



**NATIONAL INSTITUTE OF TECHNOLOGY
ROURKELA – 769 008, ODISHA**

Advertised Tender Enquiry

Department: Food Process Engineering

Tender Notice No: NITR/PW-SR/FP/2019/181

Date: 12/12/2019

To

Important Dates

**Through
CPP PORTAL
(E-procurement)**

Event	Date	Time
Pre-bid Conference	NA	NA
Last Date of submission of bid	09/01/2020	03:00 PM
Date of opening of techno-commercial bid	10/01/2020	03:00 PM

Dear Sir,

We intend to purchase the commodities specified below and invite quotations in accordance with the terms and conditions detailed in the bid document. If you are interested, kindly send your offer with prices and complete terms within the time mentioned above.

For any clarification:

**Head, Department of Food Process Engineering
Attn.: Dr. P. P. Sutar
NATIONAL INSTITUTE OF TECHNOLOGY
ROURKELA – 769 008, ODISHA
Phone: 0661 – 2462903
E-mail: sutarp@nitrkl.ac.in**

Yours sincerely,

Name: **Prof. P. P. Sutar,**
ASSISTANT PROFESSOR
FOOD PROCESS ENGINEERING
DEPARTMENT

Encl :

- 1. Schedule of requirement, specifications, dates etc.**
- 2. Bid document containing detail terms and conditions.**

1. Schedule of requirements

Sl. No.	Description of Goods/Service	Quantity
01.	Fabrication of Microwave-IR-UV-C Equipment	01

2. Specifications and allied Technical Details

As per annexure- I

3. Format of Quotation (tick appropriate box)

It is a two-part bid with separate techno-commercial and price bids.

4. The bid envelope should be submitted through

<https://eprocure.gov.in/eprocure/app>

5. Quotations should be valid for a period of **120 days** from the date of opening of techno-commercial bid.

6. Some important dates:

- i. Pre-bid Conference: Date:- **NA** Time:- **NA**
- ii. Last date of submission of bid Date :- **09/01/2020** Time:- **03:00 PM**
- iii. Opening of techno-commercial bid: Date :- **10/01/2020** Time:- **03:00 PM**

7. Warranty of **1** year must be provided.

8. GST: GST should be charged according to applicable rates.

9. Bid Security and Tender Cost: Bid Security in shape of DD (Demand Draft) for **INR 20,000/- (Rupees Twenty Thousand Only)** and **Tender Cost (Non-refundable)** in the form of DD(Demand Draft) for **INR 500/- (Rupees Five Hundred Only)** in favor of **Director, NIT Rourkela Payable at Rourkela** from any Scheduled Commercial Bank except Co-operative and Gramin bank. Demand Draft for the Bid-Security should remain valid for a period of **45 days** beyond the bid validity period from the date of opening of bids. Bid security of unsuccessful bidders should be return to them at the earliest and latest on or before the **30th days** after the award of the contract. Bid security and Tender Cost should reach physically through speed post/ register post/courier, containing in an envelope & superscripted with subject, tender reference number addressing to **Registrar, NIT Rourkela-769008, Odisha; on or before 10/01/2020 at 03:00 PM.**

10. Performance Security: Rs. 50,000/- (Rupees Fifty thousand Only) in shape of Bank Guarantee/Demand Draft (DD) in favor of Director, NIT Rourkela payable at Rourkela from any Scheduled Commercial Bank except Co-operative and Gramin bank. Performance security should remain valid for a period of **60 days** beyond the date of completion of all contractual obligations of the supplier including warranty obligation. And EMD (Earnest Money deposit) amount of successful bidder will be returned after the receipt of performance security in case of award of contract to successful bidder.

11. Please go through the enclosed "bid document" carefully for other bidding instructions.

12. Please send your quotations through <https://eprocure.gov.in/eprocure/app>

13. Techno-commercial Bid evaluation criteria:

- I. Manufacturers should certify the equipment **for microwave leakage** less than 5 mW of microwave radiation per square centimeter at approximately 4 inches from the surface of equipment.
- II. Manufacturers should also certify the equipment **for non-generation of plasma** in the presence of microwaves.
- III. The equipment must meet the **criteria of material of construction** (MOC) to avoid unacceptable quality change in the food product due to processing at high power.
- IV. The **Original Equipment Manufacturer** (OEM) should have own **service/fabrication center in India**. The bidders must enclose details of their infrastructure with reference to locations and technical manpower, availability of inventory spares, etc. A valid GST registration certificate of OEM should be submitted along with the bid.
- V. Scanned copies of the technical brochure of the above equipment and accessories (**Annexure-I**) given in the quotation must be included in the techno-commercial bid.
- VI. Make and model no. should be mentioned in the technical bid.

14. Financial Bid evaluation criteria:

- I. Price Must be genuine.
- II. Price comparison for the award of contract will be made on over-all price (L1).

15. For technical details, you may contact

Prof. P. P. Sutar
Department of Food Process Engineering
National Institute of Technology, Rourkela – 769 008
Phone: 0661 – 2462903
E-mail: sutarp@nitrkl.ac.in



NATIONAL INSTITUTE OF TECHNOLOGY ROURKELA – 769 008, ODISHA

BID DOCUMENT

1. Instructions to the bidders

- 1.1 Bids are invited on behalf of the Director, National Institute of Technology (NIT), Rourkela – 769 008, Orissa, from the intending bidders for supply of the goods/stores/equipment's for the Institute as detailed in the enquiry letter.
- 1.2 The bidders should quote their offer/rates in BOQ in clear terms without ambiguity.
- 1.3 In case of any discrepancy between the rates in figures and that in words, the rate in words will be accepted as correct.
- 1.4 The last date for receipt of the bid is marked in the enquiry.
- 1.5 The bids should be uploaded in <https://eprocure.gov.in/eprocure/app> Please follow the guidelines of the site.
- 1.6 If a prospective bidder requires any clarification in regard to the bidding documents, he may make a request the concerned officer or faculty member at least 15 days before the deadline for receipt of bids.
- 1.7 Each bidder shall submit only one bid. A bidder, who submits more than one bid, shall be disqualified and considered non-responsive.
- 1.8 (In respect of high value plant, machinery etc. of a complex and technical nature). The bids may be submitted in two parts, viz., technical bid and financial bid.
- 1.9 The bidder has to sign in full at all pages of the scanned part of the bidding document. No over-writing in those pages is acceptable.
- 1.10 Bidders registered with any of the following agencies/ bodies as per Public procurement policy for Micro & Small Enterprises (MSE) order 2012 are exempted categories from payment of EMD provided that the registration Certificate issued by any one of these below mentioned agencies must be valid as on close date of tender. Micro small or medium enterprises who have applied for registration or renewal of registration with any of these agencies/bodies but have not obtained the valid Certificate as on close date of tender are not eligible for exemption.
 - i) Khadi and Village Industries Commission (KVIC)
 - ii) National Small Industries Corporation (NSIC)
 - iii) Any other body specified by Ministry of MSME/GOI

2. Conditions of the bid

- 2.1 The rates quoted should preferably be net, inclusive of packing, forwarding, freight, Insurance and all other incidental charges including taxes. In case these charges are quoted extra in addition to the quoted rates, the amount thereof or Ad Valorem rate must be specified. Packing, forwarding, freight, entry tax etc., when quotes separately are reimbursable at actual. If external agencies are employed, their receipts must be enclosed with the invoice.

- 2.2 Duties and Taxes are to be quoted separately. Ad Valorem rates thereof should be clearly indicated with reference to the relevant Acts and Rules.

It may be noted that the Institute is availing custom duty exemption in terms of Notification No. 51/96 – Customs dt. 23.07.1996, Notification No. - 47/2017- Integrated Tax (Rate) dt. 14.11.2017 and Notification No- 45/2017 – Integrated tax (Rate) dt. 14/11/2017 & Notification No. - 45/2017- Central tax (Rate) dt. 14.11.2017, Notification No. - 45/2017- Union Territory Tax (Rate) dt. 14/11/2017 [Vide DSIR, Ministry of Science and Technology, Government of India, Registration No.: TU/V/RG- CDE (227)/2016, dated: 13.11.2018]

- 2.3 The goods are required to be delivered at the indenting Department of NIT, Rourkela, and must be reached within **90 days** from the date of placement of the supply of order under the risk and arrangement of the bidder and offers with delivery beyond the above period shall be treated as unresponsive. In case the delivery time is higher, the same must be mentioned clearly in the quotation.
- 2.4 The bid should remain valid for a period of **120 days** from the date of opening. In case your offer has a different validity period that should be clearly mentioned in the quotation.
- 2.5 Conditional discount, if any, offered by the bidder shall not be considered at the time of evaluation.
- 2.6 The goods offered should strictly conform to the specification and technical details mentioned in **Annexure - I**.
- 2.7 The Institute may like to conduct pre-dispatch inspection of goods, where applicable.
- 2.8 Period of guarantee/warranty, where applicable, should be specified in the bid.
- 2.9 If the successful bidder, on receipt of the supply order, fails to execute the order within the stipulated period, in full or part, it will be open to the Director, NIT, Rourkela to recover liquidated damage from the firm at the rate of 1 percent of the value of undelivered goods per month or part thereof, subject to a maximum of 5 percent of the value of undelivered goods. Alternatively, it will also be opened to the Director, to arrange procurement of the required goods from any other source at the risk and expenses of the bidder.
- 2.10 The successful bidder may be required to execute a contract, where applicable.
- 2.11 The bidder has to furnish up to date GST and Income Tax Clearance Certificate along with the bid which will be mandatory clause while technical bid evaluation.
- 2.12 Payment (100 percent after delivery) will be made by Account Payee Cheque /Bank Draft, on delivery and after successful completion of training, installation, configuration, testing, and implementation with existing infrastructure and proper verification of high-performance computing cluster whichever is later/latest.
- 2.13 In case of Advance payment, the payment will be made on either in Foreign Demand Draft or Wire Transfer only. The proforma invoice copy need to be sent for advance payment.
- 2.14 In the event of any dispute arising out of the bid or from the resultant contract, the decision of the Director, NIT, Rourkela shall be final.
- 2.15 The bid document/resultant contract will be interpreted under Indian Laws.

Fabrication of Microwave-IR-UV-C Equipment

Equipment should have a feeding section, microwave with water spray cooling cavity, infrared cavity, microwave excited UV chamber, and unloading section, control panel with computer interface suitable for continuous processing of food products. The detailed specifications are given below:

1. Feeding Section:

- Feeding section (made up of stainless-steel food grade material) should have 5 kg of product filling capacity (bulk volume < 0.1 m³) with the provision of the adjustable gate (thickness > 1 mm) at the bottom.

2. Microwave Assisted Water Spray Food Heating Cavity:

- This section should be provided with overhead water tank (5 -10 L) with water spraying arrangement (Pump power rating > 0.10 hp, pressure head > 4 m) along with return valve to increase the moisture content of the product.
- It should be fitted with IR temperature sensor (temp range: 0°C to 150°C) for the temperature measurement of the samples at the inlet.
- The material of the feeder should be rust proof (stainless steel) in case of wet material handling.
- This chamber should be able to process material at least 5 kg/h with MW power 4 kW.
- The bottom of this chamber should be:
 - a) Perforated so that product can be supplied with air and water can be drained, and
 - b) Non-perforated bottom for all types of products and excess water should be drained through a suitable valve and filter.

3. Infrared Peeler/Dryer (Sustainable and non-chemical IR system):

The section should have the following arrangements-

- Fitted with a minimum of 12 kW IR emitters in the cavity.
- The cavity should be fitted with a perforated belt conveyor with VFD.
- The IR emitter should be fitted on both the sides of the belt conveyor.
- The wavelength of IR emitters should be suitable for food heating.
- Conveyor should be provided in the chamber with the forwarding and backward movement arrangement.
- The wall of the cavity should have standard openings (1kW magnetron-international size) to connect with the waveguide of the magnetrons (4 nos. with 1 kW each).
- The internal material of the cavity should be microwave (2.45 GHz) reflecting and free from electron emission in the electromagnetic field.
- The wall of the cavity should be well insulated to avoid loss of heat. The cavity should have the suitable strength to support the 4 kW magnetrons and power system.
- The cavity should be fitted with microwave leak proof materials/screens (2.45 GHz frequency) at the transparent window to the surrounding.
- Air exhaust arrangement (>2 m³ per minute) should be provided for taking out the humid air from the cavity with a temperature sensor (range: up to 80°C), and humidity sensors (0 to 100% RH).
- There should be an arrangement of choke to prevent leakage of microwaves from the cavity.
- The whole cavity should be insulated with suitable material for avoiding heat loss.

4. MW Excited UV Chamber:

- MW-UV capacity should be suitable for material same as that of IR section fitted with atleast 2 kW microwave installed power sources.
- The section should be provided with a conveyor minimum speed 1-3 cm/s, motor with VFD and it must have an arrangement to easily remove the product.
- UV chamber should be fitted with ambient air circulator for immediate cooling of the product.
- IR temperature and humidity sensors should be fitted to MW-UV chamber.
- one imaging camera (at least 1 MP) should be fitted for capturing the online images of the samples after treatment.

5. Unloading Section:

- It should be connected with the MW-UV treatment chamber and equipped with screw conveyor device (0-30 rpm should be provided with VFD) suitable for output at the rate at least 5 kg/h.
- The material of the section should be rust proof in case of wet material handling.

6. Magnetron, IR Lamps, UV lights, Power System, and Control Panel:

It should have:

- All magnetrons (2.45 GHz, 240V, 50 Hz) each with electric accessories of power regulation and cooling. The magnetrons must be connected with safety switches for automatic shutdown in case of overheating by magnetrons or microwave leakage by the mishandling of the operator.
- All infrared emitters (wavelength suitable for food heating) should be fitted with power regulators (1 kW- 4 kW), temperature indicators (range: 0°C-300°C) and timer (range: 0-999 sec).
- A control panel fitted with microwave power controller (1-6 kW) and timer. Also, it should be fitted with safety switches and digital displays for microwave and IR power.
- The electric connections should withstand the heavy-duty operations.
- A digital controller cum indicator should be provided for temperature, relative humidity, air velocity and power (MW, IR).
- A computer should be attached to the control panel to continuously monitor and display the air temperature, relative humidity, cooling air temperature, calculated psychrometric properties, magnetron body temperature, and IR sensors temperature. The computer should have 16-22" display with high speed x64 bit processor, Windows 8 operating system, RAM at least 4 GB (Ex), data printer, 100+ GB storage, UPS, and upsand compatible with MATLAB 7. The computer processor must be compatible with a standard high-speed data logger.

7. Safety Features:

- Equipment must be fabricated so that it should not generate plasma in presence of microwaves.
- It should be provided with a (3-4 step) ladder (height 4 ft and width 1 ft) made up of non-conducting material for the operator's safety.
- Magnetron should automatically be switched off when there is any cross connection by overheating in control panel.
- The equipment should not give vibrations to nearby working apparatus also should not interfere with other electronic devices, computer screen, mobile phone, telephone, and digital displays.
- It should be automatically tripped off when there is high voltage fluctuation.

8. General Terms:

- At least one-year warranty must be provided on all magnetrons, IR, UV lamps and other electronic devices.
- All electric circuit diagrams should be provided along with electric emergency repair kit.

Details of the configuration and deviation must be provided along with technical bid.

Other Terms and Conditions

1. Certificate from OEM or its Indian representative to have a complete after sales service set up unit in India.
2. If the bidder is not an OEM, the representative must submit a certificate from OEM for serving the same OEM in India at least for 5 years.
3. Warranty and Comprehensive Maintenance Contract (CMC):
(i) Comprehensive warranty for 1 years including spares and consumables. Warranty will be effective from the date of successful installation at NIT-Rourkela.
4. Price should include installation and delivery of the Microwave-IR-UV-C Equipment to NIT-Rourkela basis. Customs duty exemption certificate will be provided by the Institute.
5. **Release of EMD:** The EMD of the successful bidder shall be released after successful installation of the units.
6. **Validity of bids:** The rate quote should be valid for a minimum of 120 days.

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