EXPRESSION OF INTEREST

Operation and Maintenance of the Plasma Nitriding Facility for Job Work

Introduction

AIC-IPR Plasmatech Innovation Foundation (hereinafter referred to as '**AIC-Plasmatech'**) is incorporated as a non-profit company, under section 8 of Companies Act, 2013, by *Institute for Plasma Research* (IPR), Gandhinagar, to commercialize and facilitate transfer of technologies to industries. IPR is an aided institute of the *Department of Atomic Energy* (DAE), Govt. of India, and has been working on research and development in the field of plasma science & technology and allied fields. As an initiative to address societal problems, IPR has developed several plasma-based technologies relevant to societal and environmental applications. Specifically, IPR has developed a proprietary *Plasma Nitriding* (PN) technology and was operating the PN job shop / facility for industrial scale demonstration of this technology on chargeable basis. In order to facilitate the translation and transfer of such technologies to Indian industries, it is desired that such a job shop be operated and maintained by a business entity which would also facilitate the transfer of technology.

Atal Innovation Mission (AIM) is a flagship initiative set up by the *National Institution for Transforming India* (NITI) Aayog in 2016 with an objective to create and encourage an environment of innovation and entrepreneurship across schools, educational organisations, research institutes, and industries, including *Micro, Small & Medium Enterprises* (MSME). AIM intends to support the establishment of new incubation centres called *Atal Incubation Centres* (AICs) that would nurture innovative start-up businesses in their pursuit to become scalable and sustainable enterprises.

IPR has authorised AIC-Plasmatech for utilising its infrastructure & knowhow to facilitate demonstration, translation and commercialization of its plasma related technologies.

Objectives

The AIC-Plasmatech with active mentoring & infrastructural support from IPR, works closely with industries so as to facilitate such absorption, translation and transfer of technologies. The AIC-Plasmatech aims at supporting technology-based startups in line with the Government of India's startup and MSME policies. The AIC-Plasmatech thus invites application for ***Expression-of-Interest*** (EOI) for operation & maintenance of PN job shop /

facility using IPR's established PN system & knowhow on **'*Government Owned Company Operated*** (hereinafter referred to as **'GOCO'**) **Mode'.**

It is proposed to entrust the scope of operating this dedicated system to companies / industries / startups on GOCO Mode execution for PN of components at an annual rental fee along with some percentage of turnover as performance linked payment (% royalty). The company will be responsible for deputing engineer(s) & technician(s), with degree / diploma qualification, to achieve the best possible throughput. Brief information about the technology offered is available on IPR website (***https://www.ipr.res.in/eoi1.html***) & AIC website (***www.plasmatech.co.in***).

Interested companies / industries having adequate know-how of operation of heat treatment industry, vacuum systems, qualified & skilled technical personnel, sound financial background, commitment and desirous of long-term partnership with AIC-Plasmatech & IPR, are invited to participate in the EOI. On receipt of application form for EOI (**Annexure 1**), AIC-Plasmatech shall evaluate and assess suitability prior to empanelment. This assessment may include capability evaluation of your company/industry by AIC-Plasmatech & IPR experts. **This call for EOI does not carry with it, any guarantee for allotment of work order / acceptance of bid.**

Cost of EOI

Payment of Rs. 590 (Rs. 500 + 18% GST, as per prevailing GST rates) as demand draft or by electronic remittance to AIC-Plasmatech's bank details mentioned in how to apply section at the end of document (a copy of the payment confirmation along with transaction ID and date may be submitted if done electronically) in favour of '***AIC-IPR Plasmatech Innovation Foundation***' payable at Gandhinagar. The application form shall be submitted along with the Demand Draft or payment confirmation receipt if payment done by electronic remittance to AIC-Plasmatech's bank details well within the due date and due time. This EOI is issued as a "Pre-Bid Qualification". Inadequate, incorrect or incomplete information will attract summary rejection. **AIC-Plasmatech reserves the right to accept or reject all or any EOI. Mere compliance to the EOI terms does not guarantee further consideration for qualification or award of such contracts.**

Introduction to Plasma Nitriding Technology

Many engineering components owing to their critical nature of application, demands very hard surface along with tough core. Hard surfaces tend to break while tough ones don't. PN

is a surface-hardening thermochemical process that introduces nitrogen ions into the surface of steel at a temperature range of 500 to 550 °C, while retaining the bulk properties as that of the alloy. The purpose of PN is to increase the surface hardness of the steel and improve its wear and corrosion resistance properties thereby increasing the service life of the components.

During PN, nitrogen diffuses into the steel and forms iron and chromium nitrides, which in turn increases the surface hardness of the material by a factor of two or three depending on the substrate material.

Conventional nitriding of components carried out in an atmosphere of partially dissociated ammonia (gas nitriding) or cyanide-cyanate salt bath (liquid nitriding) at temperature of 550 to 600 °C have many disadvantages.

PN scores over conventional nitriding methods through lower processing temperature, almost zero contaminations, faster treatment cycles, negligible distortion, reduced treatment duration and eco-friendly process. The process duration can vary from 3 hours to 24 hrs. for getting a thickness of ~25 to 500 microns depending on the material. The treatment time and gas composition is tuned to get the desired surface hardness and thickness of the nitride layer. PN has been used extensively in automobile, plastic moulding, forging, manufacturing, and textile industries to improve the service life of their components and products.

The PN system and the capital infrastructure owned by IPR will be the property of IPR. The said capital equipment shall be run, operated and maintained by the company which will utilize the technology & system to its best capacity to run as job work as its own business – thereby facilitating commercializing using home grown technology. It is understood that this capital equipment facility offered by AIC-Plasmatech / IPR will be used by the selected bidder for their own job working / heat treatment business thereby demonstrating commercial scale use of this technology by industry. At the end of the tenure of this GOCO mode agreement, it is expected that the selected bidder will establish its own PN facility and avail technology license from AIC-Plasmatech, as the case may be, at the end of the tenure of this GOCO mode agreement.

PN facility being offered under GOCO mode shall include:

(i) PN system comprising of vacuum chamber & pumping system, gas supply system (without cylinder & regulators), power supplies.

(ii) Water chiller to provide cooling water to PN system.

Scope of work of Company / Bidder

The company (bidder) who is awarded the contract to operate and maintain the PN facility to execute job work at The *Facilitation Centre for Industrial Plasma Technologies* (FCIPT) will have to ensure compliance to the following scope of work:

1. Market the process so, that company obtains more jobs / orders and the PN system works with maximum / desired capacity.
2. Deploy human resources required for operation and maintenance of the PN system along with ensuring all safety protocols during their presence in FCIPT, IPR.
3. Operation and maintenance of the PN system for surface hardening jobs supplied by industries, which includes bearing all the consumables (including electricity, gases, water, chemicals etc.), any kind of raw materials and O&M costs.
4. Timely service to the customers without delay.
5. Make payments to AIC-Plasmatech as per the GOCO agreement.
6. Company may install any additional equipment in facility (if required) for better output based on space availability & prior approval from AIC-Plasmatech.
7. Any accidents / mishaps including loss of property & human resource will be sole responsibility of the company.
8. All the work and expenditure not covered under the scope of AIC-Plasmatech.

Scope of AIC-Plasmatech

1. **AIC-Plasmatech** will provide the PN system facility along with
   a) *Standard Operating Procedure* (SOP) for operation
   b) Trouble shooting manual
   c) One-time training to the operators / technicians and staff of bidder, subject to a maximum of ten (10) working days. Thereafter, technical advice / support / training will be on chargeable basis.

2. Test reports will be provided on chargeable basis.

Technical support will be provided subject to availability & based on approval from AIC-Plasmatech. Any services beyond the above scope will be on chargeable basis based on individual case to case basis.

Eligibility criteria of the private industry to submit their bids and show EOI

1. The Bidder should be a Start- up registered under *Department for Promotion of Industry and Internal Trade* (DPIIT) – *formerly called Department of Industrial Policy & Promotion* (DIPP) and / or an MSME.
2. For startups, the experience can be relaxed based on prevailing MSME and prevailing government norms. The scrutiny of the startup application shall be in accordance with the DAE approved policy for incubation and AIM as applicable.
3. Startups having business linkages / agreements with established companies should submit suitable documentation / proof to demonstrate their technical merit in such cases.

Note – Individual / One Person Company (OPC) / Partnership firms (except, Limited Liability Partnership - LLP) are not eligible.

Evaluation Criteria

- A committee formed by Chairman – AIC Plasmatech shall review the bids received. The bidders will be evaluated based on their background, education, experience, type of firm / organization (whether startup or MSME etc.), Financial capabilities and business plan as mentioned in **Annexure-2** as part of Technical cum commercial bid evaluation. Only bidders having score of 75 points & above will be considered for price bid opening / evaluation.
- Price bid evaluation: Percentage of annual turnover to be quoted as royalty percentage to be paid bi-annually (on 15th April & 15th October of each year) to AIC-Plasmatech. Bidder with highest bid in price bid evaluation criteria may be considered subject to fulfilment of all other eligibility requirements.
- Bidders need to submit documents mentioned in **Annexure-1** checklist for technical cum commercial bid and **Annexure-3** price bid in two separate envelopes. **Envelope – 1** superscribing "**Technical cum Commercial Bid**" for technical and commercial bid documents and **Envelope – 2** superscribing

"**Price Bid – Do Not Open**" for price bid document and enclose both the envelopes in one larger envelope.

Note :- Bidders quoting the price bid value (percentage of turnover as royalty) in any place other than price bid document will be disqualified.

Payment Terms

- The selected bidder may be asked to pay annual rental fee (upfront) of Rs. 5 lakhs plus GST. In addition to that, the selected bidder has to purchase the insurance for the coverage of entire facility for each year on signing of the contract. The beneficiary for receiving the insurance amount will be AIC-Plasmatech.
- GST applicable and any taxes / duties shall be in addition to the above proposed value as statutorily applicable.

General terms of Contract & Tenure of the contract

- Duration of the contract will be for two years.
- Renewal of the contract will be done, subject to the approval of Director, AIC-Plasmatech, if the company wishes to continue further with their services.
- In case of termination of the contract, whether natural or premature, the GOCO bidder will have to avail the knowhow / obtain license of the technology for further use. In case the GOCO bidder does not wish to continue with the business, they will have to execute a legal bond / undertaking confirming that they will keep the knowhow confidential and shall not use the knowhow / license of the technology for any further use.
- AIC-Plasmatech will review the activity of the company / Industry every month for first six month, thereafter on a quarterly basis. In case the performance is not found satisfactory at any point of time, AIC-Plasmatech reserves the right to terminate the contract and the second highest bidder may be given the opportunity.
- Company will be solely responsible for the Running, Operation & Maintenance of the facility and any damages occurring during working will be borne by the

company. It is the responsibility of the company to handover the facility in proper working condition to AIC-Plasmatech at the end of tenure/contract.

- Insurance cost will be borne by selected bidder every year.
- AIC-Plasmatech reserves the right to conduct due diligence on Companies business operations, financials, legal obligations, intellectual property, and other relevant assets or liabilities.
- AIC-Plasmatech has right to take decision related to the bidding process including rejection of application or closure of contract without assigning any reason thereof.

Technical detail of the PN system

The PN system consisting of a vacuum chamber having a working volume of 1.0 m diameter and height of 2.4 m is installed in an area outside the current IPR's R & D activities for job work. As a result, there would be no entry for the contractors in IPR R & D premises. **The total cost of this system is Rs. 98.55 lakhs.** This PN system comprises of vacuum chamber, pumping system, gas feeding system, heating and cooling along with a pulsed dc power supply having 20 kHz frequency and ~ 50 kW power capacity for plasma generation. The vacuum system will be accompanied by a pumping system and various accessories for gas and pressure controls along with its displays. All connections for gas supply will be arranged for the operation of the system. However the cylinders along with the regulators and the refilling of the gas cylinders will be the responsibility of the private industry. The system can accommodate a load of 500kg maximum in one batch.

SALIENT FEATURES

- No Post grinding operation is required
- The process can be more accurately controlled
- Can be performed at lower temperatures
- Less Distortion
- Reduced time cycles
- Eco-friendly process

Applications

PN has invaded the industrial sector so extensively that because of its advantages it has an edge over conventional surface hardening processes and is used in many industrial sectors such as but not limited to,

- Automobile Industry - crankshafts, camshafts, gears, pistons, cylinders, valves etc.
- Metal Casting and Moulding Industries - moulds for all types of alloys
- Forging Industry - all kinds of dies for hammering and pressing
- Aluminium Industry - dies for casting and extruding
- Plastics Industry - extruder screws, cylinders, moulds for injection moulding
- Machine Building - shafts, spindles, slide-rails
- Powder Metallurgy - gears, bushes, synchromesh rings
- Power Engineering - turbines, shafts, spindles, gears.

HOW TO APPLY?

Interested parties may fill up the following application form and submit the list of documents listed below:

1. Cover letter addressed to **Director, IPR / Chairman – AIC-IPR Plasmatech Innovation Foundation** citing the EoI specified here.
2. Duly signed Application form (**Annexure - 1**)

   Payment of Rs. 590 (Rs. 500 + 18% GST, as per prevailing GST rates) as Demand Draft or by electronic remittance to **AIC-Plasmatech's** bank account. A copy of the payment confirmation along with transaction ID and date may be submitted, if done electronically. Bank details are as follows:

   Name of Account. : AIC - IPR PLASMATECH INNOVATION FOUNDATION

   Bank Name. : State bank of India (SBI)

   Account No. : 42518460708

   IFSC Code. : SBIN0010864

UPI ID: aiciprif@sbi

QR Code for UPI Payment

3. Documents related to your company's registration (copy of PAN Card, GST Certificate, Registration Documents / Certificate of Incorporation, *Small Scale Industrial Units* (SSI) / MSME recognition, DPIIT registration for startups and other Government issued certifications) as applicable
4. Audited financial reports of last 3 years, Income Tax Returns of last 3 years. (suitable concession will be provided to MSME and prevailing government norms, however, norms for startups may be relaxed).

5. Details of top management (brief Curriculum Vitae of Chairman / Managing Director / Board of Directors / Founder).
6. One page business plan on how your company will use this system and operate it for regular job working.
7. Background experience including list of clients, types of heat treatment jobs or projects undertaken, installations or collaborations indicating the name of company, client, year, title of project etc. as and if applicable.
8. Leaflets & brochures of your company.
9. Bidders need to submit documents mentioned in **Annexure – 1** application form along with documents mentioned in checklist for technical cum commercial bid and **Annexure – 3** price bid in two separate envelopes. **Envelope – 1** superscribing "**Technical cum commercial Bid"** for technical and commercial bid documents and **Envelope – 2** superscribing **"Price Bid-Do Not Open"** for price bid document and enclose both the envelope in one larger envelope superscribing "**EXPRESSION OF INTEREST for Operating PN Job Work"**
10. Bidders quoting the price bid value (percentage of turnover as royalty) in any place other than price bid document will be disqualified).

Important Dates

1. **EOI Submission Start Date & Time –** 17th Jan-2025, 17:00 hrs.
2. **Scope Appraisal Meeting Date, Time & Venue –** 28th Jan-2025, 10:00 hrs. & Facilitation Centre for Industrial Plasma Technologies (FCIPT), A-10/B, G.I.D.C. Electronics Estate, Sector 25, Gandhinagar, Gujarat 382016
3. **EOI Submission Due Date & Time –** 17th Feb -2025, 17:00 hrs.
4. **Bid Opening (Technical-cum-Commercial) Date, Time & Venue –** 18th Feb-2025, 10:00 hrs. & Institute For Plasma Research (IPR) Bhat Village,Near Indira Bridge Gandhinagar,Gujarat-382428

Note :- Price bid will open only for companies qualifying the criteria for technical-cum-commercial bid eligibility criteria. The shortlisted companies will be intimated about the Date, Time & Venue of Price bid opening.

The hard copy of all the documents mentioned above in a sealed envelope superscribing "**EXPRESSION OF INTEREST for Operating PN Job Work"** must be sent to:

Chairman
AIC-IPR Plasmatech Innovation Foundation
Institute for Plasma Research
Near Indira Bridge, Bhat,
Gandhinagar – 382 428 (Gujarat)

Additionally, The soft copies of the documents mentioned above may be sent by email (preferably combined as one PDF file) **except price bid** to ***ptts@ipr.res.in*** with a copy to ***technology@ipr.res.in***.

Note:- Bidders quoting the price bid value (percentage of turnover as royalty) in any place other than price bid document will be disqualified.

For any further queries, please feel free to contact,

Dr. Nirav Jamnapara,
Head – AIC-Plasmatech
Phone : 079-23964039 / 38
Email : ***ptts@ipr.res.in***

ANNEXURE-1

Application form for EOI for Operation & Maintenance of IPR's established Plasma Nitriding Facility on GOCO Mode

1.	Name of the firm/organization/company with contact details	
2.	Details of registration as an industry/ legal entity (copy of certificate to be attached)	
3.	Details of the experience, qualifications, technical capabilities and expertise of the party	
4.	Audited annual statements of accounts for the past year along with IT returns for 3 years	
5.	Marketing structure and Business plan for the operating the PN facility	
6.	Any other information to substantiate technical and financial competence of the party	

(Separate sheets may be enclosed if the space provided is insufficient. Additional information like corporate brochures, Key Technical persons' profile, Past and Current technology collaborations and quality program implementations are welcome. Applications with incorrect and incomplete information will not be considered.

I / We assure that all the information provided by me/us on this form is true to best of my/our knowledge, and on the basis of this information any decision taken by Institute for Plasma Research shall be accepted by me/us. I/We also undertake to furnish any further information required in this connection. Please find enclosed a Demand Draft (non-refundable) / Bankers cheque or (a copy of the payment confirmation along with transaction ID and date may be submitted if done electronically) DD No._____ dated _____ of Rs. 590 (Rs. 500 + 18% GST, as per prevailing GST rates) drawn in favour of **AIC-IPR Plasmatech Innovation Foundation,** as application processing fee.

Date: Signature:

Place: *Name & Office seal*

Check List of Documents to be Submitted

S. No.	Documents	Yes / No / NA
1.	**Duly Filled Application Form**	
2.	**Documents related to company's registration**	
(a)	Copy of PAN Card	
(b)	GST certificate	
(c)	Registration documents / certificate of incorporation	
(d)	SSI / MSME recognition	
(e)	DPIIT Registration for startups	
(f)	Other Government issued certifications (if applicable)	
3. (a)	**Audited financial reports of last 3 years**	
(b)	**IT Returns of last 3 years**	
4.	**Details of top management (Brief CV of Chairman / Managing Director / Board of Directors / Founder).**	
5.	**One page Business plan on how your company will use this system and operate it for regular job working.**	
6.	**Background experience including list of clients, types of heat treatment jobs or projects undertaken, installations or collaborations indicating the name of company, client, year, title of project etc. as and if applicable.**	
7.	**Leaflets & brochures of your company.**	
8.	**Price bid form enclosed in separate envelope as mentioned in EOI (Annexure-3)**	

ANNEXURE-2

A) Technical cum Commercial Bid Evaluation Scoring Criteria

S. No.	Criteria	Max. Points
1.	Experience and Track Record	30
2.	Technical Capability	30
3.	Financial Capability	10
4.	Business plan and Marketing strategies	30
	Total Score	**100**

1. **Experience and Track Record** **(30 points)**
   - Years of experience in facility management of similar nature.
   - Previous projects completed of similar scope and scale.
2. **Technical Capability** **(30 points)**
   - Background of founder/top management/promoter
   - Availability of qualified personnel and certifications.

   Note: *In case of startup, relevant technical capabilities of founder will be considered.*
3. **Financial Capability** **(10 points)**
   - Audited financial reports of last 3 years.
   - IT Returns of last 3 years.

   Note: *Suitable concession will be provided to MSME and prevailing government norms, however, norms for startups may be relaxed.*
4. **Business plan and Marketing strategies** **(30 points)**
   - Detailed business plan
   - Marketing strategies and Networking with other similar industries.

Note: - Bidders having score of 75 points & above will be shortlisted for price bid opening / evaluation.

B) Price Bid Evaluation Criteria

1. **Percentage of turnover quoted in bid (% royalty)**
   - Percentage of turnover to be quoted as royalty percentage.

ANNEXURE-3

Price bid format for EOI for Operation & Maintenance of IPR's established Plasma Nitriding Facility on GOCO Mode

Description	Percentage (%) (in figures)	Percentage (%) (in words)
Percentage of turnover to be payable as royalty		

The annual turnover details need to be submitted after each financial year approved by certified Chartered Account firm & accordingly, the amount based on percentage of turnover quoted above as royalty to AIC-Plasmatech, at the end of each financial year.

Note: Bidders quoting the price bid value (percentage of turnover as royalty) in any place other than this format of price bid will be disqualified.

Date:

Place:

Signature

Name of the company, authorize signatory & Office seal