राष्ट्रीय प्रोद्योगिकी संस्थान दुर्गापुर
NATIONAL INSTITUTE OF TECHNOLOGY DURGAPUR
MAHATMA GANDHI AVENUE, DURGAPUR-713209
West Bengal, INDIA, www.nitdgp.ac.in
(An Autonomous Institution of the Govt. of India under MoE)
An Autonomous Institution of the Govt. of India under Ministry of Education (Shiksha Mantralaya)

Notice No.: NITD/ME/TE Lab/2026-27/31

Date: 02-11-2026

Sub: - Notice Inviting Objections/Comments on Procurement of Equipment for Department of ME, NIT Durgapur.

1. A request has been received from Dr. Sayanatan Sengupta, Assistant Professor, Mechanical Engineering, NIT Durgapur for procurement of Equipment for Thermal Energy Lab Under Proprietary Article. Details of Equipment:-

| Sl. No | Name of Item | Qty |
|---|---|---|
| 1 | Solar Concentrator Training System | 1 |
| 2 | Solar Thermal Training System | 1 |
| 3 | Thermal Energy Storage Training System | 1 |
| 4 | Solar PV Training and Research System | 1 |
| 5 | Wind Energy Training System | 1 |
| 6 | Fuel Cell Training System | 1 |
| 7 | Integrated Platform for Carbon Capture and Utilization | 1 |

2. The specification of the Equipment (Annexure-I), PAC Certificate from the department and certification from the supplier are attached herewith.

3. The above documents as mentioned in serial no. 2 are being uploaded in the public domain to submit objections, comments, if any from the manufacturer/supplier regarding Proprietary nature of the software within seven days giving the reference no. NITD/ME/TE Lab/2026-27/31 Date: 02-11-2026. The comments/objections should be received by the FIC Procurement & Store, NIT Durgapur over email address: procurement@nitdgp.ac.in.

4. In case of No Objection Received within seven days, it will be presumed that any other vendor is having no comment or objection to offer and case will be decided on merit to finalize the purchase.

Gaurav Kumar
02/11/26
Gaurav Kumar
FIC Procurement & Store
NIT Durgapur

Encls: -

PAC Certificates by Indenter

PAC Certificate by Supplier

Technical Specification of the Software

| Sl. No | Name of Goods | Qty | Specification |
|---|---|---|---|
| 1 | Solar Concentrator Training System | 1 | |

| Sl. No. | Components | Sub-Components | Specifications |
|---|---|---|---|
| 01. | **Heat generating unit with Tracking system** | **Parabolic Trough collector** | |
| | | Reflecting material | SS (acrylic mirror in next version) |
| | | Length | 1219.2 (mm) |
| | | Arc length (perimeter) | 1828.8 (mm) |
| | | **Absorber tube** | |
| | | Number | 2 |
| | | Absorber material | Copper, SS |
| | | **Tracking system** | |
| | | Mode of tracking | Dual axis |
| 02. | **Storage unit** | **Supply tanks** | |
| | | Material | SS |
| | | Number | 2 |
| | | **Storage tank-1** | |
| | | Material | SS |
| | | **Storage tank-2 (with heat exchanger)** | |
| | | Material | SS |
| | | **Storage tank Insulation** | |
| 03. | **Control Unit** | **Sensors and regulators** | |
| | | Temperature meters with sensors | |
| | | Flow meter with sensor | |
| | | Flow Regulator | |
| 04. | **Accessories** | **Radiation meter** | |
| | | Range | 0 to 1999 |
| | | **Anemometer** | |
| | | Wind speed Range | 0.4 to 45.0 |
| | | Temperature range | -14 to 60 |
| | | **Pump -1** | |
| | | Type | Hot water |
| | | **Pump -2** | |
| | | Type | Hot oil |
| | | **Pipe and fitting** | |
| | | **Oil** | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | Heat of fusion | 173($\frac{kJ}{kg}$) |
| | | | | | PCM-2 | |
| | | | | | Name of PCM | Organic fatty acid |
| | | | | | Melting temperature | 67 (0C) |
| | | | | | Heat of fusion | 210($\frac{kJ}{kg}$) |
| | | | | | Heat exchanger | |
| | | | | | Number | 3 |
| | | | | | Heat exchanger tube material | Copper |
| | | | | | PCM holding pipe (shell) | |
| | | | | | Number | 3 |
| | | | | | Material | SS-304 |
| | | | 3 | Control unit | Temperature Meters | |
| | | | | | Temperature Sensors | |
| | | | | | Flow meter & Sensor | |
| | | | 4 | Accessories | External tank | |
| | | | | | Number | 2 |
| | | | | | Hot water Pump | |
| | | | | | Manual | |

| | | | | | |
|---|---|---|---|---|---|
| 4 | **Solar PV Training & Research System** | 1 | **Sl. No.** | **Component** | **Specification** |
| | | | | **POWER GENERATING UNIT** | |
| | | | **1.** | **Solar Panels (Two Solar Panels of 40Wp each)**<br>• Power Rating<br>• Maximum Power Voltage<br>• Maximum Power Current<br>• Open Circuit Voltage<br>• Short Circuit Current<br>• Panel Type | 40 Wp<br>18.33 V<br>2.39 A<br>22.25 V<br>2.53 A<br>Poly crystalline |
| | | | **2.** | **Artificial Sunlight**<br>• Tube Type<br>• Wattage<br>• No. Of Tubes per Panel<br>• Total No. Of Light Panels | Halogen<br>150 W each<br>6<br>2 |
| | | | | **POWER CONDITIONING UNIT** | |
| | | | **3.** | **Measurement**<br>• Module Voltage Voltmeter<br>• Inverter i/p Voltage Voltmeter<br>• DC Load Voltage Voltmeter<br>• Battery Input Voltage Voltmeter<br>• Module Current Ammeter<br>• Inverter i/p Current Ammeter<br>• DC Load Current Ammeter<br>• Battery i/p Current Ammeter<br>• Gen. AC Current Ammeter | 0-200 V<br>0-200 V<br>0-200 V<br>0-200 V<br>0-10 A<br>0-10 A<br>0-2 A<br>0-2 A<br>0-2 A |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | Rated wind speed | 12.5 $(\frac{m}{sec})$ |
| | | | | | Power generation at rated speed | 300(W) |
| | | | | | Cut-in speed | 3.5 $(\frac{m}{sec})$ |
| | | | | | Blade | |
| | | | | | | |
| | | | | | Material | Carbon fibre |
| | | | 2 | Artificial Wind generating unit | Induction motor | |
| | | | | | Power rating | 10 (HP) |
| | | | | | Generated wind speed range | 0-15 m/sec |
| | | | 3 | Control Unit | Battery | |
| | | | | | Capacity | 42 (Ah)/12V |
| | | | | | Inverter | |
| | | | | | Rated power | 650(VA) |
| | | | | | Input voltage | 12(V) |
| | | | | | Output Voltage | 110 V, 60Hz |
| | | | | | Charge controller | |
| | | | | | Rated power | 400(W) |
| | | | | | Rated load voltage | 12 (V) |
| | | | | | DC voltmeters/ammeter | |
| | | | | | AC voltmeters/ammeter | |
| | | | | | Power analysers | |
| | | | | | Power rating | 1KVA |
| | | | | | Tachometer with sensor | |
| | | | | | Anemometer | |
| | | | 4 | Accessories | Manual | |
| 6 | Fuel Cell Training System | 1 | **a) Fuel Cell** | | | |
| | | | | | Type of fuel cell | PEM |
| | | | | | Number of cells | 48 |
| | | | | | Rated Power | 1000W |
| | | | | | Performance | 28.8V @ 35A |
| | | | | | H2 Supply valve voltage | 12V |
| | | | | | Purging valve voltage | 12V |
| | | | | | Blower voltage | 12V |
| | | | | | Reactants | Hydrogen and Air |
| | | | | | External temperature | 5 to 30°C |

| | | | |
|---|---|---|---|
| | | | Bottom SS316 End Flange<br>End Flange – OD -100mm, Thickness – 10mm, 4 X M8 Through holes@28mm PCD, ¼ NPT Tapping center<br><br>U coil Heater 1<br>L – 310 mm, OD – 8mm<br><br>U Coil Heater 2<br>L – 290 mm, OD – 8mm<br>Gas Inlet and Outlet<br>2 X ¼ NPT - ¼ OD ferrule fitting<br>6 K-type thermocouples (Grounded)<br>D - 2mm, L - 60mm, 110mm, 170mm, 210mm, 270mm, and 320mm<br>6 Thermocouple fittings<br>⅛ NPT SS316 Hex head Plug, 2mm through hole<br><br>2 internal snap rings<br>OD - 55mm<br><br>1 perforated sheet disc<br><br>D - 54.5mm, T - 1mm, Hole size - 1.2mm |
| | | 6 | CO2 Sensor<br>2 X SprintIR W F 100 | 1. $CO_2$ Sensing Method: Non-dispersive infrared (NDIR) absorption<br>2. Sample Method: Solid-state LED NDIR Diffusion<br>3. Measurement Range: 0-100%<br>4. Accuracy: ppm +/- 5% of reading STP<br>5. Time to 1st Reading: <0.5 Seconds<br>6. Operating Conditions - Temperature: 0°C to 50°C<br>7. Pressure - 0.3 bar, Burst pressure - 2bar<br>8. Storage Conditions - Temperature: -40°C to 70°C<br>9. Operating Conditions - Humidity: 0-95% RH,<br>non-condensing Resolution: 10 ppm<br>10. Non-Linearity: < 1% of FS<br>11. Pressure Dependence: 0.13% of reading per mbar OSTP<br>12. Warm-up Time: < 30s.<br>13. Response Time: Flow Rate Dependent<br>14. Sensor Lifespan: > 15 years |
| | | 7 | Cooling Water Circulation Pump Diaphragm Booster Pump | 12Volts - 8A, Flow rate upto 10LPM, Self-Priming |
| | | 8 | PID Temperature Controller | 12Volts - 8A, Flow rate upto 10LPM, Self-Priming In-house developed controller, switching with ON-OFF pulses via solid state relay |
| | | 9 | Mass Flow Controller SMC - PFCA7 10 C6 1Q M R K | Heating type sensor<br>Flow Range – 0.1l/min – 10l/min Control accuracy - ±3 % F.S. Control Signal<br>Can be used for N2, Dry Air, and $CO_2$<br>Min unit - 0.01L/min<br>IO-Link, analogue input, local setting |
| | | 10 | Bubble Reactor | ID – 75mm, OD – 85mm, L – 400mm,<br>3 X 1" sintered sparger – pore size – 5 microns attached at base |
| | | 11 | IoT Based Data Logging Unit | 1. A micro-controller-based subsystem will be developed for real-time multiple thermocouple data acquisition with cold junction compensation.<br>2. Precise temperature regulation at multiple points in the thermal chamber by controlling power supplied to electric heater.<br>3. Integration and calibration of multiple $CO_2$ sensors.<br>4. A user interface will be developed to enable users to set various test conditions and live monitoring of experiments. Live temperature and $CO_2$ PPM trends will be plotted with time.<br>Test conditions and data will be logged periodically in csv format. |

12-4/7

Annexure-V

# National Institute Of Technology Durgapur 713209

(An Institute of National Importance under Ministry of Education, Govt of India)

## PROPRIETARY ARTICLE CERTIFICATE

Valid for the Current Financial Year

| | | |
|---|---|---|
| File Number and Date Reference | | **NITD/ME/Thermal Energy Lab/OH35/2026-27/01** |
| 1 | Description of the article | Solar Concentrator Training System |
| 2 | Forecast of quantity/annual requirement | 01 |
| 3 | Approximate estimated value for above quantity | RS. 649000.00 |
| 4 | Maker's name and address | ECOSENSE SUSTAINABLE SOLUTIONS PVT. LTD., F-34/8 Okhla Phase -2, New Delhi - 110020 |
| 5 | Name(s) of authorized dealers/stockists | ECOSENSE SUSTAINABLE SOLUTIONS PVT |

6 I approve the above purchase on PAC basis and certify that:-Note- Tick to retain only one out of (b), (c-1) or (c) whichever is applicable or indicate as applicable. Please do confirm (a) by ticking it-without which PAC certificate will be invalid.

| | | |
|---|---|---|
| 6(a) | This is the only firm who is manufacturing/stocking this item. AND | ✓ |
| 6(b) | A similar article is not manufactured/sold by any other firm, which could be used in lieu OR | ✓ |
| 6(c-1) | No other make/brand will be suitable for following tangible reasons (like OEM/warranty spares): OR | |
| 6(c) | No other make/brand will be suitable for following intangible reasons (if PAC was also given in the last procurement cycle, please also bring out efforts made since then to locate more sources): OR | |
| 7 | Reference of concurrence of finance wing to the proposal: | |

History of purchases of this item for past three years may be given below

Name of the supplier / Order history:

| Name of the supplier | Order/Tender References & Date | Quantity Ordered | Basic Rate on Order (Rs.) | Adverse Performance Reported if Any |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |

Recommended by : Name & Signature of Indenter---------- Sayantan Sengupta

Signature of Approving Authority (HOD/HOC)---------- 25/09/2026 Stamp & Date

Head of the Department
Mechanical Engineering
National Institute of Technology Durgapur
West Bengal-713209, India

C-4/8

Annexure-V

# National Institute Of Technology Durgapur 713209

(An Institute of National Importance under Ministry of Education, Govt of India)

## PROPRIETARY ARTICLE CERTIFICATE

Valid for the Current Financial Year

| | | |
|---|---|---|
| File Number and Date Reference | | **NITD/ME/Thermal Energy Lab/OH35/2026-27/01** |
| 1 | Description of the article | Solar Thermal Training System |
| 2 | Forecast of quantity/annual requirement | 01 |
| 3 | Approximate estimated value for above quantity | RS. 489700.00 |
| 4 | Maker's name and address | ECOSENSE SUSTAINABLE SOLUTIONS PVT. LTD., F-34/8 Okhla Phase -2, New Delhi - 110020 |
| 5 | Name(s) of authorized dealers/stockists | ECOSENSE SUSTAINABLE SOLUTIONS PVT |

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Recommended by : Name & Signature of Indenter---------- Sayantan Sengupta

Signature of Approving Authority (HOD/HOC)---------- 25/09/2026 Stamp & Date

Head of the Department
Mechanical Engineering
National Institute of Technology Durgapur
West Bengal-713209, India

C-4/9

Annexure-V

# National Institute Of Technology Durgapur 713209

(An Institute of National Importance under Ministry of Education, Govt of India)

## PROPRIETARY ARTICLE CERTIFICATE

Valid for the Current Financial Year

| | | |
|---|---|---|
| File Number and Date Reference | | **NITD/ME/Thermal Energy Lab/OH35/2026-27/01** |
| 1 | Description of the article | Thermal Energy Storage Training System |
| 2 | Forecast of quantity/annual requirement | 01 |
| 3 | Approximate estimated value for above quantity | RS. 767000.00 |
| 4 | Maker's name and address | ECOSENSE SUSTAINABLE SOLUTIONS PVT. LTD., F-34/8 Okhla Phase -2, New Delhi - 110020 |
| 5 | Name(s) of authorized dealers/stockists | ECOSENSE SUSTAINABLE SOLUTIONS PVT |

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Name of the supplier / Order history:

| Name of the supplier | Order/Tender References & Date | Quantity Ordered | Basic Rate on Order (Rs.) | Adverse Performance Reported if Any |
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| | | | | |

Recommended by : Name & Signature of Indenter---------- Sayantan Sengupta.

Signature of Approving Authority (HOD/HOC)---------- 25/09/2026 Stamp & Date

Head of the Department
Mechanical Engineering
National Institute of Technology Durgapur
West Bengal-713209, India

C-4/10

Annexure-V

# National Institute Of Technology Durgapur 713209

(An Institute of National Importance under Ministry of Education, Govt of India)

## PROPRIETARY ARTICLE CERTIFICATE

Valid for the Current Financial Year

| | | |
|---|---|---|
| File Number and Date Reference | | **NITD/ME/Thermal Energy Lab/OH35/2026-27/01** |
| 1 | Description of the article | Solar PV Training and Research System |
| 2 | Forecast of quantity/annual requirement | 01 |
| 3 | Approximate estimated value for above quantity | RS. 383500.00 |
| 4 | Maker's name and address | ECOSENSE SUSTAINABLE SOLUTIONS PVT. LTD., F-34/8 Okhla Phase -2, New Delhi - 110020 |
| 5 | Name(s) of authorized dealers/stockists | ECOSENSE SUSTAINABLE SOLUTIONS PVT |

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History of purchases of this item for past three years may be given below

Name of the supplier / Order history:

| Name of the supplier | Order/Tender References & Date | Quantity Ordered | Basic Rate on Order (Rs.) | Adverse Performance Reported if Any |
|---|---|---|---|---|
| | | | | |
| | | | | |

Recommended by : Name & Signature of Indenter---------- Sayantan Sengupta

Signature of Approving Authority (HOD/HOC)---------- Stamp & Date 25/09/2026

Head of the Department
Mechanical Engineering
National Institute of Technology Durgapur
West Bengal-713209, India

C-4/11

Annexure-V

# National Institute Of Technology Durgapur 713209

(An Institute of National Importance under Ministry of Education, Govt of India)

## PROPRIETARY ARTICLE CERTIFICATE

Valid for the Current Financial Year

| | | |
|---|---|---|
| File Number and Date Reference | | **NITD/ME/Thermal Energy Lab/OH35/2026-27/01** |
| 1 | Description of the article | Wind Energy Training System |
| 2 | Forecast of quantity/annual requirement | 01 |
| 3 | Approximate estimated value for above quantity | RS. 944000.00 |
| 4 | Maker's name and address | ECOSENSE SUSTAINABLE SOLUTIONS PVT. LTD., F-34/8 Okhla Phase -2, New Delhi - 110020 |
| 5 | Name(s) of authorized dealers/stockists | ECOSENSE SUSTAINABLE SOLUTIONS PVT |

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Name of the supplier / Order history:

| Name of the supplier | Order/Tender References & Date | Quantity Ordered | Basic Rate on Order (Rs.) | Adverse Performance Reported if Any |
|---|---|---|---|---|
| | | | | |
| | | | | |

Recommended by : Name & Signature of Indenter---------- Sayanta Sengupta.

Signature of Approving Authority (HOD/HOC)---------- Stamp & Date 25/09/2026

Head of the Department
Mechanical Engineering
National Institute of Technology Durgapur
West Bengal-713209, India

C-4/12

Annexure-V

# National Institute Of Technology Durgapur 713209

(An Institute of National Importance under Ministry of Education, Govt of India)

## PROPRIETARY ARTICLE CERTIFICATE

Valid for the Current Financial Year

| | | |
|---|---|---|
| File Number and Date Reference | | **NITD/ME/Thermal Energy Lab/OH35/2026-27/01** |
| 1 | Description of the article | Fuel Cell Training System |
| 2 | Forecast of quantity/annual requirement | 01 |
| 3 | Approximate estimated value for above quantity | RS. 1298000.00 |
| 4 | Maker's name and address | ECOSENSE SUSTAINABLE SOLUTIONS PVT. LTD., F-34/8 Okhla Phase -2, New Delhi - 110020 |
| 5 | Name(s) of authorized dealers/stockists | ECOSENSE SUSTAINABLE SOLUTIONS PVT |

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| Name of the supplier | Order/Tender References & Date | Quantity Ordered | Basic Rate on Order (Rs.) | Adverse Performance Reported if Any |
|---|---|---|---|---|
| | | | | |
| | | | | |

Recommended by : Name & Signature of Indenter---------- Sayantan Sengupta

Signature of Approving Authority (HOD/HOC)---------- Stamp & Date 25/09/2026

Head of the Department
Mechanical Engineering
National Institute of Technology Durgapur
West Bengal-713209, India

IC-4/13

Annexure-V

# National Institute Of Technology Durgapur 713209

(An Institute of National Importance under Ministry of Education, Govt of India)

## PROPRIETARY ARTICLE CERTIFICATE

Valid for the Current Financial Year

| | | |
|---|---|---|
| File Number and Date Reference | | **NITD/ME/Thermal Energy Lab/OH35/2026-27/01** |
| 1 | Description of the article | Integrated Platform for Carbon Capture and Utilization |
| 2 | Forecast of quantity/annual requirement | 01 |
| 3 | Approximate estimated value for above quantity | RS. 3245000.00 |
| 4 | Maker's name and address | ECOSENSE SUSTAINABLE SOLUTIONS PVT. LTD., F-34/8 Okhla Phase -2, New Delhi - 110020 |
| 5 | Name(s) of authorized dealers/stockists | ECOSENSE SUSTAINABLE SOLUTIONS PVT |

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Name of the supplier / Order history:

| Name of the supplier | Order/Tender References & Date | Quantity Ordered | Basic Rate on Order (Rs.) | Adverse Performance Reported if Any |
|---|---|---|---|---|
| | | | | |
| | | | | |

Recommended by : Name & Signature of Indenter---Sayantan Sengupta---

Signature of Approving Authority (HOD/HOC)---------- Stamp & Date 25/09/2026

Head of the Department
Mechanical Engineering
National Institute of Technology Durgapur
West Bengal-713209, India

Date: 14th September, 2026

# PROPRIETARY CERTIFICATE

Certified that following products:-

1) **Solar PV Training and Research System**
2) **Wind Energy Training System**
3) **Fuel Cell Training System**
4) **Solar Concentrator Training System**
5) **Solar Thermal Training System**
6) **Thermal Energy Storage System**
7) **Integrated Platform for Carbon Capture and Utilization**

are our proprietary product and we are original and sole manufacturer of the product. Our firm is registered vide Registration No. U74140DL2010PTC207822 dated 3rd, Sept 2010. The Training System is an indigenously designed and fabricated product, specifically designed to help train professionals and engineers in the stream of Renewable Energy Systems.

We further certify that this equipment is guaranteed for Three (3) years against any faulty workmanship and any manufacturing defect.

Abhishek Mangalick
(Director, Ecosense Sustainable Solutions Pvt. Ltd.)
Tel: +91-11-46016794, Mobile: +91-9910166999
Email: amangalick@ecosenseworld.com