



**EXPRESSION OF INTEREST FOR DEPLOYMENT OF ALTERNATE FUEL  
TECHNOLOGIES ON MARINE ENGINE FOR FISHING VESSELS FROM  
REPUTED TECHNOLOGY PROVIDERS/KIT MANUFACTURERS**

**EOI No. ICAT/EOI/NBD/06**

**1. Text of Advertisement:**

**International Center for Automotive Technology**

Plot No. 26, Sector -3,

HSIIDC, IMT - Manesar,

Gurugram - 122050, Haryana

**INVITATION FOR EXPRESSION OF INTEREST**

**International Center for Automotive Technology (ICAT)** invites Expression of Interest (EOI) in a sealed envelope from reputed technology providers/kit manufacturers in the domain of retrofitting engine for deployment of alternate fuel technologies on Marine engines for fishing vessels. The technology providers will be required to deploy the selected technologies/kits (with approved components as per the qualification criteria) in a phased manner on the engine(s).

The technology provider will be responsible for retrofitting the marine engine with alternate fuel technology/kit at the ICAT premises. ICAT will perform the baseline emission and performance of the engines using existing fuel; and further the emissions and performance of engines will be assessed with the installation of kits. The EOI intends to bring out the details with respect to scope of services that are deemed necessary to share with the interested technology provider.

The EOI Document containing the details of qualification criteria, submission requirement, objective & scope of work and evaluation criteria etc. can be downloaded from the website [www.icat.in](http://www.icat.in).

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Further details, if any, may be obtained from **NBD Department, International Center for Automotive Technology, Plot No. 26, Sector - 3, HSIIDC, IMT- Manesar, Gurugram, Haryana** during working hours.

Last date for submission of **initial applications** for the EOI is 30<sup>th</sup> May, 2023 upto 1700 hrs. Thereinafter the applications received shall be scrutinized and evaluated fortnightly based on submissions received on 30<sup>th</sup> day of every month till the expiry of the publication time of the EOI (*i.e. 15<sup>th</sup> May, 2024 upto 1700 Hrs*) or its termination. An earlier termination date to the EOI or an extension of the same shall be communicated if deemed necessary.

Sealed envelope marked to the captioned address, containing EOI may be submitted mentioning *“EOI for deployment of alternate fuel technologies on Marine engine for fishing vessels.”* on the top cover.

Failure to furnish complete information as mentioned in the EoI documents or submission of a proposal not substantially responsive to the EoI documents in every respect will be at the technology provider's risk and may result in rejection of the proposal.

## **2. Background**

The International Centre for Automotive Technology (ICAT), Manesar, is a leading world class NABL accredited automotive testing, certification and R&D service provider under the aegis of NAB (National Automotive Board), Ministry of Heavy Industries, Govt. of India.

ICAT is providing quality services to the industry in all the domains of automotive and non-automotive development and testing. Our Accreditation includes NABL (ISO 17025:2005), VCA (UK) and CAFÉ secretariat by MoRTH.

ICAT on behalf of National Fisheries Development Board (NFDB) and Department of Fisheries (DOF) is undertaking the Deployment and Assessment of Alternate Fuel

Kits on Marine Engine via a project aimed to explore the possibilities to undertake testing of technologies/kits for operating marine engines with various alternate fuel i.e. LPG, CNG etc and to assess the retrofitted marine engine for their safety and efficiency through testing over agreed test guidelines/protocol.

### **3. Scope of Work:**

The scope of the work will include the following:

1. The applicant needs to provide valid test reports for the kit (along with reports of each constituent component) as per Annexure I by test agencies listed under Rule 126 of CMVR, 1989.
2. In case the kit supplier has sufficient experience for installation of such kits on marine engines for domestic or export requirements, however, they do not have a valid certificate as per Annexure-I referred in the previous point, the same can be accepted on agreement of ICAT with concurrence of DOF& NBDF.
3. The applicant needs to install the certified kits on the marine engine for fishing vessels for deployment of the alternate fuel technology.(matrix of engines will be provided)
4. The emission and performance of the engine will be assessed after deployment of the kit.
5. The testing will be done according to the test protocols included in the Annexure -II
6. Based on the mean test data of the test trials, the efficacy of solutions can be broadly analyzed.
7. The deployed technology/kit shall have similar performance as compared to the baseline engine performance in respect to the rated engine power while the emissions level has to be reduced as compared to the baseline emissions of the engine. If this is not the case, then technology provider must update/change the technology until approved by ICAT.

8. The final testing can be done by ICAT on satisfaction from the applicant of having deployed a certified kit.
9. The cost of support for kit installation, testing and optimization(if any) shall be collected from the applicant.

**Qualification Requirements:**

- a) The bidder shall be a legally valid entity either in the form of Proprietary firm, Partnership firm, Private Limited Company or a consortium of several firms which are registered in India.
- b) Should possess PAN card issued by Income Tax Department, Govt. of India.
- c) The bidder or any of its partners/directors etc. should not have been blacklisted/debarred by any of the government agencies or department.
- d) Bidder should have Minimum 2 years' experience as a technology provider/kit manufacturer or retrofitment of engines in the domain of alternate fuels.
- e) The bidder should have average annual turnover of Rs25 lakhs for last 3 financial years.
- f) If the bidder is a startup or an MSME, the criteria may be relaxed upon approval of competent authority from ICAT with concurrence of DOF.
- g) Bidders to comply with :
  - Rule 144 (xi) of GFR 2017 (refer Office Memorandum of Department of Expenditure dated 23<sup>rd</sup> July 2020  
<https://doe.gov.in/sites/default/files/OM%20dated%2023.07.2020.pdf>)
  - Department of Industrial Policy and Promotion (DIPP) vide No. P-45021/2/2017-PP (BE-II) dated 04.06.2020 and as revised from time to time  
(<https://dpiit.gov.in/sites/default/files/PPP%20MII%20Order%20dated%2004th%20June%202020.pdf>)

**4. Content of EOI:**

The EOI shall contain (but not limited to) the following:

- a. General Background and Overview of the firm/Individual

- b. Statement of qualification
- c. Understanding of the assignment and scope
- d. Work methodology
- e. Detailed mile stones
- f. Domestic and international experience in supplying automotive application kit(s) and marine application kit(s) along with deployment on engines(if any)
- g. Professional and local partners (if any)
- h. Technical team Strength
- i. Details of technology/kit
- j. Valid certificates of the kit
- k. Methodology or deployment and claimed/expected benefit in terms of fuel economy, emissions etc as compared to the original fuel type (Petrol/Kerosene/Diesel)

**6. Evaluation Criteria and Method of Evaluation:**

- a) EOI will be evaluated based on their past experience of handling similar type of project/work, strength of their man power.
- b) The agencies may be required to make a presentation, if required, to a selection committee show-casing their proposals.
- c) Bidders can send their queries (if any) to [udit.kaul@icat.in](mailto:udit.kaul@icat.in); [ankit.trivedi@icat.in](mailto:ankit.trivedi@icat.in); [anuraj.p@icat.in](mailto:anuraj.p@icat.in)
- d) Short listed agencies will be contacted by ICAT

**7. Infrastructure Available**

The infrastructures supplied and maintained for this activity by ICAT:

- i. Engine Test lab
- ii. Engine Mounting and fixing the engine on test lab
- iii. Consumables and Fuel (on chargeable basis)

The infrastructure required from technology provider/kit supplier:

- i. Engine retrofitment equipment and kit
- ii. Alternate fuel technology/kit
- iii. Special purpose tools for fitment with trained personnel
- iv. Tools for calibration and optimization of kit performance.

**8. Condition under which EOI is issued:**

- a) The EOI is not an offer and is issued with no commitment. ICAT reserves the right to withdraw EOI and or vary any part thereof at any stage. ICAT further reserves the right to disqualify any bidder, should it be so necessary at any stage.
- b) ICAT may shortlist the successful bidder by asking the Price bids from the technically qualified bidders through this EOI OR may float fresh tender at the discretion of ICAT's competent authority.

**9. Submission of EOI:**

Expression of interest [EOI] for the first batch of applications is to be submitted in a sealed envelope in duplicate latest by *30-05- 2023 upto 1700 hrs* to

**Kind Attn : Mr. Anuraj P B**  
**Purchase Department**  
**International Centre for Automotive Technology**  
**Plot No # 26, Sector-3, HSIIDC, IMT Manesar,**  
**Gurugram,-122050**

Thereinafter the applications shall be submitted in a sealed envelope in duplicate until *15<sup>th</sup> May, 2024 upto 1700 Hrs* to

**Kind Attn : Mr. Ankit Trivedi**  
**NBD Department**  
**International Centre for Automotive Technology**  
**Plot No # 26, Sector-3, HSIIDC, IMT Manesar,**  
**Gurugram,-122050**

The applications received after **30-05- 2023 upto 1700 hrs**, will be scrutinized fortnightly based on submissions received on 30<sup>th</sup> day of every month till the expiry of the publication time of the EOI or its termination.

**Format for submission:**

**APPLICANT'S EXPRESSION OF INTEREST**

To,

NBD Department,  
International Center for Automotive Technology  
Plot No. 26, Sector -3,  
HSIIDC, IMT - Manesar,  
Gurugram - 122050, Haryana  
Tel: 0124 - 4586111

Sub: Submission of Expression of Interest to EOI NO: ICAT/EOI/NBD/06

Dear Sir,

In response to the Invitation for Expressions of Interest (EOI) published for the above purpose, we would like to express interest to carry out the above proposed task. As instructed, we attach 2 sets of our proposal in separately sealed envelopes.

Sincerely Yours,

Signature of the applicant

[Full name of applicant]

Stamp.....

Date:

Encl.: As above.

Note: This is to be furnished on the letter head of the organization.

**EOI No. ICAT/EOI/NBD/06**

## Annexure - I (Kit Approval Requirements for individual components)

Sr. No.	LPG Kit Component	Approving/ Certifying/ Verifying Authority	Clause of AIS 026/027/ Other Rules, Standards, etc.
1a	Cylinder for four-wheelers and above	Department of Explosives, Nagpur to approve/endorse in case of foreign make	ECE-R-67-01 or IS:14899-2000 or as approved under Gas Cylinder Rules, 1981
1b	Cylinder for two-wheelers and three wheelers	Department of Explosives, Nagpur to approve/endorse in case of foreign make	ECE-R-67-01 or IS:14899-2000 Or as approved under Gas Cylinder Rules, 1981
2	Cylinder Valves/Multi-Function Valve	Department of Explosives, Nagpur to approve/endorse in case of foreign make	ECE- R-67-01 or IS: 15100-2001 or as approved under Gas Cylinder Rules, 1981]
3	Regulator/Vaporizer*	Testing or verification of certificate with test report by Test Agency as per United Nations, Economic Commission for Europe Regulation No. 67 Rev. 1	United Nations, Economic Commission for Europe Regulation No. 67 Rev. 1 Note: Regulator/vaporizer is to be tested, as per Economic Commission for Europe Regulation No. 67 (Rev.1), including endurance test for 6,000 number of cycles
4	Gas-Air Mixer*	Testing/verification of certificate with test report by Test Agency as per United Nations, Economic Commission for Europe Regulation No. 67 Rev. 1	United Nations, Economic Commission for Europe Regulation No. 67 Rev. 1
5	Petrol and Gas Solenoid Valves*	Testing/verification of certificate with test report by Test Agency as per United Nations Economic Commission for Europe Regulation No. 67 Rev. 1	United Nations, Economic Commission for Europe Regulation No. 67 Rev. 1 or equivalent standard. Note: Petrol solenoid valve is to be tested, as per Economic Commission for Europe Regulation No. 67 (Rev. 1), for endurance only at a pressure 1.5 times the working pressure for 6,000 numbers of cycles.



6	<p>Inspection, Testing and Commissioning Certificate</p> <p>(a) Leak testing</p> <p>(b) Excess flow valve test*</p> <p>(c) Automatic fill limiter*</p> <p>(d) Compartment/sub Compartment</p>	To be tested by Test Agency	Clause 14 of AIS 026/ AIS 027
7	Filling Connection	Installation on vehicle to be checked by test Agency	As per Appendix A, Clause (d) of AIS 026/AIS 027
8	Ventilation	Test Agency to verify	Clause 8 (E) of AIS 026/AIS 027
9	Testing of Conduit*	Testing/Verification of Certificate with Test Report by Test Agency as per equivalent standard	Clause 8 (F) (iii) of AIS 026/AIS 027
10a	<p>LPG fuel line exceeding 4.5 kg/cm<sup>2</sup>*</p> <ul style="list-style-type: none"> <li>● Pressure testing</li> <li>● Size of tube as per engine capacity</li> <li>● Fitment on vehicle</li> </ul>	<ul style="list-style-type: none"> <li>● Testing/Verification of Certificate with Test Report by Test Agency as per equivalent standard</li> <li>● Manufacturer's declaration to be verified by Test Agency</li> <li>● Verification by Test Agency as per Safety Code of Practice</li> </ul>	<p>Clause 9 of AIS 026/ AIS 027</p> <p>Clause 9 (i) of AIS 026/AIS 027</p> <p>Clause 9 (ii) of AIS 026/AIS 027</p> <p>Clause 9 (v) of AIS 026/AIS 027</p>
10b	<p>(b) Flexible Hose/fuel line not exceeding* 4.5kg/cm<sup>2</sup></p> <ul style="list-style-type: none"> <li>● Material</li> <li>● Fitment on vehicle</li> <li>● Pressure</li> </ul>	<ul style="list-style-type: none"> <li>● Testing/Verification of Certificate with Test Report by Test Agency as per equivalent standard</li> <li>● Verification by Test Agency as per Safety Code of Practice</li> <li>● Testing/Verification of Certificate with Test Report by Test Agency</li> </ul>	<p>Clauses 10 of AIS 026/AIS 027</p> <p>Clause 9 (ii)a of AIS 026/AIS 027</p> <p>Clause 10B, 9 (v) of AIS 026/AIS 027</p> <p>Clause 10(A)(i) of AIS 026/AIS 027</p>

		as per equivalent standard	
10c	Joints and connections to withstand Pressure without any leakage	Verification by Test Agency	Clause 9(iv) and 10(A) of AIS 026/AIS 027
11	Compartment / Sub-compartment*	Test to be carried out by Test Agency as per Safety Code Practice	Clause 8D of AIS 026/AIS 027
12	Safety check for installation of LPG system	Safety checks to be carried out by Test Agency as per Safety Code of Practice	Relevant clause of AIS 026/AIS 027
Note:-	Only the latest version of all the standards, as mentioned, shall be referred for compliance.		

<b>Annexure - II (Kit Approval Requirements for individual components)</b>			
<b>Sr. No.</b>	<b>CNG/BIO-CNG/LPG Kit Component</b>	<b>Certifying /Verifying Authority</b>	<b>Clause of AIS 028/Other Rules, Standards, etc.</b>
1	CNG/BIO-CNG/LNG Cylinder*	PESO, Nagpur to certify or endorse in case of foreign make	[Gas Cylinder Rules, 2016] or International standards as endorsed by PESO
1.1	Fitment of cylinder on vehicle	Test agency to verify as per AIS 028	Clause no. 2.3,2.5 and 2.6 of AIS 028
2	CNG/LNG (Shut off valve) Cylinder valves*	PESO, Nagpur to certify or endorse in case of foreign make	IS: 3224 (for CNG valves) or [Gas Cylinder Rules, 2016] or International standards as endorsed by PESO
3	Regulator (CNG)/Regulator and vaporizer/heat exchanger(LNG)*	Testing of the component as per IS:15713 -2006 or ISO-15500 by test agency. Alternatively, test agency to verify the test certificate or report conforming to the above standard issued by accredited testing laboratory. LNG regulator and Vaporizer/heat exchanger shall meet requirements of ECE R110 or equivalent standard	IS:15713-2006 or ISO-15500 ECE R110 or equivalent standard
4	Gas-Air Mixer*	Testing of the component as per IS: 15714-2006 or ISO-15500 by test agency. Alternatively, test agency to verify the test certificate or report conforming to the above standard issued by accredited testing laboratory.	IS: 15714-2006 or ISO-15500
5	Gas injector	Testing of the component as per ISO 15500 by test agency. Alternatively, test agency to verify the test certificate or report conforming to the above standard issued by accredited testing laboratory.	ISO 15500
6	Petrol Solenoid Valve*	Testing of the component as per IS: 15717 by test agency. Alternatively, test agency to verify the test certificate or report conforming to the above standard issued by accredited testing laboratory.	IS: 15717

6.1	Gas Solenoid Valve*	Testing of the component as per IS: 15712 or ISO-15500 by test agency. Alternatively, test agency to verify the test certificate or report conforming to the above standard issued by accredited testing laboratory. Automatic valve of LNG System shall meet requirements of ECE R110 or equivalent standard	IS: 15712-2006 or ISO -15500 Automatic Valve for LNG System: ECE R110 or equivalent standard
7	Filling Connection (NZS & NGV-1 type) for CNG/LNG receptacle	Installation on vehicle to be checked by test agency as per AIS 028	Clauses 2.2.2,2.2.3,2.2.4, 2.2.5 and 2.2.6 of AIS 028
8	Ventilation	Test agency to verify	Clauses 2.4.2 of AIS 028
9	Testing of Conduit*	Testing of the component or verification of certificate or test report as per IS: 15715 by test agency.	IS: 15715
10	CNG/BIO-CNG/LNG fuel line		
10.1	High pressure – exceeding 100kPa*	100 Kpa*	
10.1.1	Exceeding 2.15MPa — Rigid pipe — Flexible hose	Testing of the component or verification of certificate or test report as per IS: 15716 by test agency. LNG rigid pipeline shall meet requirements of ECE R110 or equivalent standard Testing of the component or verification of certificate or test report as per IS 15718 by test agency. LNG pipeline shall meet requirements of ECE R110 or equivalent standard	IS 15716 ECE R110 or equivalent standard IS 15718 ECE R110 or equivalent standard
10.1.2	Pressure upto 2.15Mpa	Testing of the component or verification of certificate or test report as per IS: 15722 by test agency. LNG pipeline shall meet requirements of ECE R110 or equivalent standard	IS: 15722 with amendments ECE R110 or equivalent standard
10.2	Joints and connections*	Testing by test agency. LNG joints & connection shall meet requirements of ECE R110 or equivalent standard	Clause 3.1.4.1, 3.2.1 (b) of AIS 028 ECE R110 or equivalent standard
11	Compartment or sub-compartment*	Testing of the component or verification of certificate or test report as per IS: 15720 by test agency.	IS: 15720

12	Specific LNG components	(a) Following specific components, as applicable shall meet requirements of ECE R110 or other international standards (b) Electronics Control Unit, Pressure and/or temperature sensor (if not part of LNG cylinder)	ECE R 110 or equivalent standard
13	Safety check for installation of CNG/BIO-CNG/LNG system	Safety check to be carried out by test agency as per AIS 028	Relevant clauses of AIS 028
*	Certificate issued by accredited test agency by the By the country of origin, Or a report. Issued by. Internationally accredited testing laboratory may also be accepted.		
Note 1:	Only the standards, as amended from time to time, as mentioned above, shall be referred for compliance.		
Note 2:	LNG system components downstream of vaporizer or heat exchanger shall be considered as CNG components.		
Note 3:	Test agency to conduct applicable CMVR test as applicable with commercial available LNG fuel.		
Reference:- ANNEXURE IX [See Para E of rule 115-B], SAFETY CHECKS FOR USE OF CNG/ BIO-CNG/LNG FUELS IN INTERNAL COMBUSTION ENGINED VEHICLES (AS PER AIS 028) AND INDIAN GAS CYLINDER RULES, 2004			