

# PLATE TYPE HEAT EXCHANGER

<b>CLIENT</b>	Doosan Heavy Industries & Construction Co., Ltd.	<b>PROJECT NAME</b>	Vinh Tan 4 Thermal Power Plant Project
<b>SERVICE</b>	Closed Cooling Water Heat Exchanger	<b>ITEM NO.</b>	-
<b>MODEL NO.</b>	HT351ML-1P-341	<b>QUANTITY</b>	6SETS

## [ Process data ]

		Hot side	Cold side
<b>Fluid name</b>		Demi-water	Sea Water
<b>Heat exchanged</b>	(kJ/h)	<b>23,915,829.0</b>	
<b>Mass flow</b>	(kg/h)	1,011,337.5	1,145,343.8
<b>Volume flow</b>	(m3/h)	1,021.0	1,124.0
<b>Inlet temperature</b>	(C)	43.6	35.0
<b>Outlet temperature</b>	(C)	38.0	40.2
<b>Pressure drop (Allow./Calc.)</b>	(bar)	0.5 / 0.3237	0.5 / 0.4381
<b>Operating pressure</b>	(bar.g)	6.8	1.1
<b>Fouling resistance</b>	(m2-h-C/kcal)	0	0

## [ Fluid properties ]

<b>Density</b>	(kg/m3)	990.5	1,019.0
<b>Heat capacity</b>	(kcal/kg-C)	1.0086	0.9591
<b>Thermal conductivity</b>	(kcal/m-h-C)	0.5429	0.5373
<b>Inlet viscosity</b>	(cP)	0.6116	0.7744
<b>Outlet Viscosity</b>	(cP)	0.6797	0.7014

## [ Plate heat exchanger specification ]

<b>Heat transfer area</b>	(m2)	369.5	
<b>Number of plates</b>		341	
<b>Effective plates</b>		339	
<b>Number of channel x Pass</b>		170 x 1	170 x 1
<b>L.M.T.D</b>	(C)	3.20	
<b>O.H.T.C. Clean</b>	(kcal/m2-h-C)	5348.1	
<b>O.H.T.C. Service</b>	(kcal/m2-h-C)	4837.2	
<b>Fouling margin (Allow./Calc.)</b>	(%)	10 / 10.5625	
<b>Plate material / Thickness</b>		Titanium / 0.5 (mm)	
<b>Gasket material</b>		NBR	NBR
<b>Cover material / Painting</b>		A516-70 / BY SPEC.	
<b>Connection design</b>		STUDDERED	STUDDERED
<b>Connection material</b>		304SS LINED	TITANIUM LINED
<b>Connection rating</b>		ANSI 150#	ANSI 150#
<b>Connection size</b>		DN350 / DN350	DN350 / DN350
<b>Design temperature</b>	(C)	50	50
<b>Design / Test pressure</b>	(bar.g)	10 / 15	10 & F.V / 15
<b>Fluid volume</b>	(l)	835.0	835.0
<b>Empty Weight / Full Weight</b>	(kg)	5560 / 7240	
<b>Design code</b>		ASME SECTION VIII, DIV.1	

## [ Remark ]

## PLATE TYPE HEAT EXCHANGER

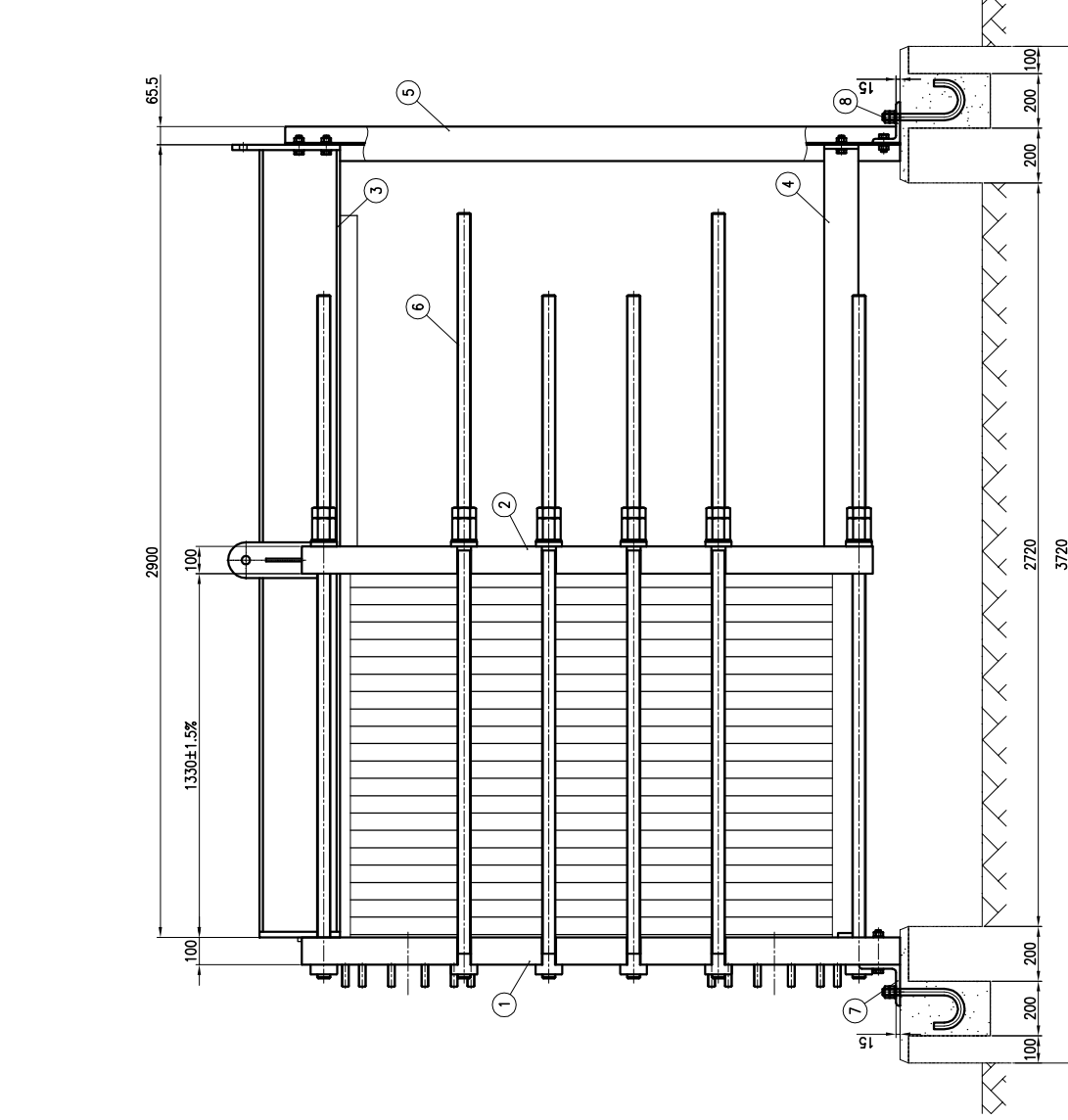
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<b>SERVICE</b>	Closed Cooling Water Heat Exchanger	<b>ITEM NO.</b>	-
<b>MODEL NO.</b>	HT351ML-1P-341	<b>QUANTITY</b>	6SETS

### [Nozzle velocity]

<b>Port hole diameter(D)</b>	0.355	m
<b>Volume flow_Hot(Q1)</b>	1,021.0	m3/h
<b>Volume flow_Cold(Q2)</b>	1,124.0	m3/h

### Nozzle port area

<b>[(D<sup>2</sup> x 3.14)/4]</b>	0.099	m <sup>2</sup>
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FLOW DIAGRAM		HOT SIDE	COLD SIDE

NOZZLE SEPERATION										
SIZE		RATING		NOZZLE WLT.		MATERIAL		QTY	SIZE	REMARK
F1	DN350	150#	RF	30XSS-12ED	1	A516-70	1	100#		
F2	DN350	150#	RF	30XSS-12ED	1	A516-70	1	100#		
F3	DN350	150#	RF	30XSS-12ED	1	A516-70	1	100#		
F4	DN350	150#	RF	30XSS-12ED	1	A516-70	1	100#		
F5	DN350	150#	RF	30XSS-12ED	1	A516-70	1	100#		
F6	DN350	150#	RF	30XSS-12ED	1	A516-70	1	100#		
F7	DN350	150#	RF	30XSS-12ED	1	A516-70	1	100#		
F8	DN350	150#	RF	30XSS-12ED	1	A516-70	1	100#		
F9	DN350	150#	RF	30XSS-12ED	1	A516-70	1	100#		
F10	DN350	150#	RF	30XSS-12ED	1	A516-70	1	100#		
F11	DN350	150#	RF	30XSS-12ED	1	A516-70	1	100#		
F12	DN350	150#	RF	30XSS-12ED	1	A516-70	1	100#		
F13	DN350	150#	RF	30XSS-12ED	1	A516-70	1	100#		
F14	DN350	150#	RF	30XSS-12ED	1	A516-70	1	100#		
F15	DN350	150#	RF	30XSS-12ED	1	A516-70	1	100#		
F16	DN350	150#	RF	30XSS-12ED	1	A516-70	1	100#		
F17	DN350	150#	RF	30XSS-12ED	1	A516-70	1	100#		
F18	DN350	150#	RF	30XSS-12ED	1	A516-70	1	100#		
F19	DN350	150#	RF	30XSS-12ED	1	A516-70	1	100#		
F20	DN350	150#	RF	30XSS-12ED	1	A516-70	1	100#		
F21	DN350	150#	RF	30XSS-12ED	1	A516-70	1	100#		
F22	DN350	150#	RF	30XSS-12ED	1	A516-70	1	100#		
F23	DN350	150#	RF	30XSS-12ED	1	A516-70	1	100#		
F24	DN350	150#	RF	30XSS-12ED	1	A516-70	1	100#		
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F30	DN350	150#	RF	30XSS-12ED	1	A516-70	1	100#		
F31	DN350	150#	RF	30XSS-12ED	1	A516-70	1	100#		
F32	DN350	150#	RF	30XSS-12ED	1	A516-70	1	100#		
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F138	DN350	150#	RF	30XSS-12ED	1	A516-70	1	100#		
F139	DN350	150#	RF	30XSS-12ED	1	A516-70	1	100#		
F140	DN350	150#	RF							

NOTES :

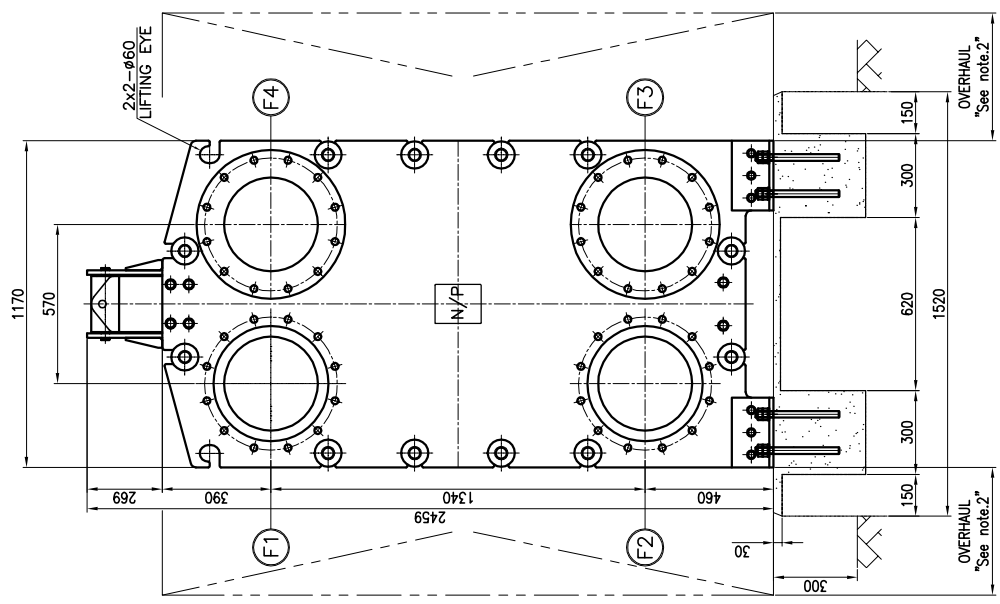
1. ALL DIMENSIONS AND ELEVATIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
2. THE HEAT EXCHANGER MUST BE INSTALLED WITH CLEARANCE ON ONE SIDE-MIN. 1000mm


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Client	 <b>VIETNAM ELECTRICITY</b> <b>EVN</b>
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Project	Project Code	V14
	UAS Code	
<b>VINH TAN 4 THERMAL POWER PLANT PROJECT</b> <b>(600MW x 2 units)</b>		

Drawn	Date	Name	Scale	OUTLINE & FOUNDATION DRAWING FOR COWHE	Unit Code	P1	Y0000
Checked	26.04.2016	J.H.PARK	1/8"		ISO Code		
Approved	26.04.2016	J.H.PARK			Proj. No.		
					Rev.	1	120011
Design		PLANT ENG.			Page-No.		1 of 1
V74-Y000-P1PGB-120011							



	NOZZLE SIZE		MAX ALLOWABLE NOZZLE LOADS					
			F <sub>X</sub> (kg)	F <sub>Y</sub> (kg)	F <sub>Z</sub> (kg)	M <sub>X</sub> (kg-m)	M <sub>Y</sub> (kg-m)	M <sub>Z</sub> (kg-m)
	F1,F2-DN350(150g)		6515	6515	6515	6184	6184	6184
	F3,F4-DN350(150g)		6515	6515	6515	6184	6184	6184

