

BOQ

NAME OF PROJECT:		2 X 660MW KHURJA SUPER THERMAL POWER PROJECT		
NAME OF PACKAGE:		CONDENSATE POLISHING UNIT		
TECHNICAL SPECIFICATION:		PE-TS-475-155-A001		
S. No.	DESCRIPTION	UNIT	QTY	
1.0	Total lump sum firm price for SUPPLY PART , SERVICES PART & MANDATORY SPARES comprising of design (i.e. Preperation and submission of drawing/ documents including " As Built " drawings and O&M Manuals) , engineering, manufacture, fabrication, assembly, inspection, testing at vendor's & sub-vendor's works, painting, maintenance tools & tackles, fill of lubricants & consumables, mandatory spares alongwith spares for erection ,startup and commissioning as required, forwarding, proper packing, shipment and delivery at site,unloading, handling, transportation & storage at site, in site transportation, assembly,AMC for Analysers, minor civil works, erection & commissioning, trial run at site, and carrying out performance guarantee tests at site, training of customer/ client O&M staff, operation and maintenance of the CPU after commissioning for a duration of 12 months & final handing over to end customer in flawless condition for project and package specified above complete with all accessories for the total scope defined as per BHEL NIT & tender technical specification, amendment & agreements till placement of order.	Set	1	
2.0	MAJOR BREAK-UP OF PRICES GIVEN IN 1.0 ABOVE.			
2.1	Total lump sum firm price for SUPPLY PART comprising of design (i.e. Preperation and submission of drawing/ documents including " As Built " drawings and O&M Manuals) , engineering, manufacture, fabrication, assembly, inspection, testing at vendor's & sub-vendor's works, painting, maintenance tools & tackles,fill of lubricants & consumables, alongwith spares for erection , startup and commissioning as required, forwarding, proper packing, shipment and delivery at site for project and package specified above complete with all accessories for the total scope defined as per BHEL NIT & tender technical specification, amendment & agreements till placement of order.	Set	1	
2.2	Total lump sum firm price for the SERVICES PART, comprising of unloading, handling, transportation & storage at site, in site transportation, assembly, minor civil works, AMC for Analysers, erection & commissioning, final painting at site, trial run at site and carrying out performance guarantee tests at site, training of customer/ client O&M staff & final handing over to end customer in flawless condition for project and package specified above complete with all accessories for the total scope defined as per BHEL NIT & tender technical specification, amendment & agreements till placement of order.	Set	1	
2.3	Total lumpsum firm price for MANDATORY SPARES comprising of manufacture, fabrication, assembly, inspection / testing (as applicable) at vendor's & sub-vendor's works, painting, forwarding, proper packing, shipment, delivery at site & guarantee as per tender technical specification above, amendment & agreements till placement of order (Price break up of mandatory spares is to be furnished as per Annexure- I).	Lot	1	
2.4	Total lumpsum firm price for providing OPERATION AND MAINTENANCE SERVICE including manpower, supervision, consumables, spares for maintenance etc. for Condensate Polishing Unit for a duration of 12 months after commissioning till final handing over to end customer in flawless condition for the scope defined as per technical specification above, amendment & agreements till placement of order (Break-up as per Annexure-II).	Lot	1	

**BOQ
ANNEXURE-I
LIST OF MANDATORY SPARES**

NAME OF PROJECT:		2X660 MW KHURJA STPP	
NAME OF PACKAGE:		CONDENSATE POLISHING UNIT	
TECHNICAL SPECIFICATION:		PE-TS-475-155-A001	
S. N.	DESCRIPTION	UNIT	QTY
1.00.00	MECHANICAL		
1	Screens and Nozzles for Under Drain System		
a)	Activated Carbon filter	%	15% of AC fitter vessel
b)	Polisher Service Vessel	%	100% of one vessel
2	Under Drain System screens, nozzles/ headeral lateral/any other type used for		
a)	Cation Regeneration Unit	Set	1 Set
b)	Anion Regeneration Unit	Set	1 Set
c)	Mixed Resin Storage Unit whichever applicable	Set	1 Set
3	All Resins (Cation, Anion & Inert resins)	m3	One full charge required for one Service vessel
2.00.00	Electrical		
a)	Motors	Set	1no of each type and rating
b)	DM Water Regeneration Pumps motor and motor bearing (if applicable)	No.	1no
c)	Alkali Transfer cum Recirculation Pump motor and motor bearing (if applicable)	No.	1no
d)	Waste recirculation cum Disposal Pumps motor and motor bearing (if applicable)	No.	1no
e)	Acid Unloading Pumps and motor bearing	No.	1no
3.00.00	CONTROL & INSTRUMENTATION		
	MEASURING INSTRUMENTS		
1	Electronic Transmitters		
i)	Transmitters of all types and model. (for the measurement of Pressure, differential pressure, flow, level, etc.) including local indication (if applicable)	%	10 % or 1 no. of each type and model whichever is more
2	Temperature elements		
i)	Temperature Transmitter	%	10 % or 1 no. of each type and model whichever is more
ii)	RTD's*	No.	1 no. of each type
iii)	Thermo well**	No.	1 no. of each type
	* (With head assembly, terminal block and nipple) ** (to be divided into various insertion lengths in proportion to main population)		

S. N.	DESCRIPTION	UNIT	QTY
3	Local Indicators (Non-Electrical type) -As applicable for the package as per the following items		
i)	Temperature gauges	No.	1 no. of each range and type
ii)	Pressure gauges	No.	1 no. of each range and type
iii)	Differential Pressure Gauges	No.	1 no. of each range and type
iv)	Level gauges	No.	1 no. of each range and type
v)	Flow gauges excluding Rotameters	No.	1 no. of each range and type
vi)	All types of Rotameters	No.	1 no. of each range and type
4	Process Actuated Switch Devices -As applicable for this package,as per the following items		
i)	Temperature switches	No.	1 no. of each range and type
ii)	Pressure switches	No.	1 no. of each range and type
iii)	Differential Pressure switches	No.	1 no. of each range and type
iv)	Level switches	No.	1 no. of each range and type
v)	Flow switches	No.	1 no. of each range and type
5	Solenoid Valves	%	10 % or 1 no. of each type and model whichever is more
6	Limit Switches (for Pneumatic Valves and Manual valves)	No.	2 no. of each type
7	ANALYSERS		
i)	PH Analyzer		
a)	Flow Through type cell and Electrode	No.	1 no. of each type
b)	Electronic Transmitter unit without sensor	No.	1 no. of each type
c)	Pre-fabricated cable with connector	Set	1 set
ii)	Conductivity Analyzer		
a)	Flow Through type cell and Electrode	No.	1 no of each type
b)	Electronic Transmitter unit without sensor	No.	1 no of each type
c)	Pre-fabricated cable with connector	Set	1 set
iii)	Sodium Analyzer		
a)	Main PCB assembly	No.	1 no of each type
b)	Power supply Cards (if applicable)	No.	1 no of each type
c)	Rubber Tubes & Capillary Tubes	Set	1 set
d)	Pre-fabricated cable with connector	Set	1 set
e)	Solenoid Valves	Set	1 set
f)	All Chemical Reagents for 12 month operation (Supply to be staggered as per the shelf life)	Set	1 set
iv)	Silica analyser (if applicable)		
a)	Main PCB assembly	No.	1 no of each type
b)	Power supply Cards(if applicable)	No.	1 no of each type
c)	Rubber Tubes & Capillary Tubes	Set	1 set
d)	Pre-fabricated cable with connector	Set	1 set
e)	Solenoid Valves	Set	1 set

S. N.	DESCRIPTION	UNIT	QTY
f)	All Chemical Reagents for 12 month operation (Supply to be staggered as per the shelf life)	Set	1 set
v)	Dissolved O2 Analysers (if applicable) - Similar spares as above analysers		
vi)	Turbidity analysers (if applicable) - similar spares as above analysers		
4.00.00	PROCESS CONNECTION PIPING (FOR IMPULSE PIPING/TUBING,SAMPLING PIPING/TUBING AND AIR SUPPLY PIPING AS APPLICABLE)		
1	2 way, 3way, 5way valve manifolds	No.	1 no.of each type,class,size and model
2	Filter regulator (if applicable)	No.	1 no.of each type,class,size and model
5.00.00	CONTROL VALVES, ACTUATORS AND ACCESSORIES		
1	Pneumatic and electro-hydraulic actuator assembly	No.	10% or 1 no. of each type, model and rating, whichever is more.
2	Diaphragms, O' rings, seals etc. of all types make etc.	No.	100%
3	Pressure Gauges of all types, make, rating etc.	No.	10% or 2 nos. of each type whichever is more
4	Solenoid valves (if applicable)	No.	10% or 2 nos. of each type whichever is more
5	Positioner units /smart positioners (complete unit) & accessories (link assembly)	No.	10% or 1 no. of each type whichever is more
6	Pneumatic air-filter/ Regulator of each type, make rating etc.	No.	10% or 2 Nos., whichever is more
7	Air lock relays	No.	10% or 2 nos. of each type whichever is more
5.00.01	PNEUMATICALLY OPERATED ISOLATION / BLOCK VALVES, ACTUATORS & ACCESSORIES (For all ON/OFF valves supplied under this package even if one or more of these items are also specified elsewhere under mandatory spares)		
1	Pneumatic actuator assembly.	No.	10% or 1 no. of each type, model and rating, whichever is more.
2	Diaphragms, O' rings, seals etc. of all types make etc.	No.	100%
3	Limit switches (complete unit)& accessories (link assembly)	No.	10% or 2 Nos., whichever is more
4	Pneumatic air-filter/Regulator of each type, make rating etc.	No.	10% or 2 Nos., whichever is more

Note: Mandatory spares listed above is bare minimum requirement. In case any additional mandatory spares requirement is covered elsewhere in the tender specification apart from specified above, same shall be deemed to have been covered in bidders scope of supply.

BOQ ANNEXURE-II (OPERATION AND MAINTENANCE SERVICES FOR CPU)			
NAME OF PROJECT:		2 X 660MW KHURJA SUPER THERMAL POWER PROJECT	
NAME OF PACKAGE:		CONDENSATE POLISHING UNIT	
TECHNICAL SPECIFICATION:		PE-TS-475-155-A001	
S. No.	DESCRIPTION	UNIT	QTY
	BREAK-UP OF SERVICES PRICES GIVEN IN 2.4 OF MAIN SHEET.		
1	Condensate Polishing Unit for Unit #1 & 2 along with CPU Regeneration System	Months	12
Notes:			
1. The operation and maintenance for the CPU specified above shall be for 12 months from the actual date for start of O & M services communicated by BHEL site. Duration of the service may vary based on the site requirement and the payment shall be accordingly done on pro-rata basis.			
2. For detail scope of services envisaged for Operation and Maintenance service, refer Technical Specification.			