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PNG POWER Ltd

TENDER FORM

The Chairman – Tender Opening Committee
PNG Power Ltd
P. O. Box 1105
BOROKO 111 NCD
Papua New Guinea
Phone: (675) 324 3381
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Email: supplyhelpdesk@pngpower.com.pg

We (full name of company).....

.....

.....

.....

hereby tender for the undermentioned goods and services subject to the conditions of tendering and at the prices quoted in the scheduled therein

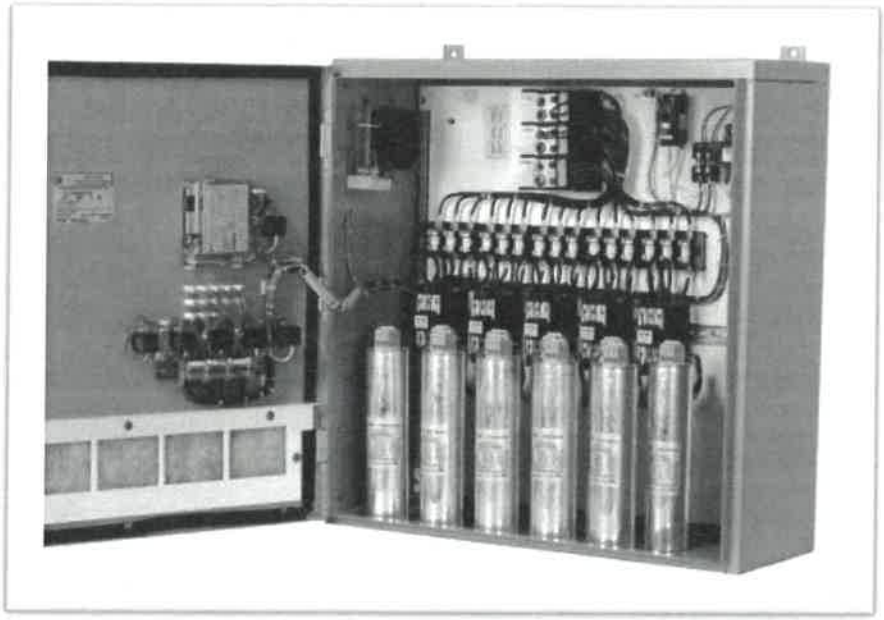
TENDER No. **12/2018**

CLOSING AT 4.00 PM FRIDAY 01ST JUNE 2018

FOR MANUFACTURE, SUPPLY, DELIVERY AND INSTALLATION OF A 10MVAR/22KV CAPACITORS UNDER THE DOBEL SUBSTATION CAPACITOR BANK PROJECT – WESTERN HIGHLANDS PROVINCE.

PNG POWER Ltd

Operations & Maintenance Business Unit | Transmission & Distribution Group
Cnr Wards Rd. & Cordia St. | Hohola | Port Moresby
PO Box 1105 Boroko | National Capital District | Papua New Guinea



DOBEL CAPACITOR BANK PROJECT

Invitation for the Design, Manufacturing, Supply, Delivery & Installation Of; 10MVAr 22kV Capacitor Bank

7th May 2018

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1.0 BACKGROUND

Mt Hagen, one of PNG Power Limited's major load centers is experiencing unreliable electrical power issues. One of the contributing factors amongst others is population growth.

The steep population increase added to the migration of rural to urban Hagen central for better opportunities, goods and services as major attractions has a significant increase in the demand for basic electricity service in effect burdens the Ramu Power Grid System. And then the rise of Industries to meet the population demands adds on the bulk load largely affecting the reactive power into the system.

The net effect seen on power system at the load end is reduction at voltage level. And for the Ramu Hydro Electric Power Station at Yonki which is the main power generation plant in the grid that produces and transmits 66 kilo volts on approximately 225 kilometers length of power lines to Dobel Substation in Mt. Hagen becomes quite a struggle to maintain voltages at the substation.

Hence this project is aimed to ensure voltage on the 22kV Substation Feeder Bus is stabilized to its nominal 22kV System Voltage during light and peak load base with regards to certain Power Flow scenarios. This project may see further capacity improvement in the near future.

The Transmissions & Distribution Group driving this project under Operating & Maintenance Business Unit of PNG Power Limited intends to improve voltage with Capacitive Reactance System integration onto the 22kV Bus System at Dobel Substation and calls immediate clients respectively to participate in this tender.

2.0 SCOPE OF SUPPLY

This paper intends summarizes the minimum requirements of the tender and also serves as a Request For Quotation (RFQ) to valued clients respectively to assist in this project by way of providing specific services and goods required to successfully complete the project by 2018.

The minimum scope of the goods and services required in this RFQ encompasses the Manufacture, Supply and Delivery of;

2.1 Indoor Capacitor Banks
2.2 Capacitor Bank Building
2.3 FAT & Training

2.4 On-site Supervision

2.1 Indoor Capacitor Banks

The Capacitor must be in two Banks of 5MVAR each to be connected to each side of the 22kV Busbar, 10MVAR in total Reactive Power Q Capacity. The mode of Control will be both Fixed and Automatic. Each Bank will have 1MVAR Fixed and the 4MVAR will be Automatically Switched in 2x steps of 2MVAR as and when required. The Capacitors are intended for Indoor and Normally Closed Bus-tie Operation.

	Capacitor Requirements & System Compliance		/ or X
2.1.1	System Voltage	22 kV	
2.1.2	System Frequency	50 Hz	
2.1.3	Number of Phases	3	
2.1.4	Number of Banks	2	
2.1.5	Size/Bank Q	5 MVAR	
2.1.6	Number of Steps/Bank	2 Steps (2, 2)MVAR Auto Sensing/Switched	
2.1.7	Fixed Configuration/Bank	1 MVAR	
2.1.8	Reactors type	Inrush	
2.1.9	SCADA System Compatibility	Modbus Protocol, RS485	
2.1.10	Protection	HRC Fuse, VT, CT, interlock Earth Switch, unbalance protection, over-temperature	
2.1.11	Relay Type	MICOM P127	
2.1.12	DC Supply	48 Vdc	

	Further Capacitor Requirements	/ or X
2.1.13	The Capacitors can be supplied in suitable enclosures/cabinets rated for indoor applications and or housed in a containerized building.	
2.1.14	Each Capacitor Bank must be fully Automated to sense the amount of reactive power demand in the 22kV system and be able to compensate accordingly in steps of 2 (2, 2 MVAR) one after another.	
2.1.15	The Capacitors must come with installation manuals, diagrams, special tools, etc. and on-site supervisor during installation.	
2.1.16	The control cablings must have a minimum route length of 100 meters to reach the existing Switchgears. If required to reduce cable length, appropriate tools and termination lugs & accessories must be supplied.	
2.1.17	The Capacitor Bank must be factory tested in the presence of PNG Power Limited's Representatives and show proof of Satisfactory Test Results signed by respective personnel from both parties.	
2.1.18	Ensure all Relays, Controls and Electronics are to be powered by the Substation's Dual 48Vdc Battery/Charger System. This will need an appropriate sized DC Cable.	
2.1.19	The capacitors must have state of art control & communication technology including remote monitoring & management access	
2.1.20	Capacitor must have provisions for a Dual Mode of Operations, i.e. Automatic or Manual where a selector switch can be used to activate the modes of operation	
2.1.21	Make provisions on the Capacitors for future expansions i.e.; additional 5MVAR	

2.2 Capacitor Bank Building

The Capacitors are anticipated to be kept and operated indoors to avoid hostile treats from the environment and weather. Hence, the capacitor banks building will form part of this tender. The building should pass all building codes & standards and the materials used should not be less than the average high grade and quality.

	Building Requirements		/ or X
2.2.1	Construct and Supply a Containerized Building or Modular Building that will come together with the Capacitors as Built-in		
2.2.2	The Containerized Building with Capacitors must have suitable access space inside for service/maintenance		
2.2.3	The Containerized Building must be provided with at least 2x earth tails at opposite ends to be connected to the Substation Earthing System		
2.2.4	Access to Capacitor Panels within the Containerized Building must be secured and safe from any live parts that may cause damage/injury through electric shock		
2.2.5	The building can be disassemble for transportation and assemble on-site		
2.2.6	Your submission of the containerized or modular building plan must show;		
	2.2.6.1	physical dimensions (mm)	
	2.2.6.2	Position of Capacitors inside the building	
	2.2.6.3	Access space around Capacitors Panels from walls, roof, adjacent/opposite panels, etc. for service/maintenance	
	2.2.6.4	2x Air Conditioning Unit (BTU or kW)	
	2.2.6.5	Lighting (interior & exterior)	
	2.2.6.6	power/control cable entries (mm2)	
	2.2.6.7	minimum installation requirements	

2.3 FAT & Training

Factory Acceptance Testing (FAT) and factory training for two representatives concerned from PNG Power Ltd to visit the Capacitor Banks at the Supplier's Factory must be included in the supplier's offer.

		/ or X
2.3.1	**Factory Acceptation Testing**	
2.3.1.1	An overall/procedural test should be conducted to prove the capacitors have passed all tests conducted after manufacture and before shipment	
2.3.1.2	Factory test sheets should be signed and marked of by Supplier and PPL representatives after successful factory testing	
2.3.2	**Factory Training**	
2.3.2.1	At least 3-5 days as factory training must be covered on the Capacitor System installations, operations & maintenance as part of the FAT	

2.3.3	FAT Expenses	Unit cost ($/day)	Total Cost $	/ or X
2.3.3.1	Return Airfare (x2) *Jacksons International Airport (Port Moresby)*			
2.3.3.2	Accommodation *2x Rooms x 7 Days*			
2.3.3.3	Meals *2x Men x 7 Days*			
2.3.3.4	Local Transport			
2.3.3.5	Total in $			
2.3.3.6	Total in PGK @ exchange rate:			

2.4 On-Site Supervision

The Supplier must include the cost of a Project Engineer's supervision on-site for 20 days and should cover installation, testing & commissioning of the project.

2.4.1	On-Site Expenses	Unit cost ($/day)	Total Cost $	/ or X
2.4.2	Return Airfare (1x) *Kagamuga International Airport (Mt Hagen)*			
2.4.3	Accommodation & Meals *Highlander Hotel (Mt Hagen), 1x Room x 20 days*			
2.4.4	Local Transport *Provided by PPL*			
2.4.5	Total in $			
2.4.6	Total in PGK @ exchange rate:			

3.0 LOCATION

All items shall be shipped to Lae Seaport, Morobe Province and delivered to immediately to PNG Power Stores, Lae. PPL will arrange delivery from Lae to final destination, Dobel Substation, Mt Hagen.

4.0 SPECIFICATION

As stated in Clause 2. Scope of Supply

5.0 COMPLIANCE

All materials shall be new and of the best quality. They shall be of the world class standards and fully comply with all relevant Australian and New Zealand Standards.

6.0 MANUAL

A technical guide containing instructions for installation, operation & maintenance shall be included free of charge as part of the offer.

7.0 TOOLS AND EQUIPMENT

Specially required tools and equipment for installation or construction must be advised of before including in the quotation unless free.

8.0 TERMS AND CONDITIONS

8.1 Supply and Delivery

A suitable Dispatch schedule will be confirmed with PNG Power before Confirmation of Order.

8.2 Payment

Payment shall be made in batches according to terms;

8.2.1	Payment Breakdown	Payment (%)	Amount ($)	Amount (PGK)	Ex. Rate	Date	/ or X
8.2.2	Concept & Design	30					
8.2.3	Manufacturing	20					
8.2.4	Confirmation of Shipment	20					
8.2.5	Successful Installation & Commissioning	20					
8.2.6	Retention (6-months after Commission)	10					
8.2.7	Total	100					

8.3 Warranty

A warranty period of not less than 12 months shall be specified in the offer to cover defects or outstanding works. A retention amount of 10% equal to the final amount of payment will be tied to the warranty duration as security.

8.4 Delivery Terms

It is the Supplier's responsibility to ensure that Shipping documents including Bill of Lading are forwarded to responsible PNG Power Ltd contact as and when issued shipping advice and PNG Power Ltd Shipping department is aware of the necessary arrangements in time to allow a smooth processing of the cargoes at the port of discharge.

			/ or X
8.4.1	All equipment, materials and accessories must be labeled:	Dobel Substation Capacitor Project PNG Power Ltd Mt Hagen, Western Highlands Province, PNG	
8.4.2	Attention to:	Brian Inamo	
8.4.3	CIF Delivery to:	Lae Seaport Morobe Province, Papua New Guinea.	

8.5 Packaging

The cables shall be wounded on cable drums of manageable size and weight at 500 meters per drum. The cable drums shall be packed with wooden cases that should be able to prevent mechanical forces and damages to cable during transportation and handling. Provisions shall be made for loading and unwinding during installations.

All equipment should be shrink wrapped to prevent water invasion, bubble wrapped and enclosed in a wooden cases and transported in a standard sizeable shipping container.

9.0 CONTACT PERSONS

9.1 Supply/Tender

Supplier to submit Quote with *Reference to this Tender*:

Tenders Committee

PNG Power Ltd

P.O. Box 1105 BOROKO, NCD, Papua New Guinea

Email: supplyhelpdesk@pngpower.com.pg

Submission of quote/tenders shall be 10 working days after receipt of notice. Quotations received after the closing date will not be considered.

9.2 Equipment Information

Forward your requests regarding technical clarifications and or additional information should be directed to:

Mr. Brian Inamo	Email: binamo@pngpower.com.pg
Mr. Nime Siria	Email: nsiria@pngpower.com.pg