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Date: November 14th, 2024

Ref. No.: IISc/ME/Tender/2024/Domestic/HIL Systems for Hybrid Powertrains

Domestic tender notification for the procurement of HIL systems for Hybrid Powertrains

(Last Date for Submission: December 4th, 2024)

This is a Request for Quote (RFQ) from domestic (India-based) manufacturers only for procurement of Hardware-in-Loop (HIL) systems for Hybrid Powertrains at the Department of Mechanical Engineering, Indian Institute of Science, Bangalore. With respect to this tender, the rules laid out by the Government of India in order No. P45021/2/2017-pp-BE-II issued by the Public Procurement Section, Department or Promotion of Industry and Internal Trade, Ministry of Commerce, and Industry, dated 4th June 2020 will be followed. As per this order, the government has defined a ‘Class-I local supplier’ as “a supplier or service provider whose goods, services or work offered for procurement, has local content equal to or more than 50%”. A ‘Class-II local supplier’ is “a supplier or service provider, whose goods, services or works offered for procurement, has local content more than 20% but less than 50%”. Only Class-I and Class-II local suppliers are eligible to participate in this open domestic tender. Any “Non-local supplier” i.e., “a supplier or service provider, whose goods, services or works offered for procurement, has local content less than 20%” is ineligible to participate in this tender. The tender should be submitted in two separate sealed envelopes: one containing the technical bid and the other containing the commercial bid, both of which should reach us, duly signed on or before 5 PM on December 4th, 2024.

The bids should be addressed to:

The Chair,
Department of Mechanical Engineering
Indian Institute of Science
Bangalore 560012, India.
Kind attention: Prof. R V Ravikrishna
email: ravikris@iisc.ac.in, chair.me@iisc.ac.in

1	Section 1	Bid Schedule	As specified by IISc
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6	Section 6	Commercial bid	Quotation with Price, Technical specifications of the Equipment
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Section 1: Bid Schedule

1.	Tender No	IISc/ME/Tender/2024/Domestic/HIL Systems for Hybrid Powertrains
2.	Tender date	
3.	Instrument	HIL Systems for Hybrid Powertrains
4.	Tender type	i) Technical bid (Part A) ii) Commercial bid (Part B)
5.	Place of tender submission	The Chair, Department of Mechanical Engineering Indian Institute of Science Bangalore 560012, India Kind attention: Prof. R V Ravikrishna
6.	Last date and time of tender submission	December 4 th , 2024, 5 PM
7.	For Further clarification	Prof. R V Ravikrishna Department of Mechanical Engineering Indian Institute of Science Bangalore 560012, India. Ph: +91-80-2293-2352 email: ravikris@iisc.ac.in

Section 2: Eligibility Criteria

Prequalification criteria:

1. Quote should come only from Indian Original Equipment Manufacturer (OEM) or their Indian authorized distributor.
2. The quotations should be on FOR-IISc Bangalore basis in INR only.
3. The Bidder's firm should have existence for a minimum of 3 years (Enclose Company Registration Certificate).
4. The Bidder should belong to either Class 1 or Class 2 supplier distinguished by their "local content" as defined by recent edits to GFR. They should mention clearly which class they belong to in the cover letter.
 - a. Class 1 supplier: Goods and services should have local content of equal to or more than 50%.
 - b. Class 2 supplier: Goods and services should have local content of equal to or more than 20 % and less than 50%.
5. Bidders offering imported products will fall under the category of non-local suppliers. They cannot claim themselves as Class-1 local suppliers/Class-2 local suppliers by claiming the services such as transportation, insurance, installation, commissioning, training, and other sales service support like AMC/CMC, etc., as local value addition.

6. The bidder must provide a supporting document specifically indicating the indigenous components of the quoted product and percentage value addition locally.
7. Purchase preference as defined by the recent edits to GFR (within the “margin of purchase preference”) will be given to the Class-1 supplier.
8. MSMEs can seek an exemption to some qualification criteria. IISc follows GFR2017 for such details.
9. The bidder should sign and submit the declaration for Acceptance of Terms and Conditions as per - Annexure 4.
10. The Bidder must not be blacklisted/banned/suspended or have a record of any service-related dispute with any organization in India or elsewhere. A declaration to this effect has to be given as per Annexure 3.

Section 3: Technical Specification for the HIL Systems for Hybrid Powertrains

Submit quote for the HIL Systems for Hybrid Powertrains with following specifications.

A. Hardware-in-Loop (HIL) System for Small Hybrid Powertrains

The requirement is to set up a fully functional HIL for small hybrid powertrains that typically power two-wheelers and three-wheelers. This is to be set up around an existing a/c transient dynamometer (Motor make: ABB, Product code: 3GEB132728-HDA124633645, Drive: ACS800-11-0030-3+E202) of 30 kW capacity. The items required are described below:

Mandatory Items:

Sl. No.	Item & Description	Specification
1	HIL testbed software capable of simulating hybrid powertrains for two-wheeler (motorcycle) and small four-wheeler applications	Capable of simulating hybrid two-wheelers and small four-wheelers
2	HIL hardware with real-time controller to integrate the software with the existing a/c dynamometer	Compatible with ABB motor: 3GEB132728-HDA124633645 and Drive: ACS800-11-0030-3+E202
3	Torque Sensor	Up to 200 Nm
4	PC	minimum 8 MB RAM, minimum 2.3 MHz speed, minimum 1 TB hard drive capacity
5	Automation Control Software & Data Acquisition	• Device Under Test (DUT) Configuration, management and Safety monitoring

		<ul style="list-style-type: none"> • Storage of recorded data in user-defined sampling rate and export option for the data in user-defined format • Live monitoring of all test bench parameters • Interface options with Power Analyzer modules using protocols like TCP/IP and AK protocols • Interface options with Power supply modules using protocols like TCP/IP
6	DC-power supply with power control with simple battery simulator	Bi-Directional power supply of 15kW Voltage range: 0-210V Current range: 0-150A
7	Electric Drive Control Panel	Generic
8	Fuel temperature control system	Fuel flow rate: 10 kg/hr Temp accuracy: $\pm 3^{\circ}\text{C}$
9	Gravimetric fuel flow measuring system	Max. flow rate: 10 kg/hr

The scope of the work includes commissioning of a HIL facility for small hybrid powertrains, and satisfactory demonstration of simulation of a hybrid motorcycle using an existing 200-cc internal combustion engine mounted on the existing a/c dynamometer. The scope of work also includes training of personnel at IISc to operate the HIL facility.

B. Heavy-Duty Engine Dynamometer for a Large Hybrid Engine Hardware-in-Loop (HIL) facility

As part of a proposed HIL facility for large hybrid powertrains, a heavy-duty engine/motor dynamometer is to be procured. The details are described below:

Mandatory items:

Sl. No.	Item & Description	Specification
1	The Loading machine or Dynamometer	Max. Power: 180-210 kW

		Max. Speed: 12000 rpm Rated Speed: 4000-5000 rpm Rated torque: 450-500 Nm Cooling: Air-cooled
2	Invertor Drives for Motor	Compatible with the Motor mentioned above in item no.1
3	Torque Sensor	500 Nm (Dual range)
4	Real time Controller	Control loop scan time: 1ms PC communication: Ethernet Drive communication: CAN
5	Universal Mounting Base	Generic
6	PC	minimum 8 MB RAM, minimum 2.3 MHz speed, minimum 1 TB hard drive capacity
7	Automation Control Software and Data Acquisition	<ul style="list-style-type: none"> • Device Under Test (DUT) Configuration, management and Safety monitoring • Storage of recorded data in user-defined sampling rate and export option for the data in user-defined format • Live monitoring of all test bench parameters • Interface options with Power Analyzer modules using protocols like TCP/IP and AK protocols • Interface options with Power supply modules using protocols like TCP/IP

Optional Items:

Sl. No.	Item & Description	Specification
1	HIL (Hardware-in-the-Loop) Hardware	Compatible with above mentioned load machine
2	HIL Software	Suitable for simulating hybrid four-wheelers and trucks
3	Power Analyzer	Generic, suitable for the Dynamometer power range and voltage
4	Bidirectional Programmable DC Power Supply	250 kW
5	Coolant Temperature Control System	Generic

6	Fuel Temperature Control System	Fuel flow rate: 100 kg/hr Temp accuracy: $\pm 5^{\circ}\text{C}$
7	Gravimetric Fuel Flow Measuring System	Max. Flow rate = 100 kg/hr
8	Electric Drive Control Panel	Generic
9	Mounting Adaptors and couplings	Generic

Section 4: Terms and Conditions

1. All documentations in the tender should be in English.
2. Tender should be submitted in two envelopes (two bid system).
 - a) Technical Bid (Part-A) – Technical bid consisting of all technical details and checklist for conformance to technical specifications. The proposal should contain a compliance table. The compliance table should include all the items of the technical specifications in the same order and format. The first additional column should describe product specifications. The next column should indicate compliance in a “Yes” or “No” response.
 - b) Commercial Bid (Part-B) – Indicating item-wise price for the items mentioned in the technical bid, as per the format of quotation provided in tender, and other commercial terms and conditions.
3. The technical bid and price bid should each be placed in separate sealed covers, superscribing on both the envelopes the tender no. and the due date. Both these sealed covers are to be placed in a bigger cover which should also be sealed and duly superscribed with the Tender No, Tender Description & Due Date.
4. The SEALED COVER superscribing tender number and due date & should reach the office of the Chair, Department of Mechanical Engineering, Indian Institute of Science Bangalore 560012, India. Kind attention: Prof. R V Ravikrishna, on or before the due date mentioned in the tender notice. In case the due date happens to be a holiday, the tender will be accepted and opened on the next working day. If the quotation cover is not sealed, it will be rejected.
5. The covering letter should clearly state that whether the vendor is a Class-I or Class-II local supplier. Failing this the bid will be automatically rejected. The letter should be supported by a supporting document from the original equipment manufacturer (OEM).
6. The Bidder must not be blacklisted/banned/suspended or have a record of any service-related dispute with any organization in India or elsewhere. A declaration to this effect should be provided.
7. The lead-time for the delivery of the equipment should be clearly mentioned in the technical and commercial bids and should be within 3 months from the date of issue of PO. In any case, the last date for delivery and installation would be March 1st, 2025.
8. Wherever requested, data must be supplied along with technical compliance documents. Technical bids without supporting data will be deemed as technically non-compliant.
9. The institute reserves the right to verify the accuracy and seek clarification of submitted specifications after opening the technical bids. Based on such clarification, if specifications are found to be unsuitable, the technical committee reserves the right to disqualify vendors. Any discrepancy between the promised and verified specifications will be deemed as technical non-compliance.
10. The technical bid should also contain warranty details and terms. Further, any periodic maintenance requirements for regular operation should be specified in detail, along with the extent of coverage under warranty for such maintenance activity.

11. The bidder will provide the prerequisite installation requirement of the equipment along with the technical bid. The vendor is responsible for the installation of the system at the institute, along with the training of end-users.
12. In the commercial bid, the price should be inclusive of all discounts. The price quotation should include the cost of installation and training of potential users if any.
13. The quotations should be on FOR-IISc Bangalore basis in INR only. GST must be not more than 18%
14. Any statutory increase in the taxes after the bidder's offer, if it takes place within the original contractual delivery date, will be borne by IISc, Bangalore, subject to the claim being supported by documentary evidence. However, if any decrease takes place, the advantage will have to be passed on to IISc, Bangalore. Any information furnished by the bidder found to be incorrect, either immediately or later, would render the bidder liable to be debarred from the bidding process.
15. The vendor should have an office with qualified technical service personnel based in India and should assure a response time of less than five business days.
16. The vendor must submit a list of all customers where similar systems have been installed. References from this list can be used to disqualify vendors with a poor track record of service, build quality, system performance, or poor availability of spares. Additionally, IISc shall have the absolute right to take the opinion of other organizations for their opinion/experience about the bidder's services/sales. Based on such input, IISc may decide about the rejection of a bid of such bidder(s).
17. Notwithstanding anything specified in this tender document, IISc Bangalore, in its sole discretion, unconditionally and without having to assign any reason, reserves the rights:
 - a) To accept OR reject the lowest tender or any other tender or all the tenders.
 - b) To accept any tender in full or in part.
 - c) To reject the tender, offer not confirming the tender terms.
18. The indenter reserves the right to relax any or all of the above conditions without assigning any reason.

Annexure 1:

Details of the Bidder: The bidder must provide the following mandatory information & attach supporting documents wherever mentioned:

Sr. No.	Type	Details
1.	Name of the Bidder	
2.	Nature of Bidder (Attach attested copy of Certificate of Incorporation/ Partnership Deed)	
3.	Registration No/ Trade License, (attach attested copy)	
4.	Registered Office Address	
5.	Address for communication	
6.	Contact person- Name and Designation	
7.	Telephone No	
8.	Email ID	
9.	Website	
10.	PAN No. (attach copy)	
11.	GST No. (attach copy)	

(Signature of the Bidder)

Name:

Designation, Seal

Date:

Annexure 2:

Declaration regarding experience

To,

The Chair,
Department of Mechanical Engineering
Indian Institute of Science
Bangalore 560012, India.
Kind attention: Prof. R V Ravikrishna

Ref: Tender No:

Dated:

Sub: Supply and installation of HIL Systems for Hybrid Powertrains

I have carefully gone through the Terms & Conditions contained in the above referred tender. I hereby declare that my company / firm has ---- years of experience in supplying and installing HIL Systems for Hybrid Powertrains. My company personnel are trained and have the expertise to provide post-sale services and routine maintenance. All the necessary support will be provided on the bidded equipment as per the request of the principal investigator.

(Signature of the Bidder)

Name:

Designation, Seal

Date:

Annexure 3:

Declaration of track record

To,
The Chair,
Department of Mechanical Engineering
Indian Institute of Science
Bangalore 560012, India.
Kind attention: Prof. R V Ravikrishna

Ref: Tender No:

Dated:

Sub: Supply and installation of HIL Systems for Hybrid Powertrains

Sir,

I have carefully gone through the Terms & Conditions contained in the above referred tender.

I hereby declare that my company / firm is not currently debarred / blacklisted by any Government / Semi-Government organizations / institutions in India or abroad. I further certify that I am competent officer in my company / firm to make this declaration.

OR

I declare the following:

Sr. No.	Country in which the company is debarred/ blacklisted / having pending case	Blacklisted / debarred by Government / Semi Government Organizations or Institutions / having pending case	Reason	Time Period

(Note: In case the company / firm was blacklisted previously, please provide the details regarding period for which the company / firm was blacklisted and the reason/s for the same).

(Signature of the Bidder)

Name:

Designation, Seal

Date:

Annexure 4:

Declaration of acceptance of terms and conditions

To,
The Chair,
Department of Mechanical Engineering
Bangalore 560012, India.
Kind attention: Prof. R V Ravikrishna

Ref: Tender No:

Dated:

Sub: Supply and installation of HIL Systems for Hybrid Powertrains

Sir,

I have carefully gone through the Terms & Conditions contained in the above referred tender document. I declare that all the provisions of this tender document are acceptable to my company. I further certify that I am an authorized signatory of my company and am, therefore, competent to make this declaration.

(Signature of the Bidder)

Name:

Designation, Seal

Date:

Annexure 5:

Details of items quoted:

- a. Company Name
- b. Product Name
- c. Part / Catalogue number
- d. Product description / main features
- e. Detailed technical specifications
- f. Remarks, if applicable

Instructions to bidders:

1. Bidder should provide technical specifications of the quoted product/s in detail.
2. Bidder should attach product brochures along with technical bid.
3. Bidder should include a covering letter clearly stating that whether they are a Class-I or Class-II local supplier. The letter should be supported by a supporting document from the original equipment manufacturer (OEM).
4. Bidders should clearly indicate compliance or non-compliance of the technical specifications provided in the tender document.

Annexure 6: The bidder needs to follow the format below and provide the declaration of local content on the company letter head:

Declaration of Local Content by Local supplier

Subject: Public Procurement (Preference to Make In India)

References:

Preference to Make in India including counter offering will be as per the Public Procurement (Preference to Make in India), Order 2017 available in the following links <https://dipp.gov.in/public-procurements>

http://dipp.nic.in/sites/default/files/publicProcurement_MakeinIndia_15June2017.pdf

http://dipp.nic.in/sites/default/files/Revised-PPP-MII-Order-2017_28052018.pdf https://dipp.gov.in/sites/default/files/PPP-MII%20Order%20dt%2029th%20May%2019_0.pdf

<https://dipp.gov.in/sites/default/files/PPP%20MII%20Order%20dated%204th%20June%202020.pdf>

We hereby declare with reference to above subject and references that M/s _____ (Tick

whichever is applicable as below)

"Class-I local supplier" meeting the requirement of minimum local content equal to 50% (fifty percent) or more defined in the above government notification for the goods and services

(or)

"Class-II local Supplier" meeting the requirement of local content 20% to less than 50% (fifty percent) defined in the above government notification for the goods and services

(or)

Non Local supplier (If not belonging to Class-I & Class-II) Please

mention the details against the following: Enquiry no:

_____ dated. _____

Type of Supplier (Class-I/Class-II) Product:

Project:.....

Details of location at which local value addition will be made is as follows:

We also understand that the false declarations will be in breach of the code of Integrity under rule 175(1)(i)(h) of the General financial rules for which a bidder or its successors can be debarred for up to two years as per Rule 151(iii) of the General Financial Rules along with such other actions as may be permissible under law.

Authorized Signature M/s -----

(Signature and seal)

Place:.....

Date:.....

Section 5 – Commercial Bid

The commercial bid should be furnished with all requirements of the tender with supporting documents as mentioned under:

Items requested in the mandatory specification section

S.No	Description	Cat. Number	Quantity	Unit Price	Sub total
1.	Essential items noted in the technical specification				
2	... (details of essential items)				
3.	Warranty (years)				
4.	FOR-IISc Bangalore only				

Items requested in the optional specification section

S.No	Description	Cat. Number	Quantity	Unit Price	Sub total
1.	Optional items noted in the technical specification				
2	... (details of Optional items)				
3.	Warranty (years)				
4.	FOR-IISc Bangalore only				

Section 6 - Checklist

The following items must be checked before the bid is submitted.

1. Sealed Envelope "A": Technical Bid

Technical bid (signed by the authorized signatory and sealed) with the below documents:

- a. Annexure 1: Bidders details
- b. Annexure 2: Declaration regarding experience
- c. Annexure 3: Declaration of track record
- d. Annexure 4: Declaration of acceptance of terms and conditions
- e. Annexure 5: Details of item quoted.
- f. Annexure 6: Declaration of local content by local supplier

2. Sealed Envelope "B": Commercial Bid

Your quotation must be submitted in two separate sealed envelopes: Technical Bid (Envelope A) and Commercial Bid (Envelope B) super scribing on both the envelopes with Tender No. and due date. These envelopes should be put in a bigger cover which should also be sealed and duly super scribed with Tender No., Tender description & Due Date.