SIZING CALCULATION
FOR
CONDENSATE WATER TRANSFER PUMPS

REVISION HISTORY

Rev.	Revision Date	Prepared By	Checked By	Approved By	Description
0	23/06/2012	K.PASUPATHI	K.A.GANESH	RKS	Issued For Approval
1	9/9/2012	K.PASUPATHI	K.A.GANESH	RKS	Issued For Approval

Owner :

BHILAI STEEL PLANT, BHILAI, CHATTISGARH

7.0 MTPA EXPANSION

Owner's Consultant:

MECON LIMITED, RANCHI

Contractor: Consortium of

FUJIAN LONGKING CO., LTD.

No. 81, LINGYUAN ROAD, LONGYAN CITY,

FUJIAN PROVIANCE, CHINA

ALLIED ENERY SYSTEMS PVT. LTD.

PLOT NO. 293, KEHAR SINGH ESTATE,

WESTEND MARG, SAIDULAJAB, NEW DELHI-110030

PACKAGE DESCRIPTION	3x150 TPH BOILERS ALONG WITH STEAM TURBO-BLOWER BUILDING (EXCLUDING ENABLING WORK), PKG NO. 011-01A

Project	3X150TPH Boiler, Auxiliaries & Turbo Blower System.
Client	M/S. Bhilai Steel Plant
EPC Contractor	M/s Fujian Longking Co. Ltd., / M/s Allied Energy Systems Pvt. Ltd.,
Document Title	Sizing Calculation for Condensate Transfer Pumps
Document Number	BSP-FSCL-05-011-01A-06-001-01-BE-00053

Description	Units	Parameter	Remarks
Flow Calcualtions:			
Maximum flow required from condensate tank to deaerator when all the three boilers are working	tph	411	From Deaerator Sizing Calculation
Maximum temperature of condensate	°C	45.05	From condensate tank sizing Calculation
Margin on flow	%	20%	As per contract
Density of water	Kg/m^3	990.099	
Design discharge flow	tph	493.2	
Selected capacity of pump	**tph**	**495**	
Head calculations:			
Deaerator safety valve set presssure	Kg/cm^2 a	6	
Deaerator nozzle pressure drop	Kg/cm^2	0.25	
Pressure drop in control valve	Kg/cm^2	2	
Static head	Kg/cm^2	2.65	
Pressure drop in flow measuring orifice	Kg/cm^2	0.2	
Pressure drop in line	Kg/cm^2	0.5	
Total pressure drop	Kg/cm^2	5.60	
Margin on pressure drop	%	10%	
Discharge pressure required	Kg/cm^2 a	12.16	
Selected Discharge Pressure	Kg/cm^2 a	13	
Suction pressure	Kg/cm^2 a	1.3	

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Description	Units	Parameter	Remarks
Differential pressure	Kg/cm^2	11.7	
Design conditions for the pump:			
Rated flow in terms of TPH	tph	495	
Rated flow in terms of m^3/hr	m^3/hr	500	
Temperature of medium	°C	50	
Differential pressure at rated flow	MLC	131.3	Suction pressure neglected
Suction pressure	MLC	flooded	