Tender ID: 2025_CSIR_ 242303_1
Tender Ref No: PUR/1/25-26/300149/CD/PO
Tender Title: Supply, installation, commissioning and handover of one chassis dynamometer system and particulate mass measurement system.

CORRIGENDUM

Item Name: Supply, installation, commissioning and handover of one Chassis Dynamometer System and particulate mass measurement system.

Sl. No	CSIR-IIP published Tender Specifications (Before)	Revised Specifications after Pre-bid meeting (Read as)
1	**Bidder Technical Qualification** The bidder shall be an Original Equipment Manufacturer (OEM), or a subsidiary thereof, or authorised Indian agent. Relevant documentary evidence must be provided to verify this status. The Bidder shall have an experience in successfully carrying out and completing "similar work" as described below, during the last 10 years ending on the last day of the month prior to the invitation of bids. This "Similar Work" shall include the following: Similar Work for Tender Part-A: Chassis dynamometer system supplied to at least one vehicle/engine certification test agency in India or other countries where at least BS-6/Euro-6 equivalent level of emission regulations were/are in force. Similar Work for Tender Part-B: • Particulate mass (PM) measurement system supplied to at least one vehicle/engine certification test agency in India or other countries where at least BS-6/Euro-6 equivalent level of emissions regulations were/are in force. The evaluation of the bid will be on item wise evaluation basis separately for Tender Part-A (Chassis Dynamometer System) and Tender Part-B (Particulate Mass (PM) Measurement System). The L1 bid will be decided individually for each system mentioned in Tender Part-A and Tender Part-B separately. The Bidder shall provide information on the past supplies using the form in Annexure-4 to demonstrate their technical qualification. Any one of the following documents may be considered as valid proof for past supplies: (i) Contract copy/purchase order along with invoice(s) with self-certification by the bidder that service/supplies against the invoices have been executed. (ii) Execution certificate by client with contract value. (iii) Any other document in support of contract execution like Third Party Inspection release note, etc. Tender reference: Page 70.	**Bidder Technical Qualification** The bidder shall be an Original Equipment Manufacturer (OEM)or a subsidiary thereof, or authorised Indian agent. Relevant documentary evidence must be provided to verify this status. The Bidder shall have experience in successfully carrying out and completing "similar work" as described below. This "Similar Work" shall include the following: For Tender Part-A: Chassis dynamometer system supplied to at least one vehicle manufacturer in India that has NABL (ISO/IEC17025) accreditation covering mass emission tests as per AIS-137 or at least one vehicle emission certification agency in India. Or Chassis dynamometer system supplied to at least one vehicle emission certification agency or vehicle manufacturer in any other country where at least BS-6/Euro-6 equivalent level of emission regulations were/are in force. The supplied chassis dynamometer system should have been used for vehicle emission certification. For Tender Part-B: Particulate Mass (PM) Measurement System supplied to at least one vehicle/engine manufacturer in India that has NABL (ISO/IEC17025) accreditation covering mass emission tests as per AIS-137 or at least one vehicle/engine emission certification agency in India. Or Particulate Mass (PM) Measurement system supplied to at least one vehicle/engine emission certification agency or vehicle/engine manufacturer in any other country where at least BS-6/Euro-6 equivalent level of emission regulations were/are in force. The supplied Particulate Mass (PM) Measurement system should have been used for vehicle/engine mass emission certification. Any one of the following documents may be considered as a proof for past supplies: (i) Contract copy/purchase order along with invoice(s) with self-certification by the bidder that service/supplies against the invoices have been executed. (ii) Execution certificate by client with contract value. (iii) Any other document in support of contract execution like Third Party Inspection release note, etc.

<table>
<tr>
<td></td>
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<td>The supplied “Similar Work” should have been utilized either for getting the NABL (ISO/IEC17025) accreditation covering mass emission tests of AIS-137 or for conducting mass emission certification tests of vehicle/engine. The Bidder shall provide the relevant information using the form in Annexure-4.

The evaluation of the bid will be carried out item-wise separately for Tender Part-A (Chassis Dynamometer System) and Tender Part-B (Particulate Mass (PM) Measurement System). The L1 bid will be decided individually for each system mentioned in Tender Part-A and Tender Part-B separately.

CSIR-IIP is a Certification Test Agency for engines and vehicles. Test equipments for use by a Certification Test Agency notified by Govt. of India under Rule 126 of Central Motor Vehicle Rules and Environment (protection) 3rd Amendment Rules 2022 are critical regulatory equipments because:
• The equipments need to be suitable for use for type approval certification of vehicles/engines.
• Results of certification test affect legal compliance with emission norms.
• Any compromise in the quality of certification directly affects public health (air pollution control) and regulatory credibility.

In view of above, no relaxation in prior experience for start-ups (whether Micro & Small Enterprises (MSEs) or otherwise) shall be given for this tender.</td>
</tr>
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<td>2</td>
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<table>
<tr><td>GCC 7.1</td><td>Tests and Inspections</td><td>Factory acceptance test shall be carried by CSIR-IIP at its own cost, if required</td></tr>
</table>
Tender reference: Page 67, GCC 7.1
</td>
<td>
<table>
<tr><td>GCC 7.1</td><td>Tests and Inspections</td><td>Pre-Delivery Inspection shall be carried out by CSIR-IIP personnel at supplier location (within India)
During the Pre-Delivery Inspection for Tender Part-A, the supplier shall demonstrate
i. Successful operation of the chassis dynamometer
ii. The compliance of the specifications mentioned in section 1.10 of Page 72 of the tender document.
During the Pre-Delivery Inspection for Tender Part-B, the supplier shall demonstrate successful operation of PM measurement system by measurement of particulates in the background air.
The stay, travel and other expenses of CSIR-IIP personnel for Pre-Delivery Inspection test visit shall be borne by CSIR-IIP.</td></tr>
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<table>
<tr><td>3</td><td>1.4(v) Dynamometer pit and chequered plate pit flooring area: The making of underground pit at CSIR-IIP laboratory, shall be in the scope of supplier. The pit shall accommodate roller and motor, cooling passages (if any) and relevant accessories. The pit shall be covered with chequered plate.

Tender reference: Page 71, 1.4.(v)</td><td>1.4(v) Dynamometer pit and chequered plate pit flooring area: The making of underground pit at CSIR-IIP laboratory, shall be in the scope of supplier. The roller and motor shall be inside the pit. The pit shall also accommodate cooling passages (if any) and relevant accessories. The pit shall be covered with chequered plate. The space available for installation of chassis dynamometer system at CSIR-IIP is : Length 26 feet and width 17 feet.</td></tr>
<tr><td>4</td><td>1.10. Chassis Dynamometer Specification
(i) Accuracy of speed measurement: ±0.08 km/h
(ii) Accuracy of time measurement: ±0.001% of measured time after at least 1000 seconds of operation
(iii) Response time (90% tractive effort step change): Less than 100 ms
(iv) Accuracy of unloaded coast down: ± 2 % of calculated value or less than 10 N whichever is greater
(v) Accuracy of force measurement: ± 10 N for all measured increments

Tender reference: Page 72, 1.10</td><td>1.10. Chassis Dynamometer Specification
(i) Accuracy of speed measurement: ±0.08 km/h
(ii) Accuracy of time measurement: ±0.001% of measured time after at least 1000 seconds of operation
(iii) Response time (90% tractive effort step change): Less than 100 ms
(iv) Accuracy of unloaded coast down: ± 2 % of calculated value or less than 10 N whichever is greater
(v) Accuracy of force measurement: ± 10 N for all measured increments
The supplier shall provide calibration certificates for above specifications. These calibration certificates shall be made available to CSIR-IIP during Pre- Delivery Inspection.</td></tr>
<tr><td>5</td><td>Table 1. Acceptance Check List
<table><tr><td>Sl. No</td><td>Test/checks</td></tr><tr><td>1</td><td>Appearance, dimensions & construction and quantity check of the complete unit with accessories and spares as per purchase order</td></tr><tr><td>2</td><td>Valid Calibration reports with traceability of calibrators to National / international standards.</td></tr><tr><td>3</td><td>Operation on atleast four of the cycles mentioned in Section 1.3 of this Annexure.</td></tr><tr><td>4</td><td>Cables and hoses routing.</td></tr><tr><td>5</td><td>All other functional checks are as per the technical bid.</td></tr></table>
Tender reference: Page 74, Table 1</td><td>Table 1. Acceptance Check List at CSIR-IIP
<table><tr><td>Sl. No</td><td>Test/checks</td></tr><tr><td>1</td><td>Appearance, dimensions & construction and quantity check of the complete unit with accessories and spares as per purchase order</td></tr><tr><td>2</td><td>Valid Calibration reports with traceability of calibrators to National / international standards.</td></tr><tr><td>3</td><td>i. The bidder shall demonstrate the chassis dynamometer operations complaint to regulatory requirement of AIS-137 for 2 wheelers and 3 wheelers.
ii. The bidder shall demonstrate the chassis dynamometer operation for MIDC and WLTC for 4 wheelers.</td></tr><tr><td>4</td><td>Dynamometer calibrations shall be performed as per AIS 137 and relevant compliance documents shall be submitted.</td></tr><tr><td>5</td><td>Cables and hoses routing.</td></tr><tr><td>6</td><td>All other functional checks are as per the technical bid.</td></tr></table></td></tr>
<tr><td>6</td><td>Table 5. Acceptance Check List

Tender reference: Page 77, Table 5 Title</td><td>Table 5. Acceptance Check List at CSIR-IIP</td></tr>
<tr><td>7</td><td>Annexure-4: Performance Statement of Items relevant to Tender Part A and/or Tender Part B.
Tender reference: Page 79.</td><td>Revised “Annexure-4:Proforma For Performance Statement” is attached.</td></tr>
<tr><td>8</td><td>Table 4: Ambient Conditions
<table><tr><td>Ambient temperature</td><td>10 to 40^{o}C</td></tr><tr><td>Atmospheric pressure:</td><td>Above 85 kPa</td></tr><tr><td>Electrical Supply</td><td>The facility should be designed keeping in view the Indian electrical supply</td></tr></table>
Tender reference: Page 77, Table 4</td><td>Table 4: Ambient Conditions
<table><tr><td>Ambient temperature</td><td>10 to 40^{o}C</td></tr><tr><td>Atmospheric pressure</td><td>85 kPa to 100 kPa</td></tr><tr><td>Electrical Supply</td><td>The facility should be designed keeping in view the Indian electrical supply</td></tr></table></td></tr>
</table>

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9	3.8(v)Compliance with the complete technical requirements specified in the bid document is mandatory. At the discretions of CSIR-IIP, any bidder failing to meet these requirements will be disqualified, and deviations from the technical specifications will not be considered. Tender reference: Page 78.	3.8(v)Compliance with the complete technical requirements specified in the bid document is mandatory. At the discretions of CSIR-IIP, any bidder failing to meet these requirements will be disqualified, and deviations from the technical specifications will not be considered. Bidder shall provide the compliance statement in the Proforma given in Annexure-5. Annexure-5 is attached separately for Tender Part-A and Part-B.
10	Delivery and satisfactory Installation, Commissioning and handover period: on or before 27.02.2026 Tender reference: Page 3.	Delivery and satisfactory Installation, Commissioning and handover period: On or before 14 months from the date of purchase order.
11	30% advance against equal value bank guarantee of one (01) year validity. 70% after successful installation and commissioning. Tender reference: Page 67, GCC 10.3.3	80% payment after delivery subject to inspection by CSIR-IIP in presence of supplier. Balance 20% payment after satisfactory installation and commissioning. Note: GST will be paid on 80% of the contract value, along with 80% payment after delivery at CSIR-IIP, subject to inspection by CSIR-IIP in the presence of the supplier.
12	Bid submission end date: 22-09-2025	Bid submission end date: 17-10-2025

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Annexure-4: Proforma For Performance Statement
(Annexure-4 is applicable for both Tender Part A and Part B)

Name of the Firm…….

Order placed by (full address of purchaser)	Order No. and date	Description of the equipment	Applicability of Equipment		Price	Date of completion of delivery		Remarks indicating reasons for late delivery, if any	Has the equipment/service been installed satisfactory? (Attach a certificate from the purchaser/ Consignee)	Contact Person along with Tel. No., Fax No. & E-Mail Address
			Has the equipment been utilized for NABL (ISO/IEC17025) accreditation covering mass emission test(s) of AIS-137	Has the equipment been utilized for mass emissions certification of vehicle/engines		As per contract	Actual date of Delivery			
1	2	3	4a	4b	5	6a	6b	7	8	9

CSIR-IIP has right to contact any of the listed purchaser(s) for getting further details on past supplies.

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Annexure-5 for Tender Part-A: Technical Compliance
Item Name: Supply, installation, commissioning and handover of one chassis dynamometer.

S. No.	CSIR-IIP's requirements as per Tender Document (including revisions mentioned through Corrigendum 1, 2, 3)	Bidder Compliance (Yes/No)	Bidder Comment (if any)
1.1	(i) 24 inch or larger diameter roller suitable for testing of 2, 3 & small 4 wheeler.		
	(ii) 1 axle inline configuration.		
	(iii) Air speed simulation cooling fan in synchronization with dynamometer speed.		
	(iv) Driver's aid PC along with display.		
	(v) Dynamometer controller along with necessary software and subsystems.		
1.2	(i) AIS-137 (the relevant parts that are applicable for 2 wheelers, 3 wheelers)		
	(ii) AIS 039		
	(iii) AIS 040		
	(iv) AIS 041		
1.3	Test cycles: The bidder shall provide WMTC, IDC, MIDC, WLTC and other relevant test cycles applicable for 2 wheelers, 3 wheelers, and light duty 4 wheelers in India, Europe, United States of America and Japan. There shall be a provision to develop new customized cycles. The requirement of chassis dynamometer for 4 wheelers is for R&D testing.		
1.4	(i) Dynamometer along with control system and Driver's Aid		
	(ii) Steel or GI cover for the chassis dynamometer		
	(iii) Torque flange or Load cell		
	(iv) Speed encoder		
	(v) Dynamometer pit and chequered plate pit flooring area: The making of underground pit at CSIR-IIP laboratory, shall be in the scope ofsupplier. The roller and motor shall be inside the pit. The pit shall also accommodate cooling passages (if any) and relevant accessories. The pit shall be covered withchequered plate. The space available for installation of chassis dynamometer system at CSIR-IIP is : Length 26 feet and width 17 feet.		
	(vi) Capability of centering a 4-wheeler to be provided. In case, automatic centering device is needed, it shall be provided.		
1.5	The chassis dynamometer shall be used for vehicles emissions testing and electric vehicles testing. The chassis dynamometer system shall include all the subsystems and shall meet all the technical specifications and requirements as given in this tender document.		
1.6	(i) Humidity range: 10 % to 85 % RH		

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Tender Title: Supply, installation, commissioning and handover of one chassis dynamometer system and particulate mass measurement system.

S. No.	CSIR-IIP's requirements as per Tender Document (including revisions mentioned through Corrigendum 1, 2, 3)	Bidder Compliance (Yes/No)	Bidder Comment (if any)
	(ii) Temperature range: 5°C to 40 °C		
	(iii) Power supply range: 3 phase 400 V ±10%, 50 Hz		
1.7	(i) Roller Diameter: 24 inch or larger		
	(ii) Roller Covering: Manual covers		
	(iii) Maximum Speed: Capable of testing vehicles upto a maximum speed of 170 km/h		
	(iv) Simulated inertia: 150-1200 kg		
1.8	(i) AC Motor Position: In Line with Roller		
	(ii) Nominal power in generating mode: 55 kW or above. The dynamometer should be capable of testing the range of vehicles for the specified test cycles: a. Two wheeler with rated power of 3 kW@6000 rpm and Max. torque of 6.5 Nm@3500 rpm on IDC and WMTC test cycles. b. Two wheeler with rated power of 50 kW@8000 rpm and Max. torque of 64 Nm@6700 rpm on IDC and WMTC test cycles. c. Three wheeler with rated power of 8.10 kW@5000 rpm and Max. torque of 18 Nm@3500 rpm on IDC test cycle. d. Four wheeler with rated power of 50 kW@5500 rpm and Max. torque of 89 Nm@3500 rpm on MIDC and WLTC test cycles for R&D purpose. Vehicle models such as Alto K10 (Maruti Suzuki India Limited), KWID (Renaulat India Pvt Limited) etc., may be considered for estimating technical parameters required for chassis dynamometer.		
1.9	(i) Type of Drive: AC Drive IGBT or SiC Type or equivalent		
	(ii) Operation Type: Suitable for braking & Motoring Operation		
	(iii) AC Drive Cooling System: Inbuilt		
	(iv) Power cabinet shall be able to install in non air-conditioned room: temp range 5°C to 40 °C		
1.10	(i) Accuracy of speed measurement: ±0.08 km/h		
	(ii) Accuracy of time measurement: ±0.001% of measured time after at least 1000 seconds of operation		
	(iii) Response time (90% tractive effort step change): Less than 100 ms		
	(iv) Accuracy of unloaded coast down: ± 2 % of calculated value or less than 10 N whichever is greater		
	(v) Accuracy of force measurement: ± 10 N for all measured increments		
	The supplier shall provide calibration certificates for above specifications. These calibration certificates shall be made available to CSIR-IIP during Pre- Delivery Inspection.		
1.11	Wheel clamping device and necessary restraint system for 2, 3 and 4 wheelers shall be provided. Roller brake assembly shall be provided along with emergency brakes.		

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S. No.	CSIR-IIP's requirements as per Tender Document (including revisions mentioned through Corrigendum 1, 2, 3)	Bidder Compliance (Yes/No)	Bidder Comment (if any)
1.12	(i) Road Load Simulation: Dynamometer to be capable of simulating road load with three road load co-efficient that can be adjusted to shape the road load curve.		
	(ii) Legislative requirement: System should be designed to allow the system to reproduce an exact simulation of defined driving cycles as defined in Section 1.3 of this Annexure and provide a reliable, accurate and repeatable pattern of road load simulation.		
	(iii) All the functions required for the operation of the dynamometer shall be present in the driver's remote control/handset. The load applied by the dynamometer shall simulate the rolling resistance, aerodynamic drag and inertia forces that occur on the road.		
	(iv) The dynamometer shall be capable of: a. Road load simulation b. Speed & Torque control mode or Force mode c. Acceleration & Deceleration mode d. Calibration mode e. Coast down & acceleration test f. Vehicle loss compensation g. Dynamic control of gradient h. Dynamometer calibration i. Verification of dynamic torque j. Distance measurement k. Parasitic loss measurement l. Real time graphics		
	(v) The dynamometer control PC shall be an industrial PC with following minimum specifications: Processor of 12 MB Cache, 4 GHz speed; RAM of 32 GB; SSD of 1 TB; 24" Monitor.		
	(vi) Host Interface: System should be capable of interfacing to a Host computer via TCP/IP or any industry standard communication protocol. Total control of chassis dynamometer through Host shall be possible.		
1.13	(i) A variable speed current of air shall be blown towards the vehicle. The set point of the linear velocity of the air at the blower outlet shall be equal to the corresponding roller speed above roller speeds of 5 km/h. The linear velocity of the air at the blower outlet shall be within ± 5 km/h or ± 10 per cent of the corresponding roller speed, whichever is greater.		
	(ii) It shall be possible to run the blower at 1% to 100% of blower speed in roller velocity synchronization mode.		

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S. No.	CSIR-IIP's requirements as per Tender Document (including revisions mentioned through Corrigendum 1, 2, 3)	Bidder Compliance (Yes/No)	Bidder Comment (if any)
	(iii) The blower shall be suitable for testing vehicles upto a maximum speed of 170 km/h		
1.14	The safety system of the dynamometer shall include the following: (i) dynamometer over speed (ii) dynamometer over torque / force or load cell signal failure (iii) speed signal failure (encoder) (iv) software system failure (e.g. communications link) (v) dynamometer brake failure (vi) produce an emergency stop of the dynamometer		
1.15	(i) A suitable Drivers' Aid to be provided in the chassis dynamometer room close to rollers to monitor the accuracy of running custom built as well as requirements of the test standards mentioned in Section 1.2 of this Annexure applicable to 2, 3 and 4 wheeler vehicles within the capacity of the chassis dynamometer. Speed Signal interface is to be available for Driver's Aid. The Driver's Aid shall be integrated with the chassis dynamometer.		
	(ii) The Driver's Aid computer shall have the following minimum technical specifications: Processor with 3.5 GHz speed; RAM of 8 GB; Hard-Drive/SSD of 500 GB.		
1.16	A weather station which is capable of displaying barometric pressure, temperature, and humidity shall be supplied. A suitable interface with communication protocol for connection with a PC based system.		
1.17	The system shall be made functional through ghost image file in case of any system breakdown. Vendor shall provide the required software and hardware capability to reset computer from ghost image file. The ghost backup shall be provided after the successful commissioning.		
1.18	Upon delivery, a full system check and demonstration are to be done by the bidder to the satisfaction of CSIR-IIP with an actual vehicle. The demonstration shall include running the vehicle with the test cycles, automatic control of chassis dynamometer, and report generation as per the legislative formats. The acceptance criteria is given below points:		
	1. Appearance, dimensions & construction and quantity check of the complete unit with accessories and spares as per purchase order.		
	2. Valid Calibration reports with traceability of calibrators to National / international standards.		

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S. No.	CSIR-IIP's requirements as per Tender Document (including revisions mentioned through Corrigendum 1, 2, 3)	Bidder Compliance (Yes/No)	Bidder Comment (if any)
	3.i. The bidder shall demonstrate the chassis dynamometer operations complaint to regulatory requirement of AIS-137 for 2 wheelers and 3 wheelers. 3.ii.The bidder shall demonstrate the chassis dynamometer operation for WLTC cycle 4 wheelers.		
	4. Dynamometer calibrations shall be performed as per AIS 137 and relevant compliance documents shall be submitted.		
	5. Cables and hoses routing.		
	6. All other functional checks are as per the technical bid.		

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Tender Title: Supply, installation, commissioning and handover of one chassis dynamometer system and particulate mass measurement system.

Annexure-5 for Tender Part-B: Technical Compliance
Item Name: Supply, installation, commissioning and handover of Particulate Mass (PM) Measurement System.

S. No.	CSIR-IIP's requirements as per Tender Document (including revisions mentioned through Corrigendum 1, 2 and 3)	Bidder Compliance (Yes/No)	Bidder Comment (if any)
2.1	The broad scope of works for Particulate Mass Measurement System here onwards refereed as "PM System" includes the supply, installation, commissioning, tools, consumables, filters, software, training of the key personnel at CSIR-IIP and handover of the PM System.		
2.2	The PM System shall be capable to measure the mass of the exhaust particulate emissions from the following categories of reciprocating internal combustion engines: Heavy Duty Engines, Agricultural Engines, Off-road and Stationary Genset engines, when run according to standards mentioned in Table 3.		
2.3	The PM System shall be capable of testing the legislative test cycles mentioned in Table 2. • D2 5-mode Steady-state discrete mode test cycle • D2 5-mode Steady-state ramped mode test cycle • 5-mode Variable Speed Cycle, • C1 8-mode Steady-state discrete mode test cycle • C1 8-mode Steady-state ramped mode test cycle (as per System and Procedure For Compliance to Revised Emission Standards for Power Generating Set Engines, including the specification of control area and NTE selection) • BHARAT IV/V NRSC, NRTC as defined in AIS 137 Part 7		
2.4	The PM System under the bid must compliant to the following test standards (i) ISO 16183		
	(ii) ISO 8178		
	(iii) System and procedure for compliance to revised emission standards for power generating set engines, CPCB, India		
	(iv) AIS 137 Part 7 Test Method, testing equipment and related procedures for type approval and conformity of production (CoP) testing of Agricultural Tractors, Construction Equipment Vehicles (CEVs) & Combine Harvesters for Emission Norms as per CMV Rules 115 and 126		
	(v) AIS-137 Part 4 Test Method, Testing Equipment and Related Procedures for Type Approval and Conformity of Production (CoP) Testing of M & N Category Vehicles having GVW exceeding 3500 kg for Bharat Stage VI (BS-VI) Emission Norms as per CMV Rules 115, 116 and 126		
	(vi) Regulation (EU) 2024/1257		
2.5	(i) The PM System shall comprise of dilution air conditioning system, partial flow dilution tunnel, filter panels comprising of filter holders, an control system including computer, etc. The PM System shall be compliant with the requirements mentioned in Section 2.3: Test Cycles, and Section 2.4: Test Standards.		

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S. No.	CSIR-IIP's requirements as per Tender Document (including revisions mentioned through Corrigendum 1, 2 and 3)	Bidder Compliance (Yes/No)	Bidder Comment (if any)
	(ii) The dilution system shall be capable of • Completely eliminate water condensation in the dilution and sampling systems. • Maintain the temperature of the diluted exhaust gas between 42 °C and 52 °C within 20 cm upstream or downstream of the filter holder(s). • The d12iluents temperature shall be between 20 °C and 52 °C in close proximity to the entrance into the dilution tunnel.		
	(iii) The 12diluents (ambient air, or synthetic air, or nitrogen) shall be filtered with a high-efficiency filter that has an initial minimum collection efficiency of 99.97 per cent.		
	(iv) The PM System shall have at least 3 filter holders of which one holder shall hold filters of diameter 70 mm and two holders shall hold filters of diameter 47 mm.		
	(v) The linearity verification is needed for each flow meter used in particulate sampling and partial flow dilution system.		
	(vi) The PM measurement system shall come with minimum electrical (power) cable length of 8 m		
2.6	The particulate filters shall have a 0.3 µm DOP (di-octylphthalate) or PAO (poly-alpha-olefin) collection efficiency of at least 99.7 per cent. The filter material shall be either Fluorocarbon (PTFE) coated glass fibre, or Fluorocarbon (PTFE) membrane. The vendor shall supply 200 filters of 70 mm diameter, and 400 filters of 47 mm diameter.		
2.7	All the necessary consumables other than filter papers listed in section 2.6, that are needed to operate the PM System for at least 200 operational hours shall be supplied.		
2.8	The PM System shall work in the following ambient conditions:		
	Ambient temperature : 10 to 40^{o}C		
	Atmospheric pressure : 85 kPa to 100 kPa		
	Electrical Supply : The facility should be designed keeping in viewthe Indian electrical supply		
2.9	(i) The PM System shall have a dedicated computer with the necessary software to operate the PM System, calculate results, and generate reports that meet the standards listed in Table 3. The computer shall have following minimum technical specifications: Processor with 3.5 GHz speed; RAM of 8 GB; Hard Drive/SSD of 500 GB.		
	(ii) The PM System shall have user interface for the automatic representation of specific information related such as step-by-step display of automatic test runs, test related information (stop/start time, test status), functional messages, error messages etc.		
	(iii) The PM System shall have software that provides a user interface, allows user inputs, and calculates total particulates in g/kW-h or other units specified in the regulations in Table 3.		

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S. No.	CSIR-IIP's requirements as per Tender Document (including revisions mentioned through Corrigendum 1, 2 and 3)	Bidder Compliance (Yes/No)	Bidder Comment (if any)
	(iv) The PM System shall facilitate exhaust gas sampling, dilute it, and maintain the face velocity across the filter as defined in the test standards listed in Table 3.		
	(v) The PM System shall have the capability to take the inputs online from test-cell automation system to estimate all required parameters and comply with the standards listed in Table 3.		
	(vi) The PM System shall come with software that is capable to display relevant data from the test-cell automation system and other critical instruments/sensors, including any error messages related to the readings.		
	(vii) The PM System shall have the capability to communicate with test-cell automation system and be operated by test-cell automation system. The vendor shall provide communication protocols for integrating the system with the test-cell automation at no extra cost.		
	(viii) Considering the future upgrades, the PM System shall be capable for seamless integration with particle number counter.		
2.10	The PM System shall be made functional through ghost image file in case of any unexpected computer breakdown or software crash. Vendor shall provide the required software and hardware capability to reset computer from ghost image file. The ghost backup shall be provided after the successful commissioning.		
2.11	Upon delivery, a full system check and demonstration are to be done by the bidder to the satisfaction of CSIR-IIP. The demonstration shall include running the PM system with the test cycles on actual engine available at CSIR-IIP, and report generation as per the legislative formats. The acceptance criteria are given in Table-5		
	Appearance, dimensions & construction and quantity check of the complete unit with accessories and spares as per purchase order.		
	Valid calibration reports with traceability of calibrators to National / international standards.		
	The PM System verification with any/all of the cycles listed in Table 2.		
	Cables and hoses routing.		
	All other functional checks are as per the technical bid.		

24/9/25

(Stores & Purchase Officer)
For CSIR