

NTPC Limited

(A Government of India Enterprise)



Invites

Expression of Interest

(EOI)

For Setting Up

A Pilot Project for Generation of Hydrogen using Waste (Municipal Solid Waste (MSW), Re-fuse Derived Fuel (RDF), Agricultural Waste, or any other suitable form of waste) along with required storage.

DOCUMENTS OF EOI

This EOI document comprises of the following sections:

- (i) Section I : EOI Information
- (ii) Section II : Introduction
- (iii) Section III : Instructions to the Applicants
- (iv) Section IV : Consideration of Response
- (v) Section V : Application Form and Annexures

Section – I

EOI Information

DETAILED NOTICE INVITING EXPRESSION OF INTEREST (EOI)**EOI No. NTPC/PE/ET&PR/EOI-02/2023-24****Date: 26.06.2023**

NTPC is Inviting Expression of Interest for setting up a pilot project for generation of Hydrogen using waste (Municipal Solid Waste (MSW), Re-fuse Derived Fuel (RDF), Agricultural Waste, or any other suitable form of waste) along with required storage.

DOWNLOAD AND TIMELINES FOR SUBMISSION OF EOI

- a. Interested APPLICANTs may download the documents of EOI free of cost from <https://ntpctender.ntpc.co.in>
- b. **Last date for submission of EOI** : **15.09.2023**
- c. **Last date for queries/ seeking clarifications** : **08.09.2023**
- d. **Date of opening of Eoi response** : **18.09.2023**
- e. **Response Validity** : **6 months from the last date for EOI Submission**

1.0 For consideration of EOI, APPLICANTs are required to e-mail signed and scanned copy of EOI duly filled and completed in all respect, through e-mail mentioned hereunder. Email: suneetmehta@ntpc.co.in / dipankarhalder@ntpc.co.in

2.0 NTPC shall not be liable for any postal/ Mail delivery issue delays whatsoever in receipt of EOI documents and EOI received after the stipulated date and time shall not be entertained. EOIs submitted without supporting document will summarily rejected.

3.0 NTPC reserves the right to reject or accept any or all applications, cancel/withdraw the EOI process without assigning any reason whatsoever and in such case, APPLICANT shall not have any claim arising out of such action. NTPC bears no responsibility or liability of any kind in reference to the EOI.

Section - II

Introduction

INTRODUCTION

1.0 ABOUT NTPC

NTPC is India's largest energy conglomerate with roots planted way back in 1975 to accelerate power development in India. Since then, it has established itself as the dominant power major with presence in the entire value chain of the power generation business. From fossil fuels it has forayed into generating electricity via hydro, nuclear and renewable energy sources. This foray will play a major role in lowering its carbon footprint by reducing greenhouse gas emissions.

The total installed capacity of the company is 72,364 MW (including JVs) own stations include 26 coals based, 7 gas based, 1 Hydro, 1 Wind, 27 Solar PV and 1 Small hydro plant. Under JV, NTPC has 9 coals based, 4 gas based, 8 hydro and 5 renewable energy projects. The capacity will have a diversified fuel mix and by 2032, non-fossil fuel-based generation capacity shall make up nearly 30% of NTPC's portfolio. NTPC Limited produces around 400 billion units of electricity annually

NTPC Limited has reported a total income INR 1779.77 billion (21.6 billion USD) in the financial year 2022-23. NTPC group achieved a net profit of INR 171.21 billion (2.08 billion USD) in the financial year 2022-23 and has been consistently paying dividends to its shareholders.

2.0 INTENT OF THE EXPRESSION OF INTEREST (EOI)

2.1 India is facing a major environment challenge associated with waste management.

Therefore, there is a need to develop sustainable and economically viable waste management system for ensuring maximum resource extraction from waste along with safe disposal of residual waste. Accordingly, NTPC has taken several initiatives for effective waste management such as waste to charcoal, waste to syngas etc. Another utility area for waste management which NTPC is exploring is conversion of waste into useable hydrogen. Converting waste into valuable sources like hydrogen, can help reduce greenhouse gas emissions, minimize landfill usage and promote more sustainable energy system.

2.2 Accordingly, NTPC is inviting expressing of interest from Indian/foreign companies who may set up a pilot project for generation of Hydrogen of capacity between 20 Kg per day (Minimum) to 50 Kg per day (Maximum) (Corresponding to RDF data as attached with EOI) using Waste (Municipal Solid Waste (MSW), Re-fuse Derived Fuel (RDF), Agricultural Waste, or any other suitable form of waste) along with infrastructure for storage of hydrogen (60 Kg) at 200 Kg/cm².

(GLOBAL INVITATION OF EXPRESSION OF INTEREST)

- 2.3** To evaluate different technologies on a same platform, various design parameter, operational data and other information sought in EOI may be furnished considering reference data of Re-fuse Derived Fuel (RDF) analysis enclosed as Annexure-5. In addition to above data corresponding to attached RDF, operational/ design data for best and worst quality of waste along with corresponding waste analysis data such as GCV, ash content, moisture, carbon, hydrogen, nitrogen, oxygen etc. for the proposed technology is to be included in EOI submission. Further, applicant shall also provide typical range of these parameters for the proposed waste based on the earlier executed/reference projects.
- 2.4** The initiative intends to demonstrate the capability hydrogen production from waste, analyze the techno-commercial feasibility, validate the performance, and subsequently develop product/solutions which can be a pathway for large scale hydrogen production that is commercially viable and sustainable. The hydrogen produced from pilot plant may be used for NTPC plant internal use, co-firing in existing NTPC gas turbines, fuel cell based microgrids, mobility etc.
- 2.5** The interested applicants will submit the technical data/ information, guarantee parameters, the total estimated project cost and shall propose the financial contribution to be shared by themselves and by NTPC and other information as sought in Section-V.
- 2.6** Based on techno-commercial analysis of the responses in the EOI and further discussions with interested parties, if it is found commercially feasible, NTPC may go for pilot installation / may not proceed with any project at this stage.
- 2.7** NTPC reserves the right to implement the project either on nomination basis or through Request for Proposal (RFP) process amongst the shortlisted parties identified through this EOI Process.
- 2.8** The response(s) received in the EOI/ information received post feasibility study will be utilized by NTPC for:
- a. Identification for suitable technologies which fits the intended use cases
- AND/OR
- b. Formulation of specifications for various systems/stages required for execution of demonstration/commercial project(s)

AND/OR

- c. Shortlisting of parties for forthcoming Request for Proposals (RFP) / tenders by NTPC for undertaking demonstration/commercial project(s)

The Applicants may express their interest in respect of their offerings along with other inputs as indicated in relevant Annexures/formats.

3.0 Indicative Role and Responsibilities of Parties for Pilot Project

Indicative roles and responsibilities of the parties for pilot project shall include but not limited to the following:

3.1 NTPC's Role:

- Land for installation and commissioning of the system within NTPC premises.
- Necessary support during operation and maintenance (O&M) of the pilot project.
- NTPC shall provide the required waste (as per the selected technology) at segregation/pre-processing/handling facility which is to be developed by the applicant.
- NTPC shall provide power supply feeder from the nearest available switchgear. However complete electrical system including cabling, termination etc., from terminal point (power supply feeder at switchgear) onward shall be in the scope of vendor.
- NTPC shall provide water (if required) from nearest available terminal point. However, water treatment (if required), connections, piping and system from terminal points onward shall be in the scope of vendor.
- Facilitate the applicant in applying for statutory clearances for the project.
- Facilitate the installation and commissioning of the system.
- Support in Data collection and analyzing the performance of the system during testing and subsequent operation.

3.2 Applicant's Role

- Design, engineering, manufacture, supply, erection, commissioning, and testing of waste to hydrogen generation plant, storage infrastructure, associated electrical, civil/ structural, control and instrumentation and other accessories required for completion of the pilot project. The scope also includes all the facilities required for storage, handling, pre-processing etc. at NTPC premises.
- Ensuring that the complete plant shall be odorless, applicable emission norm compliant, having an aesthetic environment with noise level in permissible limits.
- Providing all treatment systems to prevent discharge of harmful substances

(GLOBAL INVITATION OF EXPRESSION OF INTEREST)

- Providing enough automation to prevent human exposure to messy areas during O&M of the plant.
- O&M of the entire plant (including unloading, storage, handling, processing of the waste etc.) for a period of 3 years from the date of commissioning
- Data collection and analyzing the performance of the system during testing and subsequent operation
- Getting required statutory clearances for installation and operation of the system
- Sharing the stack and system level information for comprehensive understanding of the system
- Providing service air, instrument air and any other utility as per requirement of the proposed system
- Complete civil, structural, architectural works including survey, drainage, fencing/ boundary wall etc.

Section - III

Instructions to the Applicants

INSTRUCTIONS TO THE APPLICANTS**1.0 The Applicants should note that:**

- a. Language of the responses to EOI or any query/clarifications/correspondences shall be in English only.
- b. For expression of interest, Application Form and Annexures given in Section-V shall be duly filled and sent to NTPC by the APPLICANT in soft copy.
- c. Applicants should go through Section-I and Section-II thoroughly before filling and submitting the application form and annexures in Section-V.
- d. Applicants shall mention the name and contact details of two persons, with complete address, phone number and email id.
- e. NTPC Ltd. may, at its sole discretion, ask for additional information/ documents and/ or seek clarifications from the Applicant(s) after the Deadline for submission of response, inter alia, for the purpose of removal of inconsistencies or infirmities in their responses.

2.0 Enquiries and clarifications

Any clarifications on the EOI may be sought to the following via e-mail:

To: suneetmehta@ntpc.co.in

CC to: dipankarhalder@ntpc.co.in

3.0 Corrigendum

At any time before the last date of submission of EOIs, NTPC may, for any reason, whether at its own initiative or in response to a clarification requested by an Applicant, modify the EOI document. The amendment will be posted on the website and will be binding on the Applicants and the Applicant will give due consideration to the same, while they submit their EOIs, and would invariably enclose documents/ information, as required,

(GLOBAL INVITATION OF EXPRESSION OF INTEREST)

on account of the amendment, as a part of the EOI. NTPC may, at its discretion, extend the deadline for the submission of EOIs.

4.0 Preparation of the response to EOI

The application of EOI shall consist of Annexure-1, 2, 3 and 4 of Section-V.

5.0 Validity of the responses

The Applicant shall submit the responses which shall remain valid up to six (6) months after the response Deadline ("Response Validity"). NTPC reserve the right to reject any response, which does not meet the above-mentioned validity requirement.

NTPC may solicit the Applicant's consent for an extension of the period of validity of the response. The request and the response in this regard shall be in writing. In the event any Applicant refuses to extend its response validity as requested by NTPC, NTPC shall terminate processing of such Applicant's responses. An Applicant accepting NTPC request for validity extension shall not be permitted to modify its response.

6.0 Submission of the response to EOI

The responses to the EOI are to be submitted in soft copy via below e-mail format-

To: suneetmehta@ntpc.co.in

CC to: dipankarhalder@ntpc.co.in

Ref. EOI No.

Dated

Submitted to:

Name, designation & address of the concerned officer of NTPC

Submitted by:

Name, address & contact no. of the Applicant

All the pages of the response should be duly stamped and signed by the authorized signatory. The responses to the EOI should be submitted within the deadline at the e-mail address provided in the Section-I of this EOI.

7.0 Costs and expenses towards response to EOI

The Applicants shall be responsible for all the costs associated with the preparation of the response and participation in discussions and finalization & execution of the documents related with this EOI, NTPC shall not be responsible in any way for such costs, regardless of the conduct or outcome of this short-listing/ selection process.

8.0 Disclaimer

This Expression of Interest (EOI) has been prepared by NTPC Ltd. for response from Indian/Global Company/their Consortium/Affiliates/Representatives for setting up a Pilot Project pilot for generation of Hydrogen using Waste (Municipal Solid Waste (MSW), Refuse Derived Fuel (RDF), Agricultural Waste, or any other suitable form of waste) along with required storage.

In submitting the response to the EOI, the Applicant certify that it understands, accepts, and agrees to the disclaimers on this page. Nothing contained in any other provision of the EOI nor any statements made orally or in writing by any person or party shall have the effect of negating or superseding any of the disclaimers set forth herewith.

Section-IV

Consideration of Response

CONSIDERATION OF RESPONSE**Responsiveness check**

The responses submitted by Applicants shall be scrutinized and may be rejected in following conditions-to establish interest in setting up Pilot Project for generation of Hydrogen using Waste (Municipal Solid Waste (MSW), Re-fuse Derived Fuel (RDF), Agricultural Waste, or any other suitable form of waste) along with required storage. Responses shall be deemed non-responsive for following reasons:

- Responses that are incomplete, i.e., not accompanied by any of the applicable formats inter-alia covering letter power of attorney, applicable undertakings, provided in more details at annexure in Section-V.
- Responses not signed by authorized signatory and / or stamped in the manner indicated in this EOI.
- Material inconsistencies in the information/ documents submitted by the Applicant
- An Applicant submitting more than one response to this EOI either itself or through an affiliate or subsidiary company.
- Response validity being less than that required as per Clause 5 of section-III of this EOI.
- Response being conditional in nature.
- Response not received by the response Deadline.
- Response having Conflict of Interest.
- Applicant delaying in submission of additional information or clarifications sought by NTPC, as applicable.

All bids that shall meet the responsive check requirements set out above in this section of the EOI document shall be considered as responsive. In case of non-submission of relevant details as above, the responses may be considered as “**non-responsive**”, at the sole discretion of NTPC and will not be considered further.

Section-V

Application Form & Annexures

Annexure-1**FORMAT FOR COVERING LETTER CUM UNDERTAKING**

(The covering letter should be on the Letter Head of the Applicant)

Date : _____ Place : _____

To,

.....

Sub.: (INVITATION FOR EXPRESSION OF INTEREST)

Ref.: EOI No. _____, dated _____ (the "EOI")

Dear Sir,

We, the undersigned [insert name of the "Applicant"] having read, examined, and understood in detail the **(INVITATION FOR EXPRESSION OF INTEREST)**.

We confirm that neither we nor any of our Parent Company/ Affiliate/ Ultimate Parent Company has submitted response other than this response directly or indirectly in response to the aforesaid EOI.

1. We give our unconditional acceptance to the EOI, issued by NTPC, as amended. In token of our acceptance to the EOI, the same have been signed & stamped by us and enclosed to the response. We hereby confirm that the provisions of the EOI shall be binding on us.
2. We have submitted our response strictly as per provisions and formats of the EOI, without any deviations, conditions and without mentioning any assumptions or notes.
3. We hereby unconditionally and irrevocably agree and accept that the decision made by NTPC in respect of any matter regarding or arising out of the EOI shall be binding on us. We hereby expressly waive any or all claims in respect of EOI process. We confirm that there are no litigations or disputes against us, which materially affect our ability to participate or function under the obligations regarding EOI.

(GLOBAL INVITATION OF EXPRESSION OF INTEREST)

4. Details of the contact person are furnished as below:

Name:

Designation:

Address:

Contact numbers:

email id:

5. We are enclosing herewith the entire response containing duly signed formats in electronic format sent via email to: suneetmehta@ntpc.co.in as per the EOI for consideration.

6. It is confirmed that our response is consistent with all the requirements of submission as stated in the EOI and subsequent communications from NTPC, if any.

7. The information submitted in our response is complete, strictly as per the requirements stipulated in the EOI and is correct to the best of our knowledge and understanding. We would be solely responsible for any errors or omissions in our response.

We confirm that all the terms and conditions of our response are valid for acceptance for a period of six (6) months from the response Deadline.

8. We confirm that we have not taken any deviation so as to be deemed "**Non-Responsive**" as stipulated in Section-IV of this EOI.

9. We understand that you are not bound to accept any response you receive.

10. We declare that our firm is neither put on Holiday or Black-listed by any Government / PSU / Private firm or Financial Institution.

11. We understand that you are not bound to accept any response you receive.

We remain,

Yours sincerely

(Name, Designation and Signature of Authorized Person)

Annexure-2**APPLICANT'S ORGANIZATION DETAILS TO BE SUBMITTED BY APPLICANT**

(Note: Documents in support of meeting the respective requirement shall be submitted by the Applicant.)

- 1) Name of the Company
- 2) Legal status of the Company
- 3) Brief description of the Company including details of its business groups/subsidiaries/affiliates:
- 4) Existing Manufacturing facilities – Locations, Capacity
- 5) Date of Incorporation:
- 6) Date of Commencement of Business:
- 7) Full address including Telephone nos. / Fax nos.:
 - a. Registered Office:
 - b. Head Office:
 - c. Address for communication:
 - d. Contact Details:
 - e. Office Address in India, if any:
- 8) Collaborations/tie-ups with manufacturer (if applicable),
- 9) Details of Indian parties, if any, for installation, supply, services, and collaboration
- 10) Financial Data of Organization (Attach Relevant document in proof of same)

Applicant is requested to submit Annual financial turnover during the last three (3) preceding financial year. Applicant to submit audited Balance Sheet and Profit & Loss account for the above three financial years.

	Financial year 2021-22	Financial year 2020-21	Financial year 2019-20
Turnover			
Net worth			
Profit			

Annexure-3**TECHNICAL INFORMATION TO BE SUBMITTED BY APPLICANT**

Applicant shall duly furnish following information.

1.0 About the Technology and Technology Provider

Applicant shall fill the required details and attach relevant documents as per Table-1, Clause-A and Clause-B, Annexure-4.

2.0 About the Reference Plant

Applicant shall fill the required details and attach relevant documents as per Table-1, Clause-C, Annexure-4.

3.0 About Proposed Pilot Project

Applicant shall fill the required details and attach relevant documents as per Table-1, Clause-D, Annexure-4.

4.0 Budgetary Cost:

4.1 Estimated total capital investment for the proposed pilot project with cost breakup of all major components preferably as listed below along with scope of supply and services, inclusions, exclusions, terminal points, facilities required at site, tentative project schedule:

- Waste to Hydrogen Generation System and associated equipment
- Waste Storage, handling, pre-processing and associated equipment
- Hydrogen compression system
- Hydrogen storage facilities
- Civil/Infrastructure requirement
- Control System
- Installation and Commissioning
- Miscellaneous Items
- Package BOP, as applicable (Transformer / Inverters/ control systems etc. as required for completion of the pilot project)
- Safety and protection systems

4.2 Estimated Annual O&M cost with spares and consumables.

(GLOBAL INVITATION OF EXPRESSION OF INTEREST)**Note:**

- Applicant shall separately mention taxes, duties, freight, insurance applicable for above items/project.
- Applicant shall mention budgetary cost equipment supply for Indian item and imported item separately.
- Financial contribution by the party/ proposed mode of project execution

5.0 Project Timeline:

Applicant shall mention project completion period from award of job till Commissioning and Guarantee Test Run with necessary details.

(Sign & Company Seal)

Authorized signatory

Annexure-4**(Technical Data)****Note: Applicant to attach relevant/supporting documents**

Sl. No.	Description	Applicant to fill
(A) About the Technology Provider		
1.	Type of Waste to Hydrogen Generation technology proposed by Applicant	
2.	Whether Technology is owned by Applicant	Yes/No
a)	If no, Name of Technology owner/ developer/ IP Owner	
b)	Registered office of Technology owner/ developer/ IP Owner	
c)	Whether Applicant has technology tie up/ collaboration with Technology owner/developer/ IP Owner	Yes/No (Attached copy of Technology tie up/ collaboration agreement)
d)	Validity period of agreement	
(B) About the Technology		
1.	Write up of the proposed technology indicating working principle, major operating parameters/ conditions, type of waste required, input requirements (waste quality, power consumption, utility requirement), pre-processing technology, effect of input waste parameters, startup time etc.	
2.	Process flow diagram with write up	
3.	Process flow diagram with Write up for BOP system	
4.	Technology Readiness Level	
5.	Best use case, Merits and Demerits and limitations of the technology	
6.	Comparison with other waste to hydrogen technologies	
7.	Hydrogen generation data (purity, pressure, temp., impurities etc.)	
8.	Scalability and Modularity aspect	
9.	Feed rate, power, water and other utility requirement per Kg of H ₂ generation	
10.	Details of effluent generation (CO ₂ , tar, tail gas, any other emissions) per Kg of H ₂ generation	
11.	Overall Efficiency and parameters affecting efficiency/ performance	
12.	Any other relevant details (as applicable)	
(C) Details of reference pilot/commercial Installations		
1.	Name of project where Applicant/ Its Collaborator/ associate installed / is installing the proposed waste to H ₂ technology	
2.	Name and address of owner of plant	
3.	Scale of plant	(Commercial/ pilot plant)
4.	Design capacity (Hydrogen production in Kg/hr)	

(GLOBAL INVITATION OF EXPRESSION OF INTEREST)

5.	Date of award			
6.	Date of completion of plant			
7.	If installation not yet completed, Present status and date of expected completion			
8.	Scope of work of Applicant (Furnish copy of LOA)			
9.	Hydrogen purity, constituent of impurity details			
10.	Output pressure, temperature of generated hydrogen			
11.	Mass and Energy Balance Diagram			
12.	P &ID of main system and BOP			
13.	Type of waste and waste feed rate			
14.	Analysis of waste for which plant is designed (GCV, moisture, carbon, ash, oxygen, nitrogen etc.)			
15.	Equipment wise Break up of Power consumption of main system and BOP			
16.	List of other utilities with quantity			
17.	List of equipment and capacity including handling, conveying, and processing system			
18.	Land footprint,			
19.	Efficiency			
(D) Details of the Proposed Pilot Plant (Waste to Hydrogen Generation)				
		Design Waste (Ref. analysis as attached)	Best waste*	Worst waste**
1.	Design capacity of hydrogen			
2.	Hydrogen purity, constituent of impurity details.			
3.	Output pressure, temperature of generated hydrogen			
4.	Waste quality (Analysis of waste like GCV, Moisture, Ash, sulfur etc to be indicated)			
5.	Required Feed rate of waste			
6.	Mass Energy Balance Diagram			
7.	Process flow diagram indicating parameters (Temp. Pressure, flow rate etc.) at inlet and outlet of each stage of process			
8.	Thermal efficiency and Overall Plant Efficiency (Net efficiency)			
9.	Hydrogen production per Kg of waste			
10.	Capacity of handling / processing / feeding system			
11.	List of equipment with rated capacity			
12.	Electrical load list of each equipment			

Note: *Best Waste: Maximum GCV and composition of waste along with hydrogen generation to be indicated.

**Worst Waste: Minimum GCV and composition of waste along with hydrogen generation to be indicated.

(GLOBAL INVITATION OF EXPRESSION OF INTEREST)

13.	Utility			
(a)	Total Power consumption and Installed load of Plant			
(b)	Process Water			
(c)	Flow (m3/hr)			
(d)	Pressure (kg/cm2)			
(e)	Cooling Water			
(f)	Total Flow (m3/hr)			
(g)	Make requirement (m3/hr)			
(h)	Pressure (kg/cm2)			
(i)	Instrument Air (Nm3/hr)			
(j)	Service Air (Nm3/hr)			
(k)	Steam (TPH) (if require) (Specify pressure & temp)			
(l)	Others, if any. Please specify			
14.	Effluent Generation data (per Kg of H2) with Quality: <ul style="list-style-type: none"> - Solid (if any) - Liquid (if any) - Gaseous (if any) In case of any effluent, include details of treatment required. Energy for effluent removal			
15.	Land Area Required (m2)			
16.	P &ID of main system and BOP			
17.	Whether system is compatible for the waste type and quality as provided in the EOI.	Yes/No (If no, please furnish type of waste with its analysis for which system is designed.)		
18.	Land footprint			
19.	Min. turndown load			
20.	Startup time (up to full load)			
21.	Expected life of entire project as a whole (Years)			
22.	Annual maintenance requirement Maintenance Activities with frequency.			
23.	No. of shutdown days per year			
24.	Terminal Points and Exclusions			
25.	Compressor and storage details			
a)	Power consumption for compressor and motor rating of compressor (KW)			
b)	Type of compressor and capacity (m3/hr)			
c)	Cooling Water Requirement for compressor			
d)	No. of stages of compressor			
d)	Storage vessel type, capacity, design pressure, material of vessel			

(GLOBAL INVITATION OF EXPRESSION OF INTEREST)

26.	O&M details	
27.	Safety Aspects	
28.	Spares and Consumables	
29.	Guarantee/Warranty offered for the proposed pilot plant	
30.	Previous experience in implementing the proposed technology	
31.	Engineering strength of Applicant	
32.	Any other technical details, applicant would like to highlight about the proposed technology	
33.	Input data (if any) required from NTPC	
Guarantee Conditions		
34.	Hydrogen Production in standard operating conditions (Kg/hr)	
35.	Pressure of H2 produced (Bar (g))	
36.	Minimum purity of hydrogen (%) by volume	
37.	Maximum moisture content (ppm)	
38.	Maximum oxygen in Hydrogen (ppm)	
39.	Any other impurity (applicant to specify limits)	
40.	Degradation Factor	
Other Data		
41.	% of Indian content of equipment supply	
42.	% of Imported content of equipment supply and source of country	
43.	Completion schedule of project (in month)	
44.	Financial contribution to be shared by Applicant (% of total Project cost)/proposed mode of execution	
45.	In case Applicant has technology tie up/collaboration with technology owner/ developer/IP Owner, detail scope of technology support from collaborator to be indicated	
46.	Details of clearances and approvals required prior to implementation	

(GLOBAL INVITATION OF EXPRESSION OF INTEREST)

Annexure-5

(Reference Data for Refuse Derived Fuel—RDF)

FUEL COMPOSITION	
C (%)	46.54
H2 (%)	4.72
Moisture (%)	13.35
S (%)	0.10
Ash (%)	15.00
N2 (%)	3.80
O2 (%)	16.40
Chlorine (%)	0.10
SUM	100
GCV (Kcal/Kg)	3000