



NATIONAL INSTITUTE OF SOLAR ENERGY
(An autonomous Institute of Ministry of New & Renewable Energy) Surya Bhawan: Gwal Pahari: Faridabad-Gurgaon Road, Gurgaon 122003, Haryana

Invitation of Expression of Interest for setting up of a rice husk based gasifier power plant in Guyana, South America

1. The Ministry of New and Renewable Energy, Government of India, has committed to setup of 32kWe rice husk based power plant in Guyana, South America. The aim of the project is to accelerate the adoption of environmentally sustainable biomass power technologies and explore the market potential of biomass gasifier in Guyana.
2. Guyana, is a country in north-eastern South America. It has an Atlantic Ocean coastline in the northeast, and lies between Suriname to the east and Venezuela to the west, with Brazil to the south with 215,000 square kilometer area. The name Guyana means "Land of many waters." Since it was colonized by British, the legacy of British rule is reflected in the country's diverse population, which includes Indian, African, Amerindian, and multiracial groups.
3. Paddy is a main crop of Guyana. According to Head of the Guyana Rice Development Board (GRDB), paddy production was 1,058,129 tones per year, equivalent to 687,784 tons of rice or equivalent to 171,946 tons rice husk per year. Therefore, it has a huge potential of biomass energy.
4. Two different proposals are invited, from Indian Companies only, for the installation and commissioning of 32kWe rice husk based biomass gasifier power plant in Guyana using 100% producer gas engines for the power generation. First proposal is for grid connected power generation (32kWe) and, second proposal for off grid power generation (32 kWe). The details for both the systems are given below:
 - a. **Grid interactive system:** The system should consist of a down draft rice husk based gasifier, gas cleaning and cooling system, two numbers of engine generator for operating 24X7. The power plant should also be connected to the grid.

Particulars	Unit	Specification
Down draft Gasifier	1	60kW(thermal)
Gas filter	2	
Engine generator	2	32kWe
Transformer, synchronizer, Converters and transmission lines.	1	

- a. **Off grid system:** The other system should consist of a down draft rice husk based gasifier, gas cleaning and cooling system and an engine generator for operating. The plant should be able to operate at least 20 hr/ day.

Particulars	Unit	Specification
Down draft Gasifier	1	60kW(thermal)
Gas filter	1	
Engine generator	1	32kWe

Sr. No.	Parts / Sub Unit	Material of Construction & its Specification (Normative)
i)	Hopper	MS, Sheet Thickness ≥ 3 mm
ii)	Combustion & Reduction Chamber	SS Alloys / MS with Refractory lining Sheet Thickness ≥ 3 mm
iii)	Gas Blower	All SS / MS with Epoxy Coating Sheet Thickness ≥ 3 mm
iv)	Gas Cleanup Train including cyclones, scrubbers, filters etc.	All SS / MS with Epoxy Coating Sheet Thickness ≥ 3 mm

5. Material Specifications for Critical Components (following are the indicative minimum specifications and should not be construed as fixed for all models. Manufacturers are to improve keeping in view the structural requirements and life of the system for higher capacities)

I. Average Composition of Gas

CO	18-25 %	H ₂	13-15%	CH ₄	3-5%
CO ₂	5-10 %	N ₂	45-54%		
Heavy Hydrocarbons	0.2 – 0.4				

II. Calorific Value of Gas Produced ≥ 1000 kcal/ nm³

III. Gasification Efficiency

For Rice Husk	NLT 65% (Hot gas) NLT 60% (Cold gas)
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vi) Maximum Permissible Levels of:

	Naturally Aspirated Engines	Turbo-charged Engines
1) Tar Content of Gas	100 mg/nm ³	25 mg/nm ³
2) Particulate Content of Gas	50 mg/nm ³	25 mg/nm ³
3) Total Tar and Particulate (TTP)	150 mg/nm ³	50 mg/nm ³

vii) Engine Exhaust Emissions

As per Prevailing Norms of Central pollution control Board.

6. Terms and Conditions

- I. Cost towards the project should include shipping, installation & commissioning of the power plant at the site and training to the users/technicians.
- II. Proper training to be given to the operator assigned by Govt. of Guyana for the operation and maintenance of the power plant.
- III. One year operation and maintenance should be taken care by the manufacturer/ project developer including spare works. (Time period will be considered from the date of commissioning)
- IV. Project developer /Manufacturer has to provide an inventory for the period of five year.
- V. Cost should also include the all the associated tax and surcharges, Customs duty whatever applicable so.

7. Selection criteria

The Technical committee will select the suitable supplier -:

- I. Cost and technical competency of the project.
- II. Experience in similar kind of projects in India and abroad.
- III. Must have good training resource.
- IV. Present status and financial health of the Project Developer for taking up such project
- V. Type of gasification technology and configuration of the project to improve overall efficiency of the plant; and
- VI. Time schedule for implementation of the project.

8. Other Conditions

1. This is an international project and Govt. of India is committed to deliver a good service. Therefore, MNRE is very strict with the project timeline, quality of machineries and services.
 2. The Ministry reserves the right to reject any or all the proposals submitted in response to this EOI without assigning any reasons whatsoever;
 3. The proposals can be sent by Registered Post / Courier or in Person, so as to reach the address mentioned before 21st November 2016,15:00 hours.
 4. NISE shall not be responsible for any delay in submission of the proposal. Any proposal received by the NISE after the deadline will not be considered.
9. Expression of Interest (EOI) is invited from gasifier manufacturers and project developers for setting up of a grid connected rice husk based biomass gasifier power plant in Guyana. Interested organizations / project promoters can submit two separate proposal for both the systems, grid connected and off grid. Proposal should be in the prescribed formats in two parts i.e. Part-I containing technical details for setting up a grid connected rice husk based gasifier power plant, and Part-II containing only financial invoice in a separate sealed envelope, captioned as technical bid and financial bid respectively. Both the technical and commercial envelopes should be kept A-4 size sealed envelope superscripted as EOI for "Setting up a Grid connected rice husk based gasifier power plant in Guyana" **Director General, National Institute of Solar Energy, Gwalphari, Gurgaon, Haryana-122003** , Email : sk.singh.mnre@nic.in. The last date for submission of the proposal is 21st November 2016, 15:00 hours.
10. The Ministry reserves the right to reject all or any of the proposals without assigning any reason

Annexure-I

Sl.No.	Particulars	Details
1.	Name of the Organization with complete Postal Address Tel. No's/Fax/Web site:	
2.	Name of the contact person (Director or above) Designation Mobile Telephone No: Email ID	
3	Experience of the Company	
	Nos. of grid connected biomass based gasifier power project (Within India and abroad)	
	No.s of rice husk based gasifier power plant installed : (Within India and abroad)	
	Others if any,	
4.	Name of the Head of the Organization	
5.	Nature of the any other Programme carried by the Organization	
6.	Banker's Name and Address with PAN Number	
7.	Details of the Technical staff competency.	

Certified that all the information furnished above is true to my knowledge

I have no objection to MNRE/NISE verifying any or all the information furnished in this document with the concerned authorities, if, necessary , I also certify that, I have understood all the terms and conditions indicated in the EOI and in agreeing for the same , I am signing this document as an authorized signatory in the capacity of

Date:

Signature:

Place:

Name:

Seal of the Organization

Designation:

Annexure 2

1. Financial for grid connected biomass gasifier system

Financial for decentralized system				
Items		quantity	Unit cost in Rs	Total cost (Rs)
Gasifier				
	Reactor	1		
	Gas cooling and cleaning unit	2		
	Generator	2		
Equipment for grid connection				
Training cost				
Cost for one year operation and maintenance				
Spare parts for each year (kindly attach the list of spare parts with quantity)		5years		
Transportation				
Installation and commissioning charges				
Others Miscellaneous				
Tax, Customs duty, and other surcharges if any,				
Total				

2. Financial for off grid biomass gasifier system

Financial for decentralized system				
Items		quantity	Unit cost in Rs	Total cost (Rs)
Gasifier				
	Reactor	1		
	Gas cooling and cleaning unit	1		
	Generator	1		
Training cost				
Cost for one year operation and maintenance				
Spare parts for each year (kindly attach the list of spare parts with quantity)		5years		
Transportation				
Installation and commissioning charges				
Other				
Tax, Customs duty, and other surcharges if any,				
Total				

Contact details for any query

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