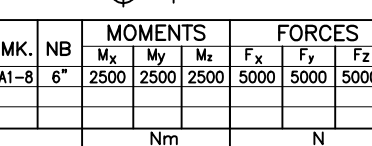


1. ALL FLANGE BOLT HOLES TO STRADDE THE NATURAL CENTRE LINES.
2. JACKSCREW HOLES TO BE EQUALLY SPACED AND BETWEEN BOLT HOLES.
3. PRIOR TO DESPATCH & TRANSPORT ALL FLANGES TO BE PROTECTED WITH WOODEN BLANKS, NON ASB. FIBRE GASKET & 4 BOLTS.
4. ALL DOUBLER PLATES TO HAVE A 1/4" NPT. TELL TALE HOLE AT LOWEST POINT & FILLED WITH GREASE AFTER LEAK TEST, PRIOR TO SHIPMENT OF HEAT EXCHANGER.
5. INSIDE CORNERS OF ALL NOZZLES TO BE RADIUSD R.3
6. SURFACE PREPARATION: CARBON STEEL TO BE SANDBLASTED TO SA 2½ & PAINTED IN ACCORDANCE WITH ENG. STANDARD 25913-83A1 & GEA PROCEDURE QAW 09-08-1
7. THE VESSEL ITEM No. IS TO BE STAMPED ON THE OUTER PERIPHERY OF ALL REMOVABLE FLANGES & THE TUBESHEETS
8. ALL WELDS OR OTHER ROUGH SPOTS ON THE INSIDE OF THE SHELL TO BE GROUND SMOOTH & FLUSH WITH THE INSIDE SURFACE - SHELL SIDE ONLY.
9. THE CARBON CONTENT OF CARBON STEEL SHALL NOT EXCEED 0,23% & THE CARBON EQUIVALENT SHALL NOT EXCEED 0,4% WHERE $CE = C + Mn/6$
10. COMP PADS SHALL CONFORM TO THE SHAPE OF THE PRESSURE COMPONENT TO WITHIN 2mm. THE GAP AT THE PERIPHERY OF THE PAD SHALL BE BETWEEN 0,5-1mm.
11. FLAME CUTTING OF BOLT HOLES IS NOT PERMITTED.
12. THE MINIMUM TOE TO TOE DISTANCE OF ANY WELD IS NOT TO BE LESS THAN 25mm OR 2t WHICHEVER IS THE GREATER.
13. ALL NDE REQUIREMENTS ARE SHOWN ON WELD MAP DRG. No's. C-711/606A/2A&2B AND C-711/606B/2A&B



25913-1900A	01	GENERAL NOTES REQUISITION	
25913-1900A Att.2	01	GENERAL REQUIREMENTS FOR HEAT EXCHANGERS	
25913-10C1	A1	FABRICATION DIMENSIONAL TOLERANCES	
25913-21A1	A1	H.E. NOZZLE LOADS & MOMENTS	
25913-10B126	A1	NOZZLE DETAILS	
25913-10B14.11	A1	HORIZONTAL VESSEL INSULATION SUPPORTS	
25913-21A1	A1	GENERAL REQUIREMENTS FOR SHELL & TUBE HEAT EXCH.	EXCH.
25913-21B3	A1	NAMEPLATE FOR SHELL & TUBE HEAT EXCHANGERS	
25913-83A1	A1	PROTECTIVE PAINT & COATINGS	
25913-88C1	A1	GENERAL REQUIREMENTS FOR WELDED FABRICATION	

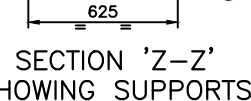
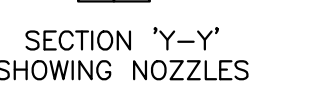
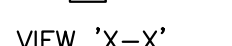
INSPECTION AUTHORITY : SAIBA ENGINEERING
FLANGE FACE FINISH : 3,2-6,3 μm Ra MAX.
FLANGES TO ANSI B16.5

DESIGN CODE : ASME VIII DIV.1 2004 W & TEMA 'R' 8th. EDITION 99					
TEMA TYPE: AES			SHELL	TUBE	
DESIGN PRESSURE kPa(g)			880	880	
EXTERNAL PRESSURE kPa(g)			FV	FV	
MAX. ALLOW. WORKING PRESS / LIMITING COMPONENT kPa(g)			880/TUBESHEET	880/TUBESHEET	
DESIGN TEMPERATURE °C			235	320	
OPERATING PRESSURE (IN/OUT)[UNIT EX-002A] kPa(g)			685/676	566/523	
OPERATING PRESSURE (IN/OUT)[UNIT EX-002B] kPa(g)			676/668	607/566	
OPERATING TEMP. (IN/OUT)[UNIT EX-002A] °C			25/56,4	102,5/62,4	
OPERATING TEMP. (IN/OUT)[UNIT EX-002B] °C			56,4/95,8	152,1/102,5	
SHOP HYDRO TEST PRESSURE (HORIZ-TOP) kPa(g)			1680	1200	
FIELD HYDRO TEST PRESSURE (BTM) kPa(g)			1110	1160	
RADIOGRAPHY			FULL	FULL	
JOINT EFFICIENCY (SHELL/HEAD)			1/1	1/-	
STRESS RELIEF			NO	NO	
MIN. DESIGN METAL TEMPERATURE °C			0	0	
CORROSION ALLOWANCE mm			3	0 (3 T/SHT.)	
PROCESS FLUID			FEED SLOP	DIESEL	
INSULATION (TYPE/THK.) /mm			PERSONNEL PROTECTION	PERSONNEL PROTECTION	
CAPACITY m ³			0,735	0,262	
MASS (PER UNIT) EMPTY kg			2560		
FULL OF WATER kg			3557		
OPERATING ka					

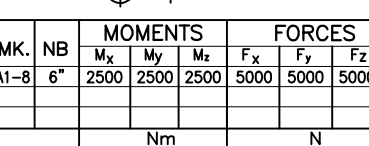
Foster Wheeler South Africa (Pty) Ltd.			Foster Wheeler South Africa Contract No. : 25913							
1. Rejected.			Foster Wheeler South Africa Order No. : 25913/PYP 579/02							
2. Comments As Noted.			Foster Wheeler South Africa Revision No.: 25913-1211AA							
3. Minor Comments (Acceptable)			Item No. : EX-002A/B							
4. No Comments.			Client's Name : Petronet							
5. Information Only.			Project Title : Intermixture Refractoriator Project							
<table border="1"> <tr> <td>BY:</td> <td>DEPT:</td> <td>DATE:</td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </table>			BY:	DEPT:	DATE:				Project Location : Tlarton, Gauteng, South Africa	
BY:	DEPT:	DATE:								
Compliance with comments does not relieve Supplier /Contractor of responsibility for the correctness of his work or of any requirements, warranties or guarantees provided or implied in this order.			Client Drawing No. : G21-140							

DATE	NAME	GEA ORDER No. C-711/606	Manufacturer:  AIRCOOLED SYSTEMS (Pty.) LTD. R.S.A. Energy Technology Division (Reg. No.: 75/00303/07)
DRWN. 18.5.05	B.B.	CLIENT: FWSA FOR PETRONET	
CHCK. 6.6.05	A.B.		
APP. 6.6.05	M.C.		

TITLE	EX - 002A	SCALE	GEA No.	REV.
FEED/BOTTOMS EXCHANGER		1:15	C-711/606A/1	3
GENERAL ARRANGEMENT	A1	DOC. No. 1077; G-OD-4-0012		
		CLIENT No.		
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1. ALL FLANGE BOLT HOLES TO STRADDLE THE NATURAL CENTRE LINES.
2. JACKSCREW HOLES TO BE EQUALLY SPACED AND BETWEEN BOLT HOLES.
3. PRIOR TO DESPATCH & TRANSPORT ALL FLANGES TO BE PROTECTED WITH WOODEN BLANKS, NON ASB. FIBRE GASKET & 4 BOLTS.
4. ALL DOUBLER PLATES TO HAVE A 1/4" NPT. TELL TALE HOLE AT LOWEST POINT & FILLED WITH GREASE AFTER LEAK TEST, PRIOR TO SHIPMENT OF HEAT EXCHANGER.
5. INSIDE CORNERS OF ALL NOZZLES TO BE RADIUSSED R.3
6. SURFACE PREPARATION: CARBON STEEL TO BE SANDBLASTED TO SA 2½ & PAINTED IN ACCORDANCE WITH ENG. STANDARD 25913-83A1 & GEA PROCEDURE QAW 09-08-1
7. THE VESSEL ITEM No. IS TO BE STAMPED ON THE OUTER PERIPHERY OF ALL REMOVABLE FLANGES & THE TUBESHEETS
8. ALL WELDS OR OTHER ROUGH SPOTS ON THE INSIDE OF THE SHELL TO BE GROUND SMOOTH & FLUSH WITH THE INSIDE SURFACE - SHELL SIDE ONLY.
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12. THE MINIMUM TOE TO TOE DISTANCE OF ANY WELD IS NOT TO BE LESS THAN 25mm OR 2t WHICHEVER IS THE GREATER.
13. ALL NDE REQUIREMENTS ARE SHOWN ON WELD MAP DRG. No's. C-711/606A/2A&2B AND C-711/606B/2A&B



25913-1900A	01	GENERAL NOTES REQUISITION
25913-1900A	Att.2 01	GENERAL REQUIREMENTS FOR HEAT EXCHANGERS
25913-10C1	A1	FABRICATION DIMENSIONAL TOLERANCES
25913-21A1	A1	H.E. NOZZLE LOADS & MOMENTS
25913-10B126	A1	NOZZLE DETAILS
25913-10B14.11	A1	HORIZONTAL VESSEL INSULATION SUPPORTS
25913-21A1	A1	GENERAL REQUIREMENTS FOR SHELL & TUBE HEAT EXCH.
25913-21B3	A1	NAMEPLATE FOR SHELL & TUBE HEAT EXCHANGERS
25913-83A1	A1	PROTECTIVE PAINT & COATINGS
25913-88C1	A1	GENERAL REQUIREMENTS FOR WELDED FABRICATION

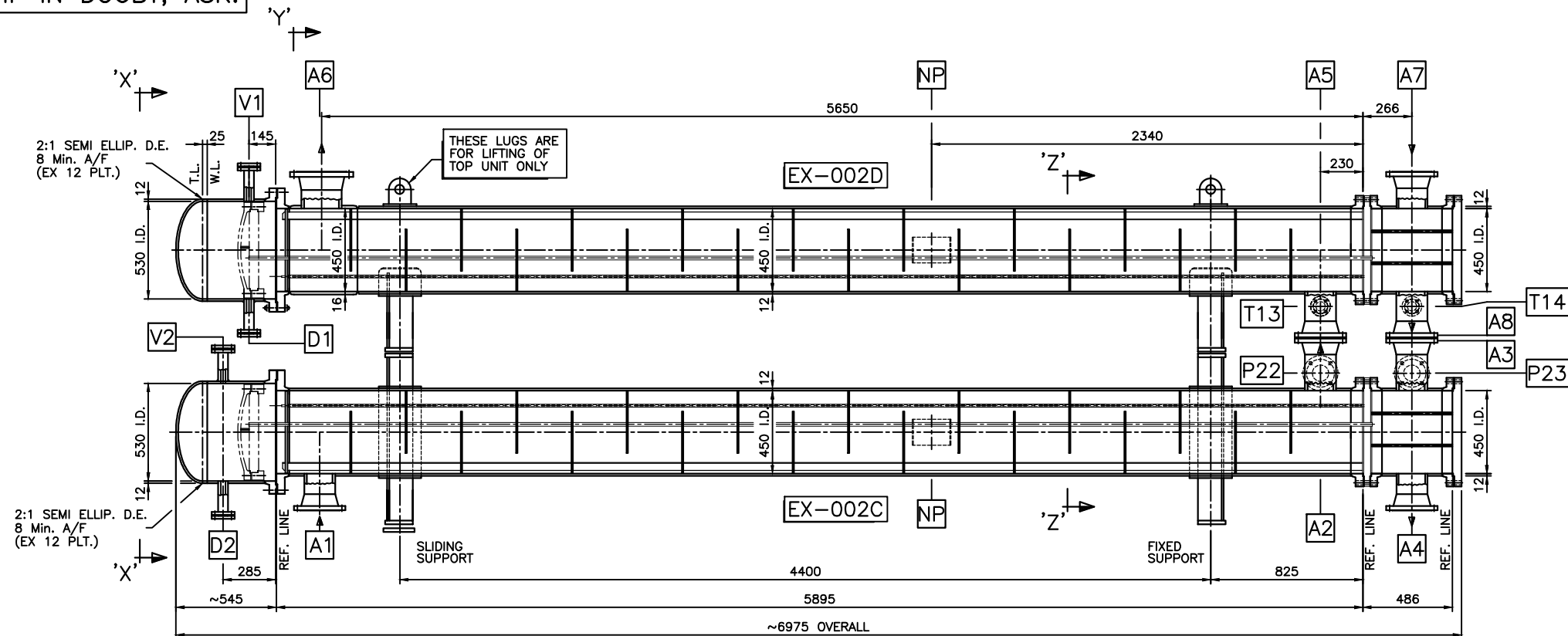
INSPECTION AUTHORITY : SAIBA ENGINEERING
FLANGE FACE FINISH : 3,2-6,3 μm Ra MAX.
FLANGES TO ANSI B16.5

DESIGN CODE : ASME VIII DIV.1 2004 W & TEMA 'R' 8th. EDITION 99			
TEMA TYPE: AES		SHELL	TUBE
DESIGN PRESSURE	kPa(g)	880	880
EXTERNAL PRESSURE	kPa(g)	FV	FV
MAX. ALLOW. WORKING PRESS / LIMITING COMPONENT	kPa(g)	880/TUBESHEET	880/TUBESHEET
DESIGN TEMPERATURE	°C	235	320
OPERATING PRESSURE (IN/OUT)[UNIT EX-002A]	kPa(g)	685/676	566/523
OPERATING PRESSURE (IN/OUT)[UNIT EX-002B]	kPa(g)	676/668	607/566
OPERATING TEMP. (IN/OUT)[UNIT EX-002A]	°C	25/56.4	102.5/62.4
OPERATING TEMP. (IN/OUT)[UNIT EX-002B]	°C	56.4/95.8	152.1/102.5
SHOP HYDRO TEST PRESSURE (HORIZ-TOP)	kPa(g)	1680	1200
FIELD HYDRO TEST PRESSURE (BTM)	kPa(g)	1110	1160
RADIOGRAPHY		FULL	FULL
JOINT EFFICIENCY (SHELL/HEAD)		1/1	1/-
STRESS RELIEF		NO	NO
MIN. DESIGN METAL TEMPERATURE	°C	0	0
CORROSION ALLOWANCE	mm	3	0 (3 T/SH.T.)
PROCESS FLUID		FEED SLOP	DIESEL
INSULATION (TYPE/THK.)	/mm	PERSONNEL PROTECTION	PERSONNEL PROTECTION
CAPACITY	m ³	0,735	0,262
MASS (PER UNIT)	EMPTY kg	2560	
	FULL OF WATER kg	3557	
	OPERATING kg	.	

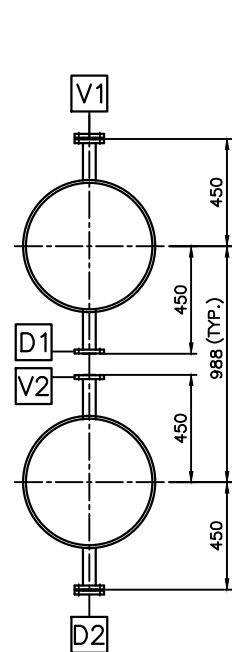
Foster Wheeler South Africa (Pty) Ltd.			Foster Wheeler South Africa Contract No. : 25913		
1. Rectified.			Foster Wheeler South Africa Order No. : 25913/PYP 579/02		
2. Comments As Noted.			Foster Wheeler South Africa Requisition No.: 25913-1211AA		
3. Minor Comments (Acceptable)			Item No. : EX-002A/B		
4. No Comments.			Client's Name : Petronet		
5. Information Only.			Project Title : Intermixture Refractorator Project		
BY:		DEPT:	DATED:		
Compliance with comments does not relieve Supplier/Contractor of responsibility for the Correctness of his work or of any requirements, warranties or guarantees which are included in the order.					
Project Location			: Taitlton, Gauteng, South Africa		
Client Drawing No.			: G21-140		

TITLE	EX-002B	SCALE	GEA No.	REV.
FEED/BOTTOMS EXCHANGER GENERAL ARRANGEMENT		1:15	C-711/606B/1	3
	A1	DOC. No. 1077; G-OD-4-0012 CLIENT No.		

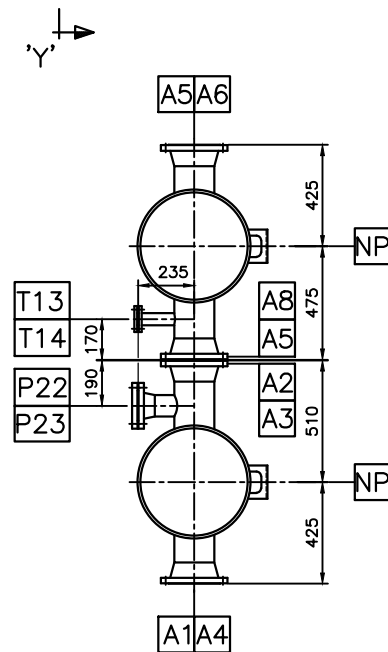
The subject matter of this document is confidential and comprises original works in which copyright subsists. All rights in respect of such subject matter are reserved. Any unauthorised reproduction or adaptation of any such work (in two dimensional or three dimensional form in the case of drawings and other artistic works) constitutes infringement of copyright and is unlawful.



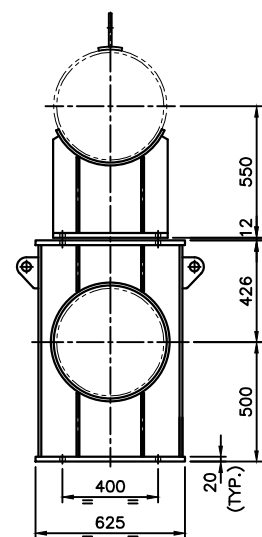
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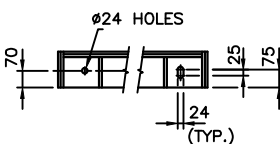
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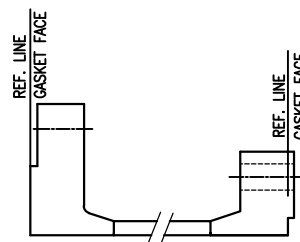
SECTION 'Y-Y'
SHOWING NOZZLES



SECTION 'Z-Z'
SHOWING SUPPORTS



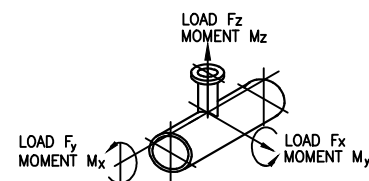
BASE PLATE PLAN
BOTTOM SUPPORT



SKETCH SHOWING
REFERENCE FACE

FOSTER WHEELER ENGINEERING STANDARDS

25913-1900A	01	GENERAL NOTES REQUISITION	
25913-1900A	Att.2	GENERAL REQUIREMENTS FOR HEAT EXCHANGERS	
25913-10C1	A1	FABRICATION DIMENSIONAL TOLERANCES	
25913-21A1	A1	H.E. NOZZLE LOADS & MOMENTS	
25913-10B126	A1	NOZZLE DETAILS	
25913-10B14.11	A1	HORIZONTAL VESSEL INSULATION SUPPORTS	
25913-21A1	A1	GENERAL REQUIREMENTS FOR SHELL & TUBE HEAT EXCH.	
25913-21B3	A1	NAMEPLATE FOR SHELL & TUBE HEAT EXCHANGERS	
25913-83A1	A1	PROTECTIVE PAINT & COATINGS	
25913-88C1	A1	GENERAL REQUIREMENTS FOR WELDED FABRICATION	



NOZZLE LOADS

MK.	NB	MOMENTS			FORCES		
		M _x	M _y	M _z	F _x	F _y	F _z
A1-5	6"	2500	2500	2500	5000	5000	5000
A6	8"	5000	5000	5000	8000	8000	8000
A7/8	6"	2500	2500	2500	5000	5000	5000
		Nm			N		

BOLT LOCATION.	No. OFF BOLTS.	SIZE OF BOLTS.	Min TORQUE Nm	Max. TORQUE Nm
CHANNEL/COVER	20	3/4"	250	300
CHANNEL/TSHT/SHLL	20	3/4"	250	300
SHLL/SHLL COVER	20	3/4"	250	300
FLOAT HD/BACK RING	20	3/4"	250	300

NOZZLE SCHEDULE

MK	NB	SCH	CLASS	TYPE/FACING	SERVICE
A1	6"	120	150	WNRF	SHELL SIDE INLET
A2	6"	120	150	WNRF	SHELL SIDE OUTLET
A3	6"	80	150	WNRF	TUBE SIDE INLET
A4	6"	80	150	WNRF	TUBE SIDE OUTLET
A5	6"	120	150	WNRF	SHELL SIDE INLET
A6	8"	100	150	WNRF	SHELL SIDE OUTLET
A7	6"	80	150	WNRF	TUBE SIDE INLET
A8	6"	80	150	WNRF	TUBE SIDE OUTLET
T13	1"	—	150	LWNRF	TEMPERATURE NOZZLE c/w BLIND FLANGE
T14	1"	—	150	LWNRF	TEMPERATURE NOZZLE c/w BLIND FLANGE
P22	3"	80	150	WNRF	PRESSURE NOZZLE c/w BLIND FLANGE
P23	3"	80	150	WNRF	PRESSURE NOZZLE c/w BLIND FLANGE
D1	1"	—	300	LWNRF	DRAIN c/w BLIND
D2	1"	—	300	LWNRF	DRAIN c/w BLIND
V1	1"	—	300	LWNRF	VENT c/w BLIND
V2	1"	—	300	LWNRF	VENT c/w BLIND

INSPECTION AUTHORITY : SAIBA ENGINEERING
FLANGE FACE FINISH : 3,2-6,3 μm Ra MAX.
FLANGES TO ANSI B16.5

DESIGN DATA

DESIGN CODE : ASME VIII DIV.1 2004 W & TEMA 'R' 8th. EDITION 99			
TEMA TYPE: AES		SHELL	TUBE
DESIGN PRESSURE	kPa(g)	880	880
EXTERNAL PRESSURE	kPa(g)	FV	FV
MAX. ALLOW. WORKING PRESS / LIMITING COMPONENT	kPa(g)	880/TUBESHEET	880/TUBESHEET
DESIGN TEMPERATURE	°C	235	320
OPERATING PRESSURE (IN/OUT)[UNIT EX-002C]	kPa(g)	668/659	646/607
OPERATING PRESSURE (IN/OUT)[UNIT EX-002D]	kPa(g)	659/651	685/646
OPERATING TEMP. (IN/OUT)[UNIT EX-002C]	°C	95,8/143,5	211,5/152,1
OPERATING TEMP. (IN/OUT)[UNIT EX-002D]	°C	143,5/207,7	293,7/211,5
SHOP HYDRO TEST PRESSURE (HORIZ-TOP)	kPa(g)	1680	1200
FIELD HYDRO TEST PRESSURE (BTM)	kPa(g)	1110	1160
RADIOGRAPHY		FULL	FULL
JOINT EFFICIENCY (SHELL/HEAD)		1/1	1/-
STRESS RELIEF		NO	NO
MIN. DESIGN METAL TEMPERATURE	°C	0	0
CORROSION ALLOWANCE	mm	3	0 (3 T/SHT.)
PROCESS FLUID		FEED SLOP	DIESEL
INSULATION (TYPE/THK.)	/mm	PERSONNEL PROTECTION	PERSONNEL PROTECTION
CAPACITY	m ³	0,735	0,262
MASS (PER UNIT)	EMPTY kg	2560	
	FULL OF WATER kg	3557	
	OPERATING ka		

 STATUS	SAIBA ENGINEERING CC				SIGN / DATE / STAMP	
	A	B	C	I/O		
DESIGN	☐	☐	☐	☐		
QA	☐	☐	☐	☐		
WELDING	☐	☐	☐	☐		
A - PROCEED B - PROCEED, CHANGE AS NOTED & RESUBMIT C - DO NOT PROCEED, CHANGE AS NOTED & RESUBMIT I/O - INFORMATION ONLY, NOT REVIEWED.						
Approved: _____ Authorisation to proceed does not imply approval of all relevant documents. Authorisation to proceed does not relieve the contractor/vendor of his responsibility or liability under the contract purchase order.						

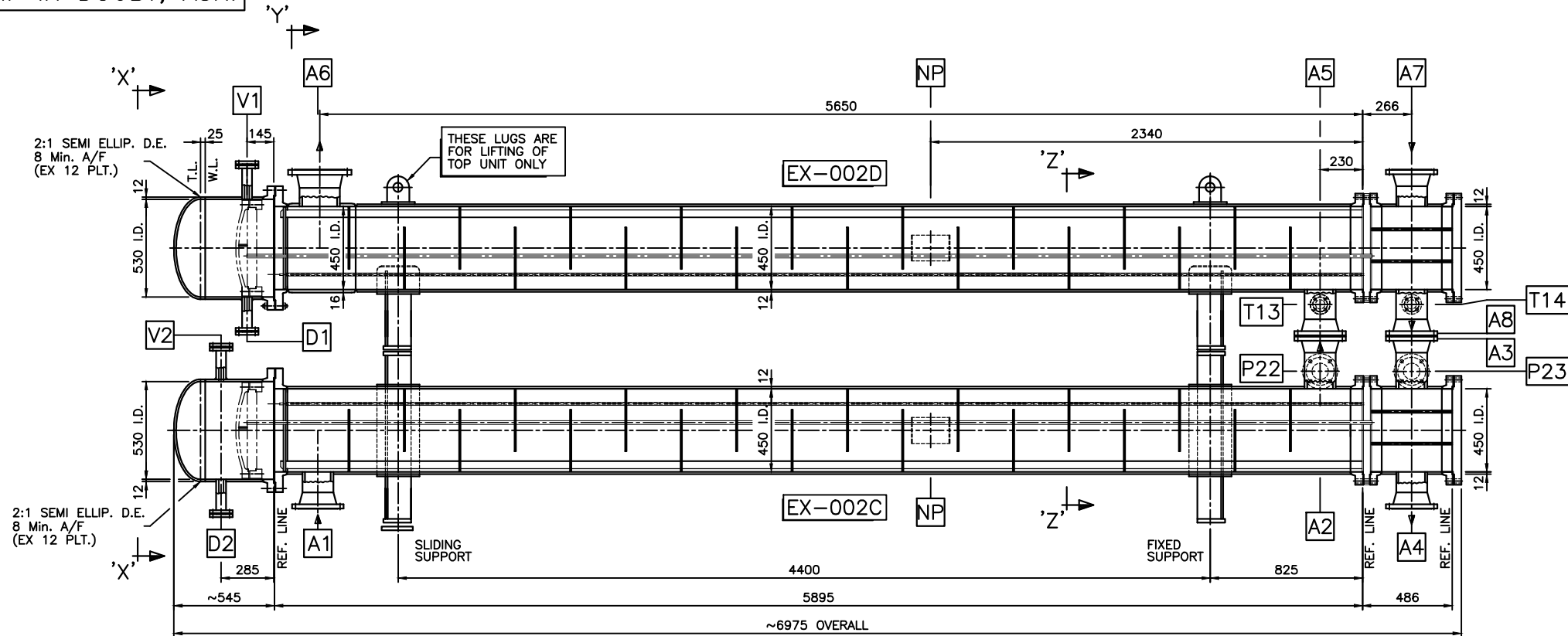
Foster Wheeler South Africa (Pty) Ltd.			Contract No. : 25913		
1. Rejected.			Foster Wheeler South Africa Order No. : 25913/PYP 579/02		
2. Comments As Noted.			Foster Wheeler South Africa Requisition No. : 25913-1211AA		
3. Minor Comments (Acceptable)			Item No. : EX-002C/D		
4. No Comments.			Client's Name : Petronet		
5. Information Only.			Project Title : Intermixture Refractoriator		
BY:		DATE:	Project Location : Taitlton, Gauteng, South Africa		
COMPLIANCE WITH COMMENTS DOES NOT RELIEVE SUPPLIER/CONTRACTOR OF RESPONSIBILITY FOR THE CORRECTNESS OF HIS WORK OR OF ANY REQUIREMENTS, WARRANTIES OR GUARANTEES OFFERED OR IMPLIED IN THE ORDER.			Client Drawing No. : G21-139		

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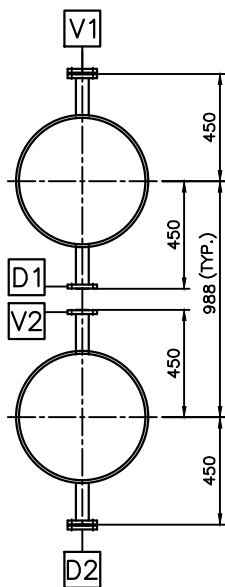
TITLE	EX-002C	GEA No.	REV.
FEED/BOTTOMS EXCHANGER	1:15	C-711/606C/1	3
GENERAL ARRANGEMENT	A1	DOC. No. 1077; G-0D-4-0015	
		CLIENT No.	

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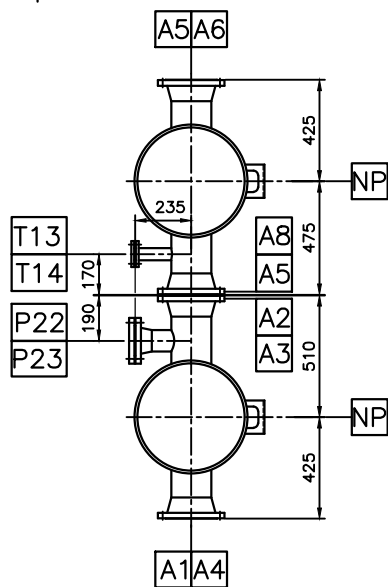
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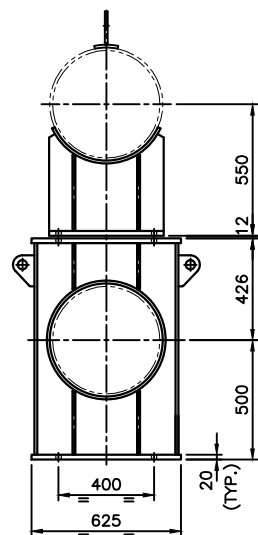
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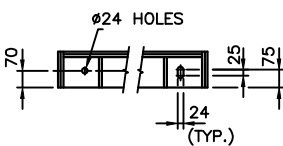
VIEW 'X-X'



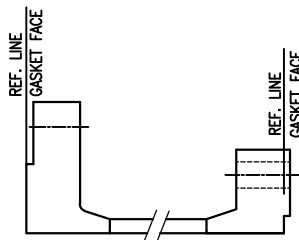
SECTION 'Y-Y'
SHOWING NOZZLES



SECTION 'Z-Z'
SHOWING SUPPORTS



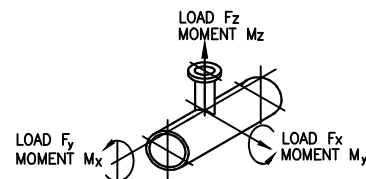
BASE PLATE PLAN
BOTTOM SUPPORT



SKETCH SHOWING
REFERENCE FACE

GENERAL NOTES:

- ALL FLANGE BOLT HOLES TO STRADDLE THE NATURAL CENTRE LINES.
- JACKSCREW HOLES TO BE EQUALLY SPACED AND BETWEEN BOLT HOLES.
- PRIOR TO DESPATCH & TRANSPORT ALL FLANGES TO BE PROTECTED WITH WOODEN BLANKS, NON ASB. FIBRE GASKET & 4 BOLTS.
- ALL DOUBLER PLATES TO HAVE A 1/4" NPT. TELL TALE HOLE AT LOWEST POINT & FILLED WITH GREASE AFTER LEAK TEST, PRIOR TO SHIPMENT OF HEAT EXCHANGER.
- INSIDE CORNERS OF ALL NOZZLES TO BE RADIUS R.3
- SURFACE PREPARATION: CARBON STEEL TO BE SANDBLASTED TO SA 2 1/2 & PAINTED IN ACCORDANCE WITH ENG. STANDARD 25913-83A1 & GEA PROCEDURE QAW 09-08-1
- THE VESSEL ITEM No. IS TO BE STAMPED ON THE OUTER PERIPHERY OF ALL REMOVABLE FLANGES & THE TUBESHEETS
- ALL WELDS OR OTHER ROUGH SPOTS ON THE INSIDE OF THE SHELL TO BE GROUND SMOOTH & FLUSH WITH THE INSIDE SURFACE - SHELL SIDE ONLY.
- THE CARBON CONTENT OF CARBON STEEL SHALL NOT EXCEED 0.23% & THE CARBON EQUIVALENT SHALL NOT EXCEED 0.4% WHERE CE=C+Mn/6
- COMP PADS SHALL CONFORM TO THE SHAPE OF THE PRESSURE COMPONENT TO WITHIN 2mm. THE GAP AT THE PERIPHERY OF THE PAD SHALL BE BETWEEN 0.5-1mm.
- FLAME CUTTING OF BOLT HOLES IS NOT PERMITTED.
- THE MINIMUM TOE TO TOE DISTANCE OF ANY WELD IS NOT TO BE LESS THAN 25mm OR 2t WHICHEVER IS THE GREATER.
- ALL NDE REQUIREMENTS ARE SHOWN ON WELD MAP DRG. No's. C-711/606C/2A&2B AND C-711/606D/2A&2B



MK.	NB	MOMENTS			FORCES		
		M _x	M _y	M _z	F _x	F _y	F _z
A1-5	6"	2500	2500	2500	5000	5000	5000
A6	8"	5000	5000	5000	8000	8000	8000
A7/8	6"	2500	2500	2500	5000	5000	5000
		Nm			N		

NOZZLE LOADS

FOSTER WHEELER ENGINEERING STANDARDS

25913-1900A	01	GENERAL NOTES REQUISITION
25913-1900A Att.2	01	GENERAL REQUIREMENTS FOR HEAT EXCHANGERS
25913-10C1	A1	FABRICATION DIMENSIONAL TOLERANCES
25913-21A1	A1	H.E. NOZZLE LOADS & MOMENTS
25913-10B126	A1	NOZZLE DETAILS
25913-10B14.11	A1	HORIZONTAL VESSEL INSULATION SUPPORTS
25913-21A1	A1	GENERAL REQUIREMENTS FOR SHELL & TUBE HEAT EXCH.
25913-21B3	A1	NAMEPLATE FOR SHELL & TUBE HEAT EXCHANGERS
25913-83A1	A1	PROTECTIVE PAINT & COATINGS
25913-88C1	A1	GENERAL REQUIREMENTS FOR WELDED FABRICATION

BOLT LOCATION.	No. OFF BOLTS.	SIZE OF BOLTS.	Min TORQUE Nm	Max. TORQUE Nm.
CHANNEL/COVER	20	3/4"	250	300
CHANNEL/TSH/SH/LL	20	3/4"	250	300
SHELL/SHELL COVER	20	3/4"	250	300
FLOAT HD/BACK RING	20	3/4"	250	300

NOZZLE SCHEDULE

MK	NB	SCH	CLASS	TYPE/FACING	SERVICE
A1	6"	120	150	WNRF	SHELL SIDE INLET
A2	6"	120	150	WNRF	SHELL SIDE OUTLET
A3	6"	80	150	WNRF	TUBE SIDE INLET
A4	6"	80	150	WNRF	TUBE SIDE OUTLET
A5	6"	120	150	WNRF	SHELL SIDE INLET
A6	8"	100	150	WNRF	SHELL SIDE OUTLET
A7	6"	80	150	WNRF	TUBE SIDE INLET
A8	6"	80	150	WNRF	TUBE SIDE OUTLET
T13	1"	-	150	LWNRF	TEMPERATURE NOZZLE c/w BLIND FLANGE
T14	1"	-	150	LWNRF	TEMPERATURE NOZZLE c/w BLIND FLANGE
P22	3"	80	150	WNRF	PRESSURE NOZZLE c/w BLIND FLANGE
P23	3"	80	150	WNRF	PRESSURE NOZZLE c/w BLIND FLANGE
D1	1"	-	300	LWNRF	DRAIN c/w BLIND
D2	1"	-	300	LWNRF	DRAIN c/w BLIND
V1	1"	-	300	LWNRF	VENT c/w BLIND
V2	1"	-	300	LWNRF	VENT c/w BLIND

INSPECTION AUTHORITY : SAIBA ENGINEERING
FLANGE FACE FINISH : 3,2-6,3 µm Ra MAX.
FLANGES TO ANSI B16.5

DESIGN DATA

DESIGN CODE : ASME VIII DIV.1 2004 W & TEMA 'R' 8th. EDITION 99		
TEMA TYPE: AES	SHELL	TUBE
DESIGN PRESSURE	kPa(g) 880	880
EXTERNAL PRESSURE	kPa(g) FV	FV
MAX. ALLOW. WORKING PRESS / LIMITING COMPONENT	kPa(g) 880/TUBESHEET	880/TUBESHEET
DESIGN TEMPERATURE	°C 235	320
OPERATING PRESSURE (IN/OUT)[UNIT EX-002C]	kPa(g) 668/659	646/607
OPERATING PRESSURE (IN/OUT)[UNIT EX-002D]	kPa(g) 659/651	685/646
OPERATING TEMP. (IN/OUT)[UNIT EX-002C]	°C 95,8/143,5	211,5/152,1
OPERATING TEMP. (IN/OUT)[UNIT EX-002D]	°C 143,5/207,7	293,7/211,5
SHOP HYDRO TEST PRESSURE (HORIZ-TOP)	kPa(g) 1680	1200
FIELD HYDRO TEST PRESSURE (BTM)	kPa(g) 1110	1160
RADIOGRAPHY	FULL	FULL
JOINT EFFICIENCY (SHELL/HEAD)	1/1	1/-
STRESS RELIEF	NO	NO
MIN. DESIGN METAL TEMPERATURE	°C 0	0
CORROSION ALLOWANCE	mm 3	0 (3 T/SHT.)
PROCESS FLUID	FEED SLOP	DIESEL
INSULATION (TYPE/THK.)	/mm PERSONNEL PROTECTION	PERSONNEL PROTECTION
CAPACITY	m ³ 0,735	0,262
MASS (PER UNIT)	EMPTY kg 2560	
	FULL OF WATER kg 3557	
	OPERATING kg .	

SAIBA ENGINEERING CC

STATUS	A	B	C	IO
DESIGN	☐	☐	☐	☐
QA	☐	☐	☐	☐
WELDING	☐	☐	☐	☐

A - PROCEED
B - PROCEED, CHANGE AS NOTED & RESUBMIT
C - DO NOT PROCEED, CHANGE AS NOTED & RESUBMIT
IO - INFORMATION ONLY, NOT REVIEWED.
Approval of this document does not imply approval of related documents.
Approval to proceed does not release the contractor/vendor of his responsibility or liability under the contract purchase order.

Foster Wheeler South Africa (Pty) Ltd.		Foster Wheeler South Africa Contract No. : 25913
1. Rejected.		Foster Wheeler South Africa Order No. : 25913/PYP 579/02
2. Comments As Noted.		Foster Wheeler South Africa Requisition No.: 25913-1211AA
3. Minor Comments (Acceptable)		Item No. : EX-002C/D
4. No Comments.		Client's Name : Petronet
5. Information Only.		Project Title : Intermixture Refractionator Project
Compliance with comments does not release Supplier/Contractor of Responsibility for the Correctness of this work or of any requirements, warranties or guarantees stated or implied in the order.		Project Location : Tarlton, Gauteng, South Africa
		Client Drawing No. : G21-139

REV.	DATE	NAME	REMARKS	DATE	CHK.	APP.
4	29.11.05	J.W	"AS BUILT"			
3	29.11.05	A.B.	DIM TO 'A1&A6' WAS 5660, CORRECTED IN LINE WITH SHELL DRG	6.09.05	A.B.	M.G.C.
2	6.9.05	A.B.	EXCHANGER C/C DIMENSION INCREASED TO ACCOMMODATE ADDED NOZZLES T13/14 & P22/23. NOZZLE DESIGNATION CHANGED AND DESIGN DATA REVISED	7.7.05	R.T.	M.G.C.
1	30.6.05	B.B.	ISSUED FOR APPROVAL	6.6.05	A.B.	
A	6.6.05	B.B.				

TITLE		EX-002D	SCALE	1:15	GEA No.	C-711/606D/1	REV.	3
FEED/BOTTOMS EXCHANGER			Manufacturer:		GEA			
GENERAL ARRANGEMENT			AIRCOOLED SYSTEMS (Pty.) LTD. R.S.A.		(Reg. No.: 75/00303/07)			
			Energy Technology Division					
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