

DOCUMENT NO:ESS-001
DOCUMENT TITLE : ENGINEERING SPECIFICATION SHEET FOR NORTH KARANPURA
(3 X 660 MW)

1.0 GENERAL

This Engineering Selection Sheet provides required Design and Performance Parameters for the LP Startup Condensate Pumps for North Karanpura Super Critical TPP (3x660 MW) project. This has to be read along with pump Technical Specification No: PC: TSP: LPSS: CON-PUMP-R00

2.0 EQUIPMENT

2.1 The pumps covered by this specification are identified in the following table(per boiler)

QTY.	DESCRIPTION	TAG NOS.		
		Unit-1	Unit-2	Unit-3
1	CONDENSATE PUMP "A"	10LCL30AP001	20LCL30AP001	30LCL30AP001
1	CONDENSATE PUMP "B"	10LCL30AP002	20LCL30AP002	30LCL30AP002

3.0 DESIGN AND PERFORMANCE PARAMETERS

Name	LP Startup Condensate Pump
Type	Either Double Suction, axially split casing Or End suction, Radially split casing
Location	Out door
Tag Number(s)	See section 2.1.
Number of Pumps Required per boiler	Two (2)
Number of pumps per project	Six (6)
Liquid to be Pumped	Condensate Water
Specific Gravity	0.959
pH	6.8 – 7.2
Fluid Temperature Range	15 – 100 °C
Maximum Operating (Design Point) Temperature	100 °C
Design Fluid Temperature	135 °C
Design Maximum Supply Cooling Water Fluid Temperature (for Seal Cooling Heat Exchanger)	38°C
Design Maximum Supply Cooling Water Fluid Pressure (for Seal Cooling Heat Exchanger)	12 kg/cm ² (g)
Rated Conditions – For each pump (Guarantee Case)	
Design Flow rate, m ³ /hr	555
Design Total Developed Head, m (Measured at pump discharge flange, two pumps operating, not including pump internal suction & discharge losses)	Bidder to Specify

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NPSH avail, m @ design flow rate	5.47
Run-out Conditions – for each pump	
Flow rate, m ³ /hr	888
Design Total Developed Head, m. (Measured at pump discharge flange, one pump operating, not including pump internal suction & discharge losses)	24.1
NPSH avail, m@ Run-out flow rate	5.36
Suction pipe size ODxTHK in mm	406.4x9.53
Discharge pipe size ODxTHK in mm	323.9x9.53
End connection at both suction and discharge	Weld neck Flanged
Flanged Eccentric reducer/expander at both suction and discharge sides as applicable.	Vendor to match the pump terminals with the connecting pipe sizes as indicated above.
Counter flanges along with fixing nut, bolts & gaskets as applicable.	Pump vendor scope
Construction	
Materials	Pump materials shall meet or exceed the strength and corrosion-erosion resistance of the following listed materials:
Casing	Carbon Steel
Impeller	316 Stainless Steel
Shaft	316 Stainless Steel
Seals	316 Stainless Steel
Casing wear rings	Nitronic 60
Impeller wear rings	316 Stainless Steel
Common Base frame along with foundation bolts	Fabricated Steel

4.0 CONDENSATE PUMPS TECHNICAL DATASHEET(To be filled by vendor)

*** Items with Asterisk are to be guaranteed by the Supplier.**

Name of Pump	LP Startup Condensate Pump
Number of pumps offered	
Pump Type	
Pump Model	
Make	

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Liquid to be pumped	
Specific gravity	
PH	
Service	
Fluid Temperature, °C	
Capacity (m ³ /hr)	
At Design Point *	
Maximum Flow	
Minimum Flow	
At Runout Flow *	
Total developed head (mlc)	
At Design Point *	
Maximum Flow	
Minimum Flow	
At Runout Flow *	
NPSH required (mlc)	
At Design Point *	
Maximum Flow	
Minimum Flow	
At Runout Flow *	
Number of Pump Stages	
Pump speed (rpm) at Design Point	
Pump speed (rpm) at Runout Flow	
Pump Critical Speed (rpm)	
Efficiency at Design Point (%) *	
Motor Size (kW) *	
Brake Horsepower Required (KW)	

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At Design Point	
At Maximum Flow	
Suction weld neck flange SIZE/RATING/MATL	
Discharge weld neck flange SIZE/RATING/MATL	
Impeller diameter for design conditions, mm.	
Maximum impeller diameter, mm.	
Minimum impeller diameter, mm.	
Minimum recirculation flow required for safe operation (m ³ /hr / temp. rise °C)	
Type of Pump Bearing Lubrication	
Is Water Cooling Required for Motor Bearings? (m ³ /hr)/temp./max. particle size	
Type Radial Bearings	
Type Thrust Bearing - Make	
Type Couplings - Make	
Suction and Discharge Nozzles	
Suction Pump Nozzle Size/Rating	
Discharge Pump Nozzle Size/Rating	
Length x Width of Base Plate, (mm.) (Common base plate)	
Weight of Pump Unit. (kg.)	
Total Weight of Pump and Motor, incl. Baseplate (kg)	
Overall sound pressure level for pump/motor unit without attenuation measured at one meter from pump unit, dB(A)	
Maximum Permissible Change of Design Point TDH and Capacity from the Specified Values Without Additional Cost to the Owner	
Casing design/hydro pressure (bar)	
Shaft diameter, in.	
Rotation (looking down from motor end)	