buyer's site.</p> <p>After the goods are manufactured and assembled, inspection and testing of the goods shall be carried out at the Supplier's plant by the Supplier prior to shipment to check whether the goods are in conformity with the technical specifications.</p> <p>Manufacturers Test Certificate with data sheet shall be issued to the effect and submit alongwith delivery documents.</p> <p>The acceptance test will be conducted by the Purchaser, their consultant or other such person nominated by the Purchaser at its option after the equipment is installed at Purchaser's site in the presence of supplier's representatives. The acceptance will involve trouble free operation. There shall not be any additional charges for carrying out acceptance test. No malfunction, partial or complete failure of any part of the equipment is expected to occur. The Supplier shall maintain necessary log in respect of the result of the test to establish to the entire satisfaction of the Purchaser, the successful completion of the test specified. In the event of the ordered item failing to pass the acceptance test, a period not exceeding two weeks will be given to rectify the defects and clear the acceptance test, failing which, the Purchaser reserve the right to get the equipment replaced by the Supplier at no extra cost to the Purchaser. Successful conduct and conclusion of the acceptance test for the installed goods and equipment shall also be the responsibility and at the cost of the Supplier.</p> <p>Before the goods and equipment are taken over by the Purchaser, the Supplier shall supply operation and maintenance Manuals together with Drawings of the goods and equipment built. These shall be in such details as will enable the Purchase to operate, maintain, adjust and repair all parts of the works as stated in the specifications. The Manuals and Drawings shall be in the ruling language (English) and in such form and numbers as stated in the Contract. Unless and otherwise agreed, the goods and equipment shall not be considered to be completed for the purposes of taking over until such Manuals and Drawing have been supplied to the Purchaser.</p> <p>On successful completion of acceptability test, receipt of deliverables, etc. and after the Purchaser is satisfied with the working of the equipment, the acceptance certificate signed by the Supplier and the representative of the Purchaser will be issued. The date on which such certificate is signed shall be deemed to be the date of successful commissioning of the equipment.</p>
SCC 18	<b>Packing:</b> Please refer to Special Conditions of Contract (SCC) of our tender document.
SCC 19	<p><b>Shipping and other Documents :</b> Please refer to Special Conditions of Contract (SCC) of our tender document.</p>
SCC 20	<p><b>Mode of dispatch:</b></p> <p><del>In case of supplies from within India, the mode of transportation shall be by Road.</del> In case of supplies from abroad, the mode of transportation shall be by Sea.</p>
SCC 21	<p><b>Insurance:</b> The Insurance in respect of goods to cover all risks including SRCC upto final destination shall be borne by Supplier at its own costs.</p>
SCC 22	<p><b>Warranty:</b> <b>02 (Two) Years on-site Comprehensive Warranty</b> from the date of completion of successful installation &amp; commissioning and completion of all contractual obligation to the entire satisfaction of buyer.</p> <p>Other details of Warranty are detailed at GCC Clause 2.21 of our tender document read with relevant SCC.</p>
SCC 23	<b>Payment:</b>

	<p><b><u>Payment shall be made in currency of the Contract in the following manner:</u></b></p> <p>(a) <b>Net 70 percent (Seventy percent) of the Contract Price</b> shall be paid through RTGS within 30 days after delivery and inspection of the materials in good condition duly certified by the end user. At the time of taking delivery of the ordered goods, Purchaser reserves the right to ask for a joint inspection in presence of Supplier's representatives for verification of the goods delivered. <b>The Seventy percent of contract price shall mean to be Seventy Percent of the basic cost of goods and related services (excluding AMC Charges) plus 100% taxes [GST] less TDS-GST at the applicable rates.</b></p> <p>(b) <b>The remaining 30 percent (Thirty percent) of the Contract value</b> shall be paid through RTGS upon installation and commissioning (including training) of all the ordered Goods and upon submission of the documents specified in the Purchase Order by the Supplier within thirty (30) days after the date of the acceptance certificate issued by the Purchaser subject to submission of Performance Security.</p> <p><b><u>Payment terms of AMC for 02 Years (Non-Comprehensive in nature):-</u></b></p> <p><b>AMC Charges shall be paid on Yearly basis</b> through RTGS within 30 days <b>after completion of each AMC year</b> subject to satisfactory service certificate given by the concerned user and against submission of bills.</p> <p>a. <b>Payment on completion of 1<sup>st</sup> year AMC Period = ₹ 3,23,761.00 + ₹ 58,277.00 (GST @18%) = ₹ 3,82,038.00</b> shall be paid subject to rendering of satisfactory performance.</p> <p>b. <b>Payment on completion of 2<sup>nd</sup> year AMC Period = ₹ 4,59,148.00 + ₹ 82,647.00 (GST @18%)= ₹ 5,41,795.00</b> shall be paid subject to rendering of satisfactory performance.</p>
SCC 24	<p><b>Liquidated Damages :</b></p> <p>Please refer to our tender document under GCC 2.27 read with the relevant SCC.</p>

Stores & Purchase Officer  
For & on behalf of the Council of Scientific & Industrial Research



## Annexure-A

OUR REF.: MTS/ENQ-1151/M24-25/Q101-16/187

NML, JAMSHEDPUR

DATE: FEBRUARY 19, 2025

TENDER NO.: PNC/335/SP/AM/01/24/24/100-2825-CSR-226/20-1)

### II. SCOPE OF SUPPLY AND TECHNICAL SPECIFICATIONS:

1. Bipolar Pulsed Power Supply with Micro-Arc oxidation consisting of as per details given below:

1 set

A. Pulsed Plasma Power Supply

1 no.

Provision for connecting to a suitable oscilloscope with current and voltage probes for recording and displaying the voltage and current Vs time.

- i. **INPUT VOLTAGE** : 415 V  $\pm$  10 %, AC 3 PHASE, 50 Hz ( $\pm$ 5%), 4 wire with separate earth connection

- ii. **OUTPUT VOLTAGE** : Bipolar Pulsed DC output (pulsed between zero and peak) wherein the peak voltage output, pulsing frequency and duty cycle are programmable as follows:

- a) **Peak Positive Voltage:** : Voltage continuously variable from +80 Volts DC to 800 Volts DC by:  
i. External control voltage 0-10 VDC [selectable] through PLC-HMI with 1% variation maximum

Average output voltage: 800V max with output voltage limit protection

- b) **Negative voltage** : Voltage: continuously variable from -20 to -200 Volts DC  
i. External control voltage 0 - 10 VDC (selectable) through PLC-HMI with 1% variation maximum.

- c) **Positive Current** : Current continuously variable from 0 Amp to 130 Amp DC by:  
a) External control voltage 0-10 VDC [selectable]

- d) **Negative Current** : Current: Continuously variable from 0 to -20 Amp with 1 Amp adjustment through PLC-HMI with 1% variation maximum

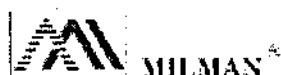
- e) **Pulse Frequency** : Continuously variable from 0.1 kHz to 2 KHz  
With steps of 0.001 KHz through PLC-HMI with 1% variation maximum with both +ve and -ve Phase controllable  
External continuous control voltage 1 - 10 VDC [selectable].

- f) **Duty Cycle** : Continuously variable from 10- 90% with 5% adjustment with 1% variation  
a) External control voltage 0-10 VDC [selectable]

- g) **Power Output:** : 100 KW (max)

- iii. **OUTPUT CURRENT** : 130 Amperes max. Output current limit protection.

- iv. **ARC SUPPRESSION** : Active Arc Suppression



v. DUTY

Continuous duty [24 Hrs. continuous operation]

vi. MODES OF OPERATION

Single positive pulse or single negative pulse or bipolar pulse with Constant Voltage (CV) / Constant Current (CC) / (Through PLC/HMI)

vii. Additional Features / Specifications:

1. INTERLOCKS/LED INDICATORS

Emergency Stop  
Over / lower input voltage, over / lower input current protection with alarm indication  
DC ON / Over Voltage or Current in CV or CC mode respectively  
Termination of the process if the output voltage once voltage is crossed the specified with indication and alarm  
Short Circuit (Overload) protection and indication  
Over Temperature (of Power devices) protection and indication  
PLC cabinet door opening alarm with indication  
Automatic lights for servicing of PLC cabinet control panel when door is open  
Indications with alarms for thermometer, chilling plant etc. to monitor and record at PLC

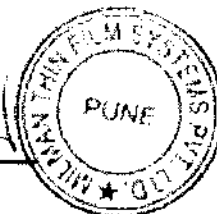
2. AMBIENT

20°C to 40 °C (Forced Water-Cooling Arrangement for Power Devices)

3. VOLTAGE CONTROLLED / CURRENT (Current controlled mode preferred)

- Output voltage controlled through 0 to 10V DC from Remote Input / PLC or Front Panel Potentiometer
- Output voltage feedback and output current feedback 0 to 10V DC to PLC
- Both Input and output feedback are linearly optically isolated
- Output voltage inhibited if input voltage is less than 130V AC or greater than 470V AC phase to phase with indication.
- Output current limit is settable with feedback protection
- Output soft start to prevent sudden voltage or current surge

Power supply can be modified to adjust output voltage (constant voltage mode) or adjust output current (constant current mode) through external potentiometer



4. **TERMINATION**
    - High Voltage DC Output connectors [ As per Standard safety norms]
  5. **PROTECTION AGAINST CORROSIVE ENVIRONMENT (cabinet and Hardware)**
    - Epoxy Powder Coated Enclosure
    - PCBs with conformal coating for Humidity protection
    - All SS316 bolts nuts & screws
  6. **ADDITIONAL FEATURES**
    - Water chilling Unit for Cooling of Power Devices
    - Castor wheels for easy movement
- (vi) All Control Switches and safety Interlocks for Operator's safety:
- Electrical overload protection
  - Emergency Stop
  - Over Current
  - Door Open

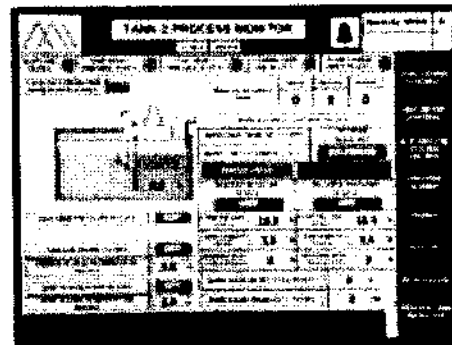
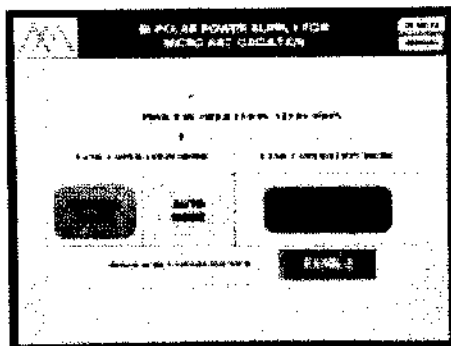
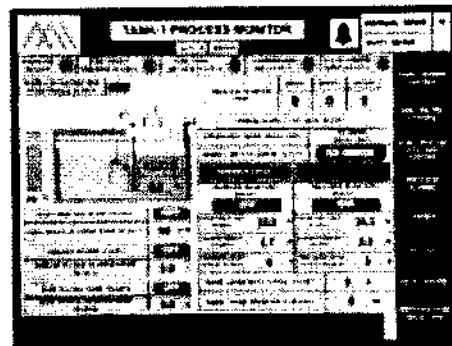
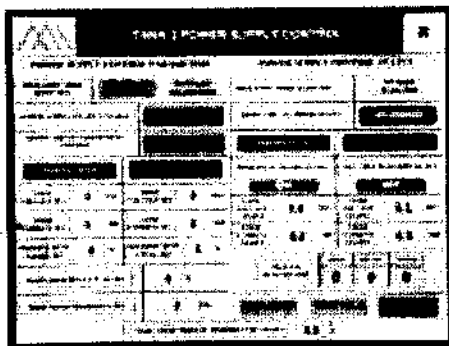


Fig. 2: PLC HMI Based Pulsed Plasma Power Supply

Indicative Image

ix. Process Automation using PLC-HMI for Micro Arc Oxidation Process Plasma Electrolysis Process along with software for the Pulsed Bipolar Plasma Power Supply I no.

- Automatic and Manual Control
- 10" to 15" TFT Colour Touch Screen HMI
- Remote interface (RS232C/RS485) to PC to display, acquire, store, retrieve and analysis of Voltage and current parameters
- Digital and Analog Inputs - Outputs
- 2 USB Ports (Host & Device)
- Recipe, Programming and Recall
- Alarms (real time and historical)
- Bar graphs
- Data logging
- Trending (real time & Historical) support for pluggable I/O Modules

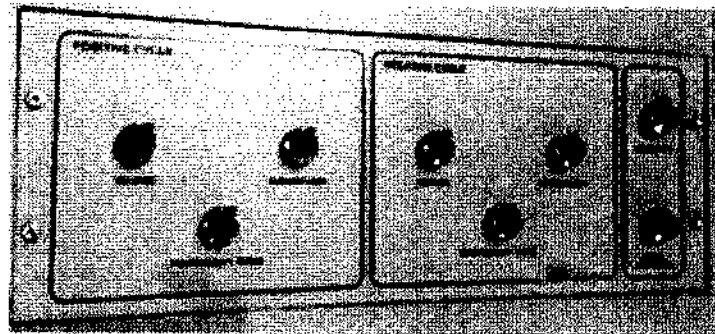
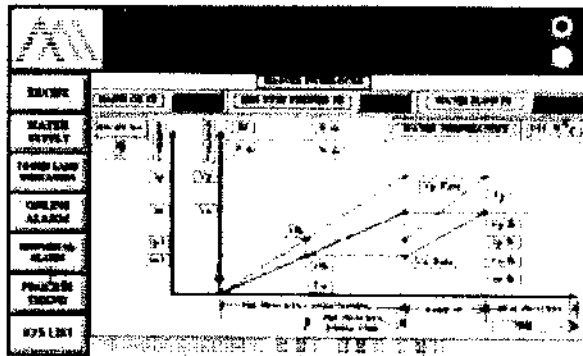
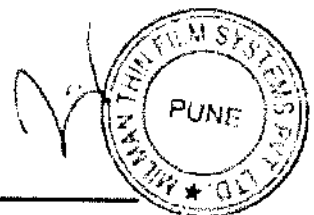


Fig. 3: Process Programming Screen and controls

Indicative Image





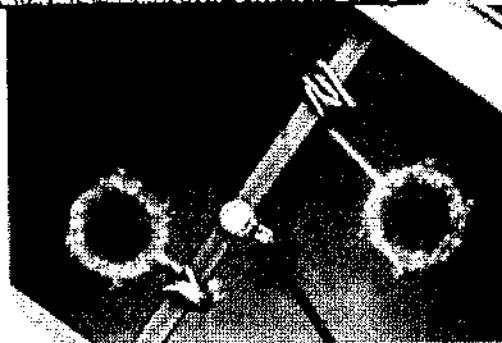
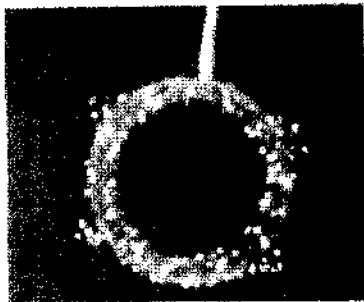
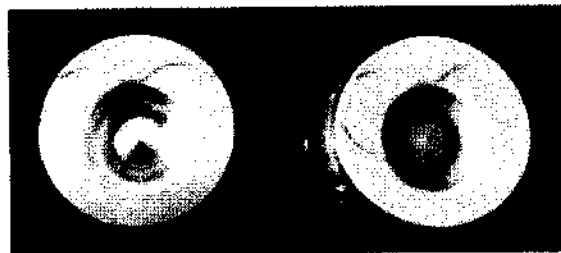


Fig 4 MICRO-ARC OXIDATION PROCESS



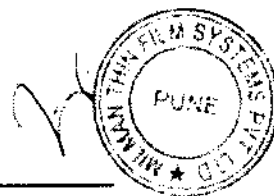
MICRO-ARC OXIDISED WATCH CASES



BEFORE PISTON AFTER

MICRO-ARC OXIDATION

Fig 5: Samples



**B. Polypropylene Process Tank 1m x 1 m x 1m with Recirculation Pump and Stirring facility**

- ERP / Polypropylene with steel frame Process Tank with lid with highly electrical insulative coating for operator's safety and drain connection
- All connecting pipes from process tank to chilling plant covered with thermal insulation material
- Tin coated copper bus bars (5 nos.) for hanging of job and counter electrodes
- Suitable stainless steel counter electrodes (8 nos.) of size 200 mm x 600 mm x 10 mm will be provided
- Bus bar pump for movement of job during the process
- Compressed air Recirculation Pump and Stirring Facility
- Electrodes for Hanging of Jobs
- Stainless Steel Counter Electrode
- Air/Nitrogen Bubbling Facility
- Thermowell for Temperature Measurement Contact / non-contact thermometer with digital display for continuous monitoring of temperature during the process. This will be connected to PLC for continuous monitoring
- Exhaust Facility for Processing Tank

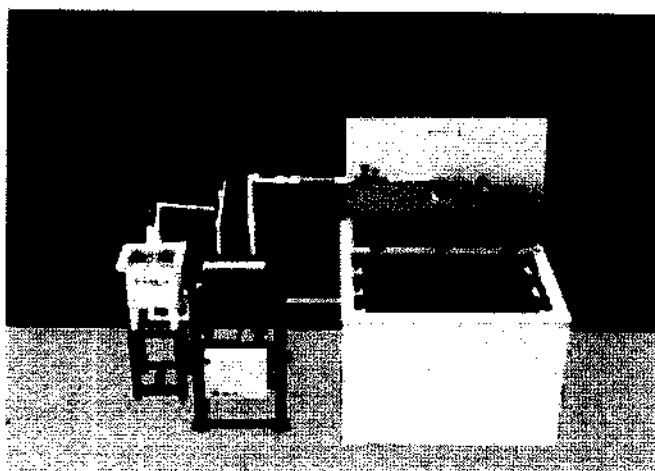


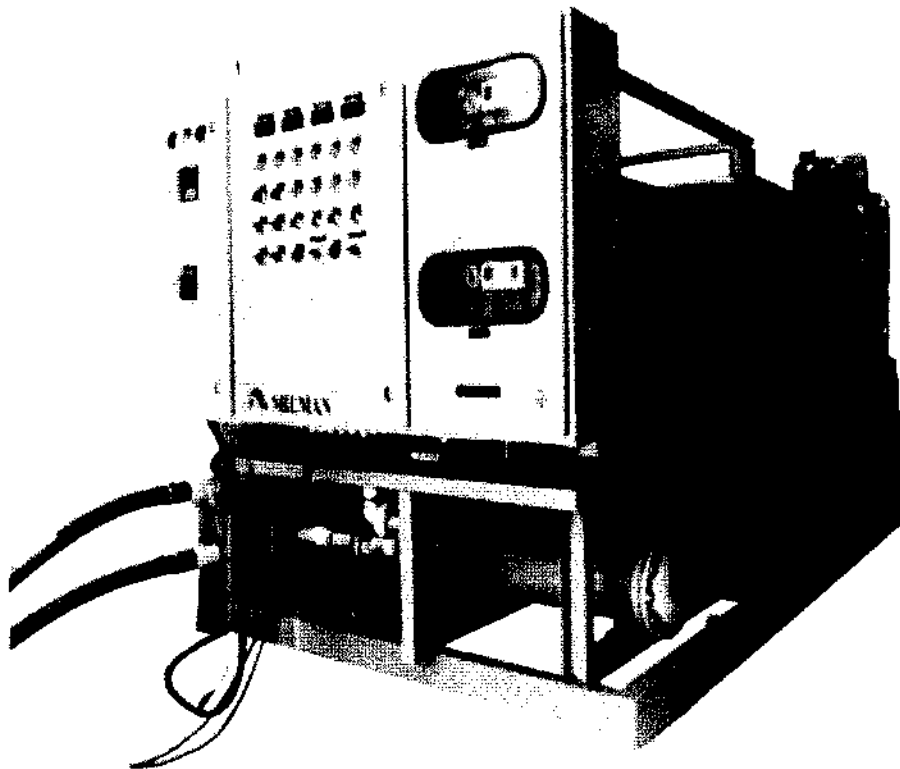
Fig. 6: Process Tank

§ Indicative Figure



**C. Chilling Plant**

1. 10 Ton Chilling Unit with Castor wheels for easy movement
2. All water circulating pipes and tank of SS 304 material
3. Indicators and Alarm for Gas pressure and Input & output temperature
4. Connected to PLC for indication and interlocks functioning (noiseless and compact)
5. Forced cooling of condensor



**Fig. 7: Chilling Unit"**

\*\* Indicative Figure



Page 11 of 15



**MILMAN**

## MILMAN THIN FILM SYSTEMS PVT. LTD.

Plot No. 112 A, 1st Floor,  
TSEWEE Industrial Estate, Behind  
Chhatrapati Shivaji Maharaj  
Vardhannagar, Mumbai - 400 004

For Sales & Technical Enquiries, Please Contact  
Mr. Bhola Azad, Sales Officer  
Phone: 022-2657-2343  
Fax: 022-2657-1277  
Web: [www.milmanthinfilmsystems.com](http://www.milmanthinfilmsystems.com)  
E-Mail: [info@milmanthinfilmsystems.com](mailto:info@milmanthinfilmsystems.com)

MISTENQ-1151/M/25-26 QUOT-166-1/044

Date: June 2, 2025

To  
The Director,  
CSIR-National Metallurgical Laboratory  
Burma Mines  
JAMSHEDPUR 831 007  
**Kind Attn:** Mr. Bhola Azad, Stores & Purchase Officer  
Tel: +91-657-2343 132/125/127  
Email: [bhola.azad@csir-nml.res.in](mailto:bhola.azad@csir-nml.res.in); [sp@nml.res.in](mailto:sp@nml.res.in)

Tender No.: P/NC/835/SP/SM/OTF/23-24 (Tender ID: 2025\_CSIR\_226280\_1)  
Our Ref.: Our quotation ref. no. MISTENQ-1151/M/24-25/QUOT-166/187 dated February 19, 2025

### Subject: Clarifications

Sir,

This has reference to your email dated 02.06.2025 for clarifications requested for the above-mentioned tender for Bipolar Power Supply with Micro Arc Oxidation. Please find given below our point wise reply to your query:

### Technical clarification:

Query 1) Please clarify about the "Provision for connecting to a suitable oscilloscope.....". Is the firm/vendor providing oscilloscope or not?

Our Reply: We will supply oscilloscope with the Power Supply.

Query 2) Please clarify about Reaction Chamber/Process Tank "ERP/Polypropylene with steel frame process tank having size 1 m x 1m x 1m.....". Is the firm/vendor providing Stainless Steel or Mild Steel coated with insulating lining material-based reaction chamber/process tank or not?

Our Reply: We will be providing Stainless steel process tank with Insulating lining.

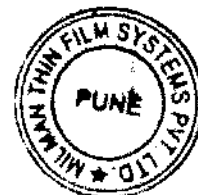
### Commercial clarification:

Query 3) You have accepted payment terms but indicated that provision applicable to MSME suppliers shall be applicable. It is conditional offer which is not acceptable for us. Kindly confirm the same.

Our Reply: We confirm that the tender Payment terms are acceptable to us.

Query 4) Delivery 10-12 working weeks. Not as per our tender terms if delivery period is >10 working weeks which is also not acceptable please confirm the same.

Our Reply: The power supply will be delivered within 8 – 10 weeks from the date of receipt of purchase order.



Contd.... 2

**MILMAN** Forwarded the quotation for Bipolar Power Supply





MILMAN

MIS/ENQ/1151/M/25-26/QUOT-166-1-044

Date: June 2, 2025

Page 2 of 2

Query 5) Training is 03 person for 07 days, you have mentioned 03 person for 3 days not as per our tender terms, please confirm the same.

Our Reply: We confirm that the training will be provided to 3 persons for 7 days during the installation.

Query 6) AMC quoted separately for 2 years, however frequency of preventive and breakdown visits not mentioned, please confirm the same.

Our Reply: As mentioned in quotation:

- Two routine visits (Annually) of Engineers to inspect performance of the Equipment and preventive maintenance.
- Visit of Engineers will be arranged for specific problems.

Query 7) self-certification regarding land border sharing with India is not submitted, please confirm the same.

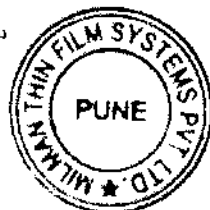
Our Reply: Self certification regarding the land border sharing with India has been submitted with file named "18LandBorder" copy of the same has been enclosed herewith for your reference.

Thanking you,

Yours sincerely,

For MILMAN THIN FILM SYSTEMS PVT. LTD.

Dr. M. G. ACHARYA  
Executive Director



**BIDDER / SUPPLIER MUST REFER TO ALL CORRESPONDENCES / COMMUNICATIONS EXCHANGED BETWEEN BIDDER AND CSIR-NML WHICH SHALL FORM A PART OF THE CONTRACT.**

Stores & Purchase Officer  
For & on behalf of the Council of Scientific & Industrial Research

### ACCEPTANCE CERTIFICATE FORM

No. \_\_\_\_\_

Dated: \_\_\_\_\_

M/s. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Sub: Certificate of commissioning of \_\_\_\_\_

01. This is to certify that the equipment as detailed below has/have been received in good condition along with all the standard and special accessories (subject to remarks in Para 2). The same has been installed and commissioned.

- (a) Contract No. \_\_\_\_\_ Date \_\_\_\_\_
- (b) Description of the equipment \_\_\_\_\_
- (c) Name of the consignee \_\_\_\_\_
- (d) Scheduled date of delivery of the consignment to the Lab./Instts. \_\_\_\_\_
- (e) Actual date of receipt of consignment by the Lab./Instts. \_\_\_\_\_
- (f) Scheduled date for completion of installation/commissioning \_\_\_\_\_
- (g) Training Starting Date \_\_\_\_\_
- (h) Training Completion Date \_\_\_\_\_
- (i) Names of People Trained \_\_\_\_\_
- (j) Actual date of completion of installation/commissioning \_\_\_\_\_
- (k) Penalty for late delivery (at Lab./Instts. level) ₹ \_\_\_\_\_
- (l) Penalty for late installation (at Lab./Instts. level) ₹ \_\_\_\_\_

Details of accessories/items not yet supplied and recoveries to be made on that account:

Sl. No.	Description	Amount to be recovered

02. The acceptance test has been done to our entire satisfaction. The supplier has fulfilled his contractual obligations satisfactorily

or

The supplier has failed to fulfil his contractual obligations with regard to the following:

(a) .....

(b) .....

(c) .....

(d) .....

The amount of recovery on account of failure of the supplier to meet his contractual obligations is as indicated at Sr. No. 3.

For Supplier

For Purchaser

Signature .....

Signature.....

Name .....

Name.....

Designation .....

Designation.....

Name of the firm.....

Name of the Lab/Instt.....

Date .....

Date.....

**PERFORMANCE SECURITY FORM**

**MODEL BANK GUARANTEE FORMAT FOR PERFORMANCE SECURITY**

To,

.....

WHEREAS ..... (name and address of the supplier) (hereinafter called "the supplier") has undertaken, in pursuance of contract No. .... dated ..... to supply (description of goods and services) (herein after called "the contract").

AND WHEREAS it has been stipulated by you in the said contract that the supplier shall furnish you with a bank guarantee by a scheduled commercial bank recognized by you for the sum specified therein as security for compliance with its obligations in accordance with the contract;

AND WHEREAS we have agreed to give the supplier such a bank guarantee;

NOW THEREFORE we hereby affirm that we are guarantors and responsible to you, on behalf of the supplier, up to a total of ..... (amount of the guarantee in words and figures), and we undertake to pay you, upon your first written demand declaring the supplier to be in default under the contract and without cavil or argument, any sum or sums within the limits of (amount of guarantee) as aforesaid, without your needing to prove or to show grounds or reasons for your demand or the sum specified therein.

We hereby waive the necessity of your demanding the said debt from the supplier before presenting us with the demand.

We further agree that no change or addition to or other modification of the terms of the contract to be performed there under or of any of the contract documents which may be made between you and the supplier shall in any way release us from any liability under this guarantee and we hereby waive notice of any such change, addition or modification.

This guarantee shall be valid until the ..... day of ....., 20.....

(Signature of the authorized officer of the Bank)

.....

Name and designation of the officer

.....

Seal, Name & Address of the Issuing Branch of the Bank

**Note: Whenever, the bidder chooses to submit the Performance Security in the form of Bank Guarantee, then he should advise the banker issuing the Bank Guarantee to immediately send by Registered Post (A.D.) an unstamped duplicate copy of the Guarantee directly to the Purchaser with a covering letter to compare with the original BG for the correctness, genuineness, etc.**