

CORRIGENDUM & REPLIES TO THE QUERIES RAISED BY VENDORS AGAINST NIT No: NU/ENGG/50/3B/NIT/2019-20/Re01/05 Dated 28.01.2021 FOR Design, Supply, Installation, testing & commissioning of Bio Gas Based Co Generation Engine and Biomethanation Plant along with the comprehensive Operation & Maintenance work initially for five years at permanent campus of Nalanda University (NU), Nalanda, Rajgir, Bihar (**Package -3B**) & NU/ENGG/66/2020-21/NIT/06 Dated 28.01.2021 For Supply of Bio Feed Raw Material: Survey, collection, Loading, Transportation, Unloading of requisite quality of the Bio Feed Raw material as per the University requirement for the digestion and generation of the biogas through anaerobic biogas digester. Initially for five years at permanent campus of Nalanda University (NU), Nalanda, Rajgir, Bihar (**Package-3B1**) (Phase I).

Prospective Bidder-1

Item No.	As per Tender	Query	Comments/reply
1	Fiber Glass Make Should also be considered	Fiber Glass Products are more durable	Required specifications and purpose of use. Depending on tank size and capacity we can consider.
2	Feed Collection & Biogas Production	i. Since Biogas Production & feed collection are complementary to each other, so it should be kept in same tender. ii. If done separately there will always be mismatch between Raw material supplier & Bio-gas supplier.	Bidder can participate in both the tenders. PMC will be appointed for smooth operation and proper communication between both the contractors.
3	e Cart	Since Biogas is available in purified form so Bio-CNG vehicle should also be allowed	We can accept CNG Vehicle request. But to use Bio-CNG at NU Campus, bidder should invest in required Bio-CNG filling station, additional capacity of digester to generate additional Biogas for vehicles and purification system for self consumption.
4	Gas Supply Rate Analysis		Changes not requested
5	Feed Supply analysis details		Changes not requested

Prospective Bidder-2			
Item No.	Query	remarks from bidder	Comments/reply
1	Pg. 4 This tender is invited for Supply, Installation, testing & commissioning of Combile Heat & Power (CHP) Engine and biomethanation plant	In order to receive competitive bidders CHP work with 5 years O&M and biogas plant tender may be published separately.	JV is allowed in this tender. Two parties with their experience and expertise can bid jointly.
2	Pg.4 (3.1) Gas generation this includes the segregation and processing of Organic feed for the Biomethanation plant at the digester site, operation and maintainance to undertake the biogas generation of requisite quality.	Segregation must be the scope of the raw material supplier (organic waste). Expected 100% segregated waste but at least 90% segregated feed material assurance required on daily basis to operate the biogas plant	As per the tender condition for waste collection and transportation, the bidder should provide feed material with proper quality and quantity. Project Officer will monitor the quality and quantity of the waste supplied.
3	Pg. 11 While submitting the offer, the intending bidder has to consider the co-ordination and providing requirement of feed in different combination in consultation with the feed collecting mechanism considering seasonal and impact for waste/feed viability in local vicinity for optimal generation of the gas.	Change in feed material will affect the quality and quantity of biogas production, hence the desired output to run the CHP engine may get affected if feed material is not constant. Segregated feed material and its type shall be available on-hand to achieve the output to run both 200KWe and 1000KWe.	As specified in the tender that both the parties should conduct site visit and check the available feed material to generate required quantity of biogas. Depending on the available seasonal feed material in the vicinity of 150 Km from NU campus waste collection and transportation bidder will supply the feed material for biogas generation. A sute visit certificate is mandatorily required to be submitted along with your bid.

4	Pg. 195, 13 CAMPUS WASTE MANAGEMENT: The successful bidder will design and formulate the campus waste management required for the bio digester feed as much as possible from the University campus.	It shall be the scope of raw waste supplier and it shall be segregated and provided to the site where the biogas plant is proposed.	As per the Waste Collection and Transportation tender, the successful bidder has to collect segregated waste from University campus and provide at dedicated location at Biogas site.
5	Pg. 203, Biogas Requirement: 1st Year - 110NCUM x 24 Hours x 365 days - Expected 75% requirement 2nd Year - Onwards: 110 NCUM x 24 Hours x 365 Days. The gas supplier will take re-confirmation on the gas as per the actual.	With 110 cum for 24 h approx. 2500 cum biogas required which will be sufficient to run 200 KWe CHP engine. What is the proposed plan for 1000 KWe CHP engine?	As mentioned in the tender document, PNG will be provided to the bidder to run 1000 KWe CHP engine.
6	Pg.5, 1 General Arrangement c,i - CHP(a) 200KWe Biogas based Engine	Vendors are providing 175 KWe or more than 200 KWe biogas based CHP engines only. Capacity shall be reduced to 175 KWe CHP engines.	This change is accepted.
7	Pg. 5, 1 General Arrangement c, i - 1000KWe - Dual fuel based (PNG & Biogas both) with hot water recovery arrangement	Purpose of PNG usage in CHP engine is not clear while biogas is produced from the proposed biomethanation plant for use in 200 KWe and 1000 KWe.	2500 cum biogas will be produced every day to run 200KWe CHP engine. PNG will be provided to run Dual fuel based (PNG & Biogas both) 1000KWe

8	<p>Pg. 38, Gas cascade system - The Gas cascade system shall comprise of Gas cylinders, interconnecting pipes, Cascade Frame, Base Support, Lifting arrangement for Cascade, Necessary pressure gauges, Valves, inlet and outlet manifold in SS 316 / Brass material, etc. The Cylinder shall be made out of High Pressure seamless steel and the cylinder shall confirm to IS: 7285 Part-II Version. All the tests mentioned in the IS code shall be done during manufacturing and shall be submitted along with the invoice. The Cylinder shall be coated with epoxy paint of approved quality to safeguard the cylinder from rusting.</p>	<p>Purpose of gas cascade system is not clear and its usage.</p>	<p>The multi purpose AIM especially for the exigency circumstances are: I. Mainly for the transportation of CNG/PNG gas from nearest /suitable station, II. Otherwise also for the storage of gas, and III, change of sources in case of dual system especially for 1000KW CHP,</p>
9	<p>Pg. 39, Scope of work - Design of the Biomethanation plant capable of generating 110 cum per hour of Bio gas continuously for 24 hours and 365 days</p>	<p>The biogas thus generated will be around 2500 cum which can be used to run only 200 KWe CHP engine for 24 hrs and the purpose of having 1000KWe CHP engine is not clear when all the biogas produced will be utilized in 200 KWe CHP engine itself.</p>	<p>2500 cum biogas will be utilised to run 200KWe CHP engine. Required capacity of PNG will be provided to run 1000KWe CHP engine.</p>

10	Pg. 40, Feed handling section, civil - Press Mud Storage Shed (if press mud is available)	Feed material type, availability and supply to be informed before the design of the biogas plant	As specified in the tender that both the parties should conduct site visit and check the available feed material to generate required quantity of biogas. Depending on the available seasonal feed material in the vicinity of 150 Km from NU campus waste collection and transportation bidder will supply the feed material for biogas generation. Depending on the site survey and available seasonal feed material, bidder should design their biogas plant.
11	Pg. 43, CSTR Anaerobic Digester Section - Volume approx. 2500 cum, RCC conforming to the site requirement for 200KW CHP.	From 2500 Cum biogas 200KWe CHP engine can be used. Proposed plan to run 1000KWe CHP which requires > 11000 cum per day is not provided in the tender and shall be clearly spelled out.	PNG will be provided to run 1000KWe CHP engine.
12	Pg. 44 Compress or for Bottling Bio Gas - For compressing Bio gas for Efficient storage in Cylinders for future usage with minimum capacity of 25 m3/hr	Requirement of Biogas purification plant is not specified in the tender and need of compressing biogas shall be spelled out for clear understanding.	Purification unit is to filter the impurity, and purify the Biogas. This will help for the better performance and efficiency of CHP ENGINE. Comparatively, It will be also be helpful to have low maintenance and less frequency in the filter cleaning of CHP unit.
13	Methods of production for slurry drying to manure	Not clearly spelled out the production of organic solid fertilizers	Slurry generated after biogas formation should be dried properly and convert into manure for garden or agricultural usage.

14	General	<p>100% Feed material assurance for running 1000KWe and 200KWe CHP engines which requires approximately 14000 cum biogas per day i.e. 550 cum biogas per hour. As you are aware, different raw material have different biogas yield, it is essential to have on hand information on the quantity and type of waste material available for the biogas plant before the tender submission which will be helpful and essential for designing the plant.</p>	<p>As mentioned in the tender document, 2500 cum biogas generated by the bidder will be utilised to run 200KWe CHP engine. Required capacity of PNG will be provided to run 1000KWe CHP engine. As specified in the tender that both the parties should conduct site visit and check the available feed material to generate required quantity of biogas. Depending on the available seasonal feed material in the vicinity of 150 Km from NU campus waste collection and transportation bidder will supply the feed material for biogas generation. Depending on the site survey and available seasonal feed material, bidder should design their biogas plant. Table of raw material quantity and biogas generation quantity as provided in the tender document for ready reference.</p>
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15	General	The estimated price for biomethanation plant with 110 cum per hr output is provided in the tender as approx. Rs. 4 crores. But to run 1000 KWe and 200 KWe CHP engines the approx., biogas requirement is 14000 cu m per day. Hence, we require two digesters of 7000 cu m depending upon the feed material and its type to run the CHP engines and approx. cost require only for biomethanation plant including purification plant, compressors and excluding cascade cylinders will be approx. Rs.14 crores.	As mentioned in the tender document 2500 cum biogas generated by the bidder will be utilised to run 200KWe CHP engine. Required capacity of PNG will be provided to run 1000KWe CHP engine. So no need to install additional capacity biogas to run 1000 KWe CHP engine.
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Prospective Bidder-3

Item No.	Type	Query	Comments
1	Feedstock Mix	In the tender for solid collection a wide range of different feedstock is given but no fix feedstock mix is specified.	As specified in the tender that both the parties should conduct site visit and check the available feed material to generate required quantity of biogas. Depending on the available seasonal feed material in the vicinity of 150 Km from NU campus waste collection and transportation bidder will supply the feed material for biogas generation. Depending on the site survey and available seasonal feed material, bidder should desing their biogas plant.
		Can we assume a feedstock mix for plant design. If the real feedstock mix vary from assumed feedstock mix the variations in the performance will be considered.	

		Please let me know if we have some more information after the pre-bid meeting.	
		It is no issue to treat several different kinds of feedstock in the same tank.	
2	Effluent	The effluent from the digester will be separated into solid phase and liquid phase.	It depends on the site conditions and requirement of the manure from customer. It is recommended to have a site visit before submitting final bid. Dry / solid and liquid separation is recommended to handle the manure. Disposal of byproducts are in the scope of the bidder, so they have to adopt any method which will be convenient to them and run the project successfully as per tender conditions.
		Is short term storage for the liquid phase or can we pump it directly to the fields for irrigation/fertilization?	
3	Plant Capacity	In the tender a required Biogas production of 2,500 Nm ³ /d (105 Nm ³ /h) is mentioned.	2500 cum biogas will be utilised to run 200KWe CHP engine. Required capacity of PNG will be provided to run 1000KWe CHP engine.
		However, in the Percentage BoQ excel sheet and page 177, Scope of work says supply, erection and commissioning of a 200 kW CHP and a 1000 kW CHP.	
		Everywhere else in the Tender only 200 kW are mentioned.	
		105 Nm ³ /h will generate 200 kW electric power.	

		Whereas 200 kW + 1000 kW require approx. 630 Nm ³ /h of Biogas generation.	
		Please let us know, whether 200 kW + 1000 kW electric power is to be generated under this tender work OR 1000 kW is considered for future expansion?	
4	Stock of Biogas	At page 203 a 5 day storage for biogas is required.	Wordings in the tender document on page 203 are: "Contractor shall always submit raw feed required to generate biogas for 5 days. The stock will be reviewed by NU on a weekly basis." This means, the bidder should make backward calculation for the requirement of raw material / waste to be collected by the waste collection and transportation bidder, to generate required Biogas based on plant efficiency factors and submit the quality and quantity of waste to generate biogas for next 5 days. This does not mean to keep biogas storage of 5 days capacity.
		But, to ensure a 5 day storage we have to erect an respective gas storage separately as part of our scope.	
		Is that correct?	

Prospective Bidder-4		
Item No.	Query	Comments
1	Waste material supply and its characteristics define the output of biogas on daily basis. Hence the supply of raw material supply shall be on daily basis without any interruption. It is not clear in tender the quantity that to be supplied to the biogas plant. Quantity need to design the size of the plant.	As specified in the tender that both the parties should conduct site visit and check the available feed material to generate required quantity of biogas. Depending on the available seasonal feed material in the vicinity of 150 Km from NU campus waste collection and transportation bidder will supply the feed material for biogas generation. Depending on the site survey and available seasonal feed material, bidder should design their biogas plant.
2	Plant area for installation and drying of fertilizer not mentioned in the tender.	As mentioned in the tender, it is recommended to have a site visit before submitting the bid. Bidder should present their Biogas Technology, required quality & quantity of feed stock, plant Drawings and Design. A site visit certificate needs to be submitted as part of your bid document
3	Digester capacity of 2500 m3 may produce biogas with around 80% capacity and it will be difficult to run 200 KWe CHP engine and not sure exact capacity of 200 KWe CHP engines in market. May change the CHP engine output according to the available capacities in market.	The bidder should design the digester to produce min. 2500cum biogas per day and use feed material accordingly.

4	Specifications provided in the tender are only related to production of biogas of 100-110 m ³ /h from which 200 KWe CHP engine will be used to run for 24 h. What is the source of biogas for running 1000 KWe CHP engine?	2500 cum biogas will be utilised to run 200KWe CHP engine. Required capacity of PNG will be provided to run 1000KWe CHP engine.
5	Why PNG based 1000 KWe CHP engine required? What is the source of PNG supply? How to run 1000 KWe CHP engine without availability of biogas to be explained? Is it a standby? Kindly confirm the need of 1000 KWe CHP engine and its usage in campus.	200KWe CHP engine will run on Biogas generated by the bidder. PNG will be supplied to run 1000KWe CHP engine. Both CHP engines will run simultaneously. Usage of CHP engine is mentioned in the tender document.
6	When biogas is proposed to use in CHP engines the need of gas cascade system and compressor of 23m ³ /h capacity requirements are not clear?	The multi purpose AIM especially for the exigency circumstances are: I. Mainly for the transportation of CNG/PNG gas from nearest /suitable station, II. Otherwise also for the storage of gas, and III, change of sources in case of dual system especially for 1000KW CHP,
7	It seems too many things are clubbed in one tender and suggests separating to two or three tender's i.e separate tender for biogas plant only, CHP engines and its O&M, balance civil works and other related works.	JV is allowed in this tender, parties with their experience and experties can bid together for their part.