



CLARIFICATION 02

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ނަންބަރު No:	TES/2020/G-012	
ޕްރޮޖެކްޓް ނަންބަރު Project:	Package 1 - Procurement of Design, Supply, Installation and Maintenance of Grid-tied Solar PV-Diesel Hybrid Power Generation Plants and Solar-Powered Ice Making Plants (Lot 1 & Lot 2)	
ޕްރޮޖެކްޓް Issued Date	22 nd November 2020	
ސަފުހާ ގެ އަދަދު No. of Pages: -18	ބޯޕްލާނު Boq: -00	ޓްރެޑިންގް Drawings: -00

Please include this clarification when submitting the bid

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Please find attached;

- Answers to the queries received.



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Name: Fathimath Rishfa Ahmed

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Signature:

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NO.	Reference	Clause No.	Page No.	Description	Query	Response
1				The table in point 3.4 of section 6 (ERQ) indicates that the PV capacity to be installed for the island of Buruni is 100kWp, while in the table on page 106 of the same document this power is 295kWp.	Could you please confirm, what is the peak PV power to be installed on Buruni Island?	100kWp
2				The table in point 3.4 of section 6 (ERQ) indicates that the battery capacity to be installed for Buruni Island is 50 kWh, while in the table on page 106 of the same document this capacity is 100 kWh.	Could you please confirm, what is the capacity of the batteries to be installed on Buruni Island?	50kWh
3					Could you please confirm if a diesel generator without noise isolation will be allowed?	Supply of Diesel Generator Set is out of the scope of the tender.
4					Could you please confirm if there is enough space to install the PCMS and all its associated equipment in the control room of each powerhouse?	Yes
5					With regard to the power to be supplied by the battery inverters on a constant basis for type C hybrid systems, different solutions currently available on the market have been studied and none of these solutions are capable of supplying the maximum power required in the tender documents (225 kW) on a constant basis and which also have	For type A islands, the existing diesel generator sets will be forming the grid. For type C islands, for some periods of the day the BESS will be forming the grid while during



				<p>grid forming feature. It is possible to define a hybrid system commanded by a hybrid controller that will give maximum priority to the consumption of energy generated by renewable sources, maximizing the penetrability of renewable energies in the system, and optimizing the reduction of fuel consumption. In this system, the generator would be the one to form the grid (System type B). Furthermore, given the PV power that will be installed, as well as the capacity of the batteries, it is very unlikely that there is dependence on these sources to grid form, and it will be almost always necessary that this be formed by a generator.</p>	<p>other periods, the existing diesel gen sets will be forming the grid.</p> <p>There are no type B islands under the scope of this tender.</p>
6				<p>In addition, the use of this hybrid control system will always allow the scalability of the system, given the increasing consumption on the islands in the short term or trying to reduce diesel consumption by the installation of more PV power or batteries.</p> <p>Another aspect to be considered is that in the next year, there would also be the possibility of integrating battery inverters with greater power and grid forming capacity into this hybrid control system because this is currently being developed by manufacturers.</p> <p>With this hybrid system controller, the update to another grid type (A, B or C) will</p>	<p>All islands are either type A or type C in this tender.</p> <p>The provided solution should allow easy transition from A to B and from B to C for future expansions</p> <p>All islands should be implemented as per design (A or C).</p>



					<p>always be available and will be easy to undertake.</p> <p>Summarizing, the alternative proposal consists of creating a type B grid that could be updated by means of software to type C during 2021.</p> <p>Due to the current situation of the market, would this alternative solution be allowed?</p>	
7					<p>For lot 2, could you please indicate the boundaries of every proposed location for PV installations and their dimensions?</p>	<p>The proposed area is provided in tender. The winning bidder shall do a site survey to prepare the detailed design.</p>
8					<p>In point 3.7 of section 6, two extra interventions are described for the Buruni island. One of them is related to the improvement of the LV network in which is necessary to act on the Distribution Boxes for their remote control. Could you please indicate, what is the number of existing Distribution Boxes?</p>	<p>The information related to the number and location of distribution boxes in Buruni is given in Clarification 01</p>
9					<p>Could you please provide us with the 04_Grid_Buruni_Cable Route & DB Locations and 04_BURUNI_network_table drawings?</p>	<p>This information is given in Clarification 01</p>
10					<p>Regarding the modifications related to the grid upgrade on A10 Dhidhoo island, U02 Rasdhoo island and N02 Vilufushi island in</p>	<p>Earth Fault and Over Current Protection with necessary circuit breakers are required for this</p>



					lot 2, the following sentence is mentioned: <i>Upgrade of protection devices at powerhouse or any other point of the network. 1 lot.</i> Could you please indicate what protections are installed in the powerhouse, as well as in the rest of the network on each island? Could you please provide us with the drawings of them?	connection.
11					Could you please confirm if there is any preference for the construction material for the substations to be built on the A10 Dhidhdhoo and U02 Rasdhoo within the scope of the contractor for Lot 2? Would a building of concrete blocks be accepted?	A Prefabricated Package Substation with RMU, Transformer and LV Panel or a building with concrete blocks with the equipment will be accepted.
12					In section 4 of the bidding documents, it is mentioned that the time to complete the execution of the facilities is 360 days, while in section 8 it is mentioned that this will be 300 days. Could you please clarify?	Completion time: 360 days
13					Could you please confirm if it is necessary to provide a security fence for the ice making plants?	For Ice Plant a security fence is required.
14					After the first analysis carried out, there are some locations, Kandoodhoo, Vandhoo, Hirilandhoo, Kinbidhoo and Omadhoo, where there is not enough space to install the required PV capacity. Could you please confirm, what is the required capacity for these locations?	This will be checked during implementation stage.



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15					With regards to the ground-mounted installations, could the indicated space be fully occupied by PV modules? Or should a perimetral path be included besides the inter row space	The specified space can be fully utilised however sufficient space shall be left between rows for maintenance.
16					Taking into account that there is around 400 km between Dhidhdhoo and Vilufushi, could you please confirm if the same meteorological database must be used to carry out the simulation for all locations?	Yes
17					Could you please indicate if the batteries for lot 2 should be installed with the ice-making plant or in the powerhouse?	Within the ice-making plant
18					The section ITB 22.2 of the BDS indicates that the bid for each lot should be submitted separately. There are several documents that are common for both lots (Certificates of completion, Audited Financial Accounts, Company Registration Certificate...), could you please accept the submission of these documents in a single way?	Should be submitted separately for each lot.
19					The section 2.3.3. Financial Resources of the EQC indicates that the requirements for the Subject Contract in case of JV must meet sixty percent for one partner, but it is also indicated a 40%. Please clarify.	One partner shall meet 40%
					Regarding logistics, we should undertake the CIP transportation of the Goods at the respective sites. Please confirm if the	These services shall be carried out by the contractor. Employer will only provide Custom Duty



					<p>following services would be carried out by the Employer:</p> <ul style="list-style-type: none"> • Loading and/or unloading of the Products whenever necessary in the recipient country including at the port, airport, and/or the Site(s). • Use/Hire of special equipment and accessories when necessary to ensure a smooth unloading and transportation. • Storage at the recipient country's port/airport and/or other places if necessary. • Transportation of the Products from the berth to the warehouse inside the unloading port/place or container yard. • Demurrage at the unloading port/place if necessary and container detention charge (when transported by containers). • Licenses, official authorizations necessary for import. • Duties, taxes or other fiscal levies payable in the recipient country. • Customs formalities and any other procedure necessary for import in the recipient country. 	<p>Exemption when the contractor submits the Bill of lading, Packing List and Commercial Invoice.</p>
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21					Please clarify if according to ITB 10 Language of Bids, documents in a language other than English such as financial statements could be provided accompanied by an accurate translation of the relevant passages into the English language like, for example, balance sheets.	An accurate translation by an independent party is allowed.
22					With regards to the institution/bank issuing the performance security, which is located outside the Republic of Maldives, Is it a compulsory requirement to have a correspondent financing institution/bank located in the Republic of Maldives? like having a branch bank/office in the same name of the institution/bank in Maldives?	No. The requirement is there should be a bank in Maldives that the provided performance security could be cashed.
23					The Bid Data Sheet mentioned that "The period following completion of plant and services in accordance with provisions of the contract shall be ten (10) years after successful commissioning per island." What are the detailed services needed in the 10 year? The term of Operation and maintenance services is only one year	Please refer to ITB 16.1
24	Plant 1S2E Section 6 _ ERQ	4,17	6-214	O&M Requirements during the one year Defect Liability period	We understand that the DLP for the tender is 720 days & bidder needs to provide remotely monitored O&M support for only initial 1 year (365 day). Please confirm that the understanding is correct	Yes correct. The bidder's responsibility for the initial year is clearly mentioned in Plant 1S2E Section 6 _ ERQ, Clause 4.17
	Plant 1S2E Section 8 _ SCC	27,1	8-6	The critical components covered under the extended defect liability are all parts of the Facilities and the period shall be 730 days from the date of Completion of the		



				Facilities or any part thereof.		
25	Plant 1S2E Section 8 _ SCC	13.3.3	8-3	The performance security shall not be reduced on the date of the Operational Acceptance	Please confirm the validity of the Performance guarantee mentioned against this clause	Contract Period plus Operation and Maintenance Period.
26	Plant 1S2E Section 6 _ ERQ	4.3.1	6-138	Battery roundtrip efficiency $\geq 95\%$	Please confirm is Battery roundtrip Efficiency is measured at Dc terminal	Yes, correct.
27	Plant 1S2E Section 6 _ ERQ	2,5	6-22	Table 2-2 in Chapter 2.5 (column “Battery and battery inverter required minimum power”)	We understand capacity in kWh is capacity required at EOL i.e. 20 years, please confirm	Yes.
28	Plant 1S2E Section 6 _ ERQ	2,5	6-22	Table 2-2 in Chapter 2.5 (column “Battery and battery inverter required minimum power”)	We understand capacity/sizing defined in this table is final and we need to only design the system in-line with it? Or Bidders are allowed to optimize the capacity/sizing?	Please follow the capacity and sizing provided in the tender.
29	Plant 1S2E Section 6 _ ERQ	4.3.1	6-138	The battery must be able to provide a minimum of 5.000 cycles at 80% of DoD at 25°C. End of Life shall be 80% of initial capacity.	1. For the tier-1 li-on batteries, the EOL is either 20 years@60% of initial capacity or 5000-6000 cycles, which ever happens early. 2. We request you to confirm 80% initial capacity is required at the end of 10th year?	We confirm the battery must be able to provide a minimum of 5.000 cycles at 80% of DoD at 25°C. End of Life shall be 80% of initial capacity.
30	Plant 1S2E Section 6 _ ERQ	4.3.1	6-138	It is preferred to have max. 3 different sizes of battery inverters for all islands to be able to have a fast change from the spare part storehouse.	Kindly note this will require oversizing of PCS at few places. Please confirm if it's acceptable.	Yes
31	Plant 1S2E Section 6 _ ERQ	4.3.1	6-138	The inverter must be able to provide sufficient short circuit power to the system. The required currents must be in accordance with the grid protection	Please provide the short circuit power requirement, so that confirmation can be taken from PCS OEM.	See attachment, Annex 1 of Clarification 02



				concept and the grid study		
32	Plant 1S2E Section 6 _ ERQ	4.3.1	6-138	The inverter supplier shall have a proven track record (minimum 5MW over the last 5 years) in island system applications.	In order to have more choices wrt PCS make, we request you to please modify this requirement as "5MW over last 5 years in island system application or Grid Connected	The inverter supplier shall have a proven track record (minimum 5MW over the last 5 years) in island system applications. The concept of "island system applications" also applies to off-grid system applications
33	Plant 1S2E Section 6 _ ERQ	4.3.1	6-138	The inverters shall be equipped with suitable DC-breakers and fuses for the battery strings, they shall both be easy accessible and exchangeable.	Most of the PCS Inverter don't supply PCS with fuses, fuse protection after battery racks will be provided in DC Combiner panel	Acceptable
34	Plant 1S2E Section 6 _ ERQ	4.3.2	6-138	The battery inverters shall have capability to operate parallel in voltage source mode while DG's are running as grid-forming element	Is this mandatory to run the inverters always in voltage source mode while DG's are also running in parallel?	Not mandatory
35	Plant 1S2E Section 6 _ ERQ	4.3.2	6-138	For each island, the battery inverters must be able to deliver the required power as stated in Chapter 2.5 in both directions (nominal power). The overload capability of the inverter must be at least 150% of its nominal power for at least 30 seconds.	The battery inverters will be sized as per Chapter 2.5. Please provide more details on why the overload capability of 150% of its nominal power for 30seconds required? Please clarify the reason for 150% requirement? Can this be changed to less (%) for more duration?	We confirm the original overload capability
36	Plant 1S2E Section 6 _ ERQ	2.18.1	6-93	N13-Power Consumption and Peak power	Can you please confirm power consumption and peak power allowed data is correct?	Estimated peak power for 2024 is 115 kW



37	Plant 1S2E Section 6 _ ERQ	4.14.4	6-208	Power Quality tests	Please confirm the power quality tests are applicable only for the PV Inverters not the Battery inverters?	Commissioning and Testing of BESS and PCMS are described in section 4.14.3
38	Plant 1S2E Section 6 _ ERQ	2,5	6-22	Table 2-2 in Chapter 2.5.	Why Type-C (PV+BESS+DG) systems are considered only for 5 islands out of 12?	Only 5 islands were selected for type C
39	Plant 1S2E Section 6 _ ERQ	2.7.1		General	Please confirm how many cycles per day should be considered for battery operation.	Usually, BESS will perform one deep cycle per day
40	Section 6 – Employer’s Requirements	6-212	4.16	The training shall take one week on the manufacturer’s premises plus one week on the 12 construction sites for each team separate.	Please provide List of Equipment's that mandatory training required at manufacturer premises	PV Inverters, BESS, EMS, PV Panels
41	Section 6 – Employer’s Requirements	6-217	5. Drawing	The following drawings are provided in attachment to the present Volume 6.	Please provide list of drawing as mentioned in table page 6-217	The drawings are available in Ministry of Finance website, as Addendum 01
42	Section 6 – Employer’s Requirements	6-14	2.2	The Contractor is free to choose the seaport of entrance. There are three of these seaports. Upon arrival at one of these ports the Contractor shall take care of the clearance.	Incoterms of delivery to be clearly specified	Incoterm for all the goods is DAP
43	Section 6 – Employer’s Requirements	6-22	2.5	Total Battery capacity: 1.9 MWh (with at least 1C nominal discharge rate)	The BESS capacities can be below the mentioned discharge rate of 1C (0.5C) as given in the table 2-2	Please, refer to Section 6, 4.3.1 Acceptable nominal discharge-rate : 0.5C to 2C as long as the required functionalities and specifications are fulfilled:



44	Section 6 – Employer’s Requirements	6-46	2.10.3	Table 2-28 Total solar capacity is 180kWp	Proposed solar capacity is coming around 240kWp	Total Solar Capacity is 180kW. PV will not be installed on Powerhouse (which is mentioned in Table 2-28: N05).
45	Section 6 – Employer’s Requirements	6-99	3.3.1	During sunny hours the PV plant will provide energy to the ice making plant and any PV excess will be evacuated to the main distribution grid following Net Metering regulations.	Net metering regulations or the maximum feed-in capacity to be informed	Maximum feed-in capacity is the rated PV capacity. BESS will be used to avoid sharp fluctuations into the grid.
46	Section 6 – Employer’s Requirements	6-28	Table 2-6	Synchronization capabilities of all DG sets	Synchronizing capability of the existing DG sets to be clarified	All the existing generator sets are in synchronize operation.
47	Section 6 – Employer’s Requirements	6-128	4.2.4.7	The maximum DC/AC ratio of the inverter for the design of the PV system shall be 1.2 or less. Additionally the Bidder must ensure that there is no clipping of the PV power due to missing inverter capacity.	To have zero clipping losses DC/AC ratio have to be 1. The two statements are looking contradictory. Is the DC/AC ratio to be followed is 1??	DC/AC ratio = 1
48	Section 6 – Employer’s Requirements	6-136	4.3	The type of battery shall be a power battery that can deliver a high power for a short period of time.	Power type batteries usually come with 2C or higher rating. Whereas our minimum sizing given in the sizing table is of 0.5C rating.	This refers to type B islands which are out of the scope of this tender
49	Section 6 – Employer’s Requirements	6-138	4.3.1	The battery must be able to provide a minimum of 5.000 cycles at 80% of DoD at 25°C. End of Life shall be 80% of initial capacity	The EOL retention capacity after 20 years is very high. The BESS needs to be oversized in BOL considering the retention capacity which is not recommended.	We confirm the battery must be able to provide a minimum of 5.000 cycles at 80% of DoD at 25°C. End of Life shall be 80% of initial capacity
50	Section 6 – Employer’s	6-217	5. Drawing	The following drawings are provided in attachment to the present Volume 6.	Please provide list of drawing as mentioned in table page 6-217	The drawings are available in Ministry of Finance website, as



	Requirements					Addendum 01
51	Section 1 - Instructions to Bidders	1-11	18.6, d	Installation and Other Services (Schedule No. 4) shall be quoted separately and shall include rates or prices for local transportation, insurance, and other services incidental to delivery of the plant, all labor, contractor's equipment, temporary works, materials, consumables, and all matters and things of whatsoever nature, including operations and maintenance services, the provision of operations and maintenance manuals, training, etc., where identified in the Bidding Document, as necessary for the proper execution of the installation and other services, including all taxes, duties, levies, and charges payable in the Employer's country as of 28 days prior to the deadline for submission of bids	Please provide insurance requirement for the project other than Marine insurance.	None
52	Section 6 – Employer's Requirements		6-11	General _ Diesel generator	With reference to Online Pre-bid meeting, In LOT -1 there is no requirement of Supply and installation of New DG's and their Controller's kindly confirm.	Correct. However, controllers shall be provided for new LVDBs. The generator set controllers are installed in LVDBS. Please refer to section 6 LVDB drawings.
53	Plant 1S2E Section 6 _ ERQ			General	Kindly advise us, Replacement of DG Controller to be followed as per Table provided in Section 6 Employers requirement (Diesel Generators currently installed)	Please follow the SLDs provided in section 6, Drawings for a clear understanding.



54	Section 6 – Employer’s Requirements		6-11	Diesel Generator system, if a replacement or revitalisation of the existing system is required as per Chapter 2, Site Specifications. The Diesel Generator system includes the Diesel Generators, fuel piping and storage, safety installations, fuel flow meters and sensors (also existing generator sets shall be equipped), exhaust system, monitoring and generator set controller (generator synchronization panel with automated system to synchronise generator sets and run generator sets in parallel on fuel optimized combination), UPS, AC cabling, communication cables, earthing, AC distribution boards, electricity meters, electrical connection to the existing system, provision of signals for the centralised SCADA system.	Please provide Existing Fuel Storage tank & Fuel System details for each islands. Does bidder scope includes Replacement of Fuel Discharges system including accessories that are damaged or to be replaced. If yes please provide list of items to be replaced as per site.	The bidders scope only includes installation of fuel flow meter for each generator.
55	Section 6 – Employer’s Requirements		6-11	General _ Diesel generator	Kindly provide List of DG Controller's & Sync Panel to be replaced for Existing DG's	Please refer to the SLDs provided in Section 6, Drawings.
56	Section 6 – Employer’s Requirements			General	Please provide us the building Height for roof top Installation	Mainly 6m tall.
57	Section 6 – Employer’s Requirements			General	Kindly Advise, replacement of Main LV Panel as per drawings received with Addendum 01 dated 22nd Oct 2020.	Yes.



58	Section 6 – Employer’s Requirements	4.2.3.2	6-123	The roof covering shall be refurbished / renewed before the installation of PV modules mounting structure starts in cases there the roof covering shows signs of corrosion or any other signs of deformation.	Kindly provide Type of Roof available in each buildings e.g. It is Truss sheet roof (what is their profile) or Concrete roof.	Its steel trapezoidal roofing sheets.
59	Section 6 – Employer’s Requirements	4.7.11	6-182	Ladder Access to Roofs For tall buildings and roofs, permanent access ladders of corrosion resistant aluminium material shall be securely attached and mounted to the walls of the respective buildings. The lowest rung of any permanent ladder shall be 3m above the ground to prevent unauthorised access to the roofs. Further moveable aluminium ladders shall be provided for access to the 3m rung	Bidder can propose FRP Ladder instead of Aluminium (for Fixed ladders)	Aluminium
60	Section 6 – Employer’s Requirements	2.5	6-22	Table 2-2: Summary of the hybrid system	The proposed Solar Capacity is mentioned as kWp. Kindly advise us it is AC or DC capacity. If DC What is AC Capacity required	PV size refers to kWp STC (Standard Test Conditions) in DC
61	Section 6 – Employer’s Requirements	2.9.3	6-39	Table 2-21: N04 - Identified location for Solar installation	Council Free Field is open ground or Roof covered area kindly advise.	Open ground
62	Section 6 – Employer’s Requirements	4.2.3.2	6-123	Roof coverings are generally made out of corrugated sheets of standing-seam type or trapezoidal/box type profile. Most roofs are Lysaght Trapezoidal Steel Sheets (0.47mm thick) with the following dimensions, but the	Please provide us Roof Structure strength, Is that all roof structure can hold Solar Modules weight.	Generally can hold. The winning bidder shall assess this during the detailed design phase.



				selected systems shall be selected by the Bidders to be flexible enough to adapt to roofs sheets with potentially different measures:		
63	Section 6 – Employer’s Requirements		6-11	General _ Diesel generator	Please Clarify, Installation of Cable from DG to LV Panel is bidder scope? If yes , please provide distance between each DG & LV panels (termination point)	Yes. You can consider 25m for bidding purpose as mentioned in the SLD.
64	Section 6 – Employer’s Requirements			General	Please provide us identified location for Installation of battery and PCS, EMS Cabinet. Is there any space available of placing EMS Cabinets or Computers	Client will provide the necessary space. It will be placed in LVDB room.
65	Section 6 – Employer’s Requirements	4.2.4.7	6-128	Selected PV inverters shall have a maximum nominal AC rating of 30 kVA	Kindly Advise, Is bidder is free to choose inverter capacity above 30KVA.	Upto 50kW can be accepted.
66				Tender Submission Date	<p>We understood from the tender document that the tender is required to be submitted in hard copy on 7th December 2020. However, we would like to submit that as the bidder we need to incorporate 12 islands into our working that would include the local contractors, Logistic approach, installed sizing for each of the site individually. Also a site visit is a must for preparing a technically & commercially sound bid.</p> <p>In the light of above situation we would request the authority to consider extending the bid submission by at least one month & keep the submission by Jan 2021.</p>	There is no change in submission date.



67				General queries for Civil Scope	<ol style="list-style-type: none"> 1. Please get the pitched angle of roof. 2. Type of roof sheet material used in the existing buildings. 3. Building detailed drawings including plan, elevation, structural member details, connection details, etc. 4. Preliminary geotechnical data. 5. Preliminary data of site topography. 6. Specific requirement for road work, drainage and site fencing. 	Winning Bidder to do site survey for preparing the detailed design.
68					Please provide general arrangement drawings for Ice Factory. Material movement planning, Operator room requirements, WC arrangement for operator, connection to the municipal drainage system details, gardening requirements etc.	Winning bidder to propose after detailed design.
69					Can we opt for Pre-Fabricated structure instead of Civil structure for Ice producing factory.	Yes
70					Extend the deadline for the submission of bids by one month considering global COVID-19 pandemic.	There is no change in submission date.



Annex 1: of Clarification 02

Plant 1S2E Section 6 _ ERQ 4.3.1 6-138

The proposed solar PV plants shall contribute to overall power system stability by providing also immunity toward dynamic voltage changes. The PV generating plant shall be capable to stay connected to the low voltage network as long as the voltage at the point of connection remains above the voltage-time diagram of figure below. The voltage is relative to the nominal voltage at the point of connection. The smallest phase to phase voltage shall be evaluated. The compliance to such Low-Voltage Ride Through (LVRT) requirement shall apply to all equipment within a solar PV generating plant that might cause its disconnection. After the voltage returned to the voltage range, the pre-disturbance operating conditions (active & reactive power) shall be resumed as fast as possible and with a tolerance of $\pm 10\%$ of the generating plant rated power.

