

12	U-16-20-10-00	PLATFORM BASE PLATE 平台垫板	PARTS 组合件	1	31.2		
11	U-16-20-09-00	LEVEL PIPING 垂直管段	PARTS 组合件	1	98.3		
10	U-16-20-08-00	FIXED SADDLE 固定鞍座	PARTS 组合件	1	324		
9	U-16-20-07-00	INSULATION SUPPORT 保温支吊架	PARTS 组合件	1	293.9		
8	U-16-20-06-00	NAME PLATE 铭牌	PARTS 组合件	1	8.41		
7	U-16-20-05-00	SLIDING SADDLE 滑动鞍座	PARTS 组合件	1	324		
6	U-16-20-04-00	BUNDLE 管束	PARTS 组合件	1	7312		
5	U-16-20-03-00	SHELL 壳体	PARTS 组合件	1	11697		
4	U-16-20-02-00	SHELL GASKETS 管箱密封垫片 $\delta=4.5$	PARTS 组合件	1			
3	ASME B18.2.2	NUTS 螺母 M36	SA-194 Gr.7H	80	0.125	10	
2	ASME B18.2.1	STUD BOLTS 双头螺栓 M36x340	SA-320 Gr.7H	40	1.46	46.7	
1	U-16-20-01-00	CHANNEL 管箱	PARTS 组合件	1	2798.2		
ITEM NO. 序号	DWG. NO. OR CODE 图号或代码	DESCRIPTION 名称及规格	MATERIAL 材料	QTY. 数量	UNIT 重量单位	WEIGHT 重量	REMARKS 备注

MATERIAL 材料										DESIGN DATA TABLE 技术数据表										
	DESCRIPTION 名称	MATERIAL 材料	STANDARD 执行标准	APPLICATION 使用场合	INSPECTION REQ. 检测要求	RATIO/MEAS 比例/测量方法	CR1. ACC. 合格标准	MIN. TEMP. 最低工作温度	IMPACT TEST 冲击试验	REMARKS 备注	技术数据表									
PLATE 板材	HEAD-CYLINDER 封头+筒体	SA-516 Gr70 (shell side)	ASME Sec1 SA-516	NORMALIZED 正火	/	/	/	-51	≥41	/	CERTIFICATION MARK 认证标记	U-STAMP U-钢印	THIRD PARTY INSPECTION 第三方检验	YES / NO	YES					
	HEAD-CYLINDER 封头+筒体	SA-240 304 (tube side)	ASME Sec1 SA-240	SOLUTION 退火	/	/	/	/	/	/	NATIONAL BOARD REGISTRATION REQ'D NB注册	YES NO	NO	VESSEL CATEGORY P.R.C 容器类别						
FORGINGS 锻件	VESSEL FLANGES 设备法兰	SA-350 1J3 (shell side)	ASME Sec1 SA-350	NORMALIZED 正火	/	/	/	-51	≥41	/	DESIGN PARAMETER 设计参数					DESIGN INSPECTION STANDARD 设计、制造、检验标准				
	NOZZEL FLANGES 接管法兰	SA-350 1J3 (shell side)	ASME Sec1 SA-350	NORMALIZED 正火	/	/	/	-51	≥41	/	HEAT EXCHANGER TYPE 换热器型式					BKU 釜式重沸器				
	NOZZEL NUTS 螺母	SA-182 F304 (tube side)	ASME Sec1 SA-182	SOLUTION 退火	/	/	/	/	/	/	PARAMETER NAME 参数名称					SHELL SIDE 管程				
	TUBESHEETS 管板	SA-182 F304 (tube side)	ASME Sec1 SA-182	SOLUTION 退火	/	/	/	/	/	/	OPERATING PRESSURE 工作压力 MPa(gag)					0.04(5.5)				
	PIPE 管材	TUBES 换热管	SA-213 TP304 SA-182 F304	ASME Sec1 SA-213	SOLUTION 退火	/	/	/	-56.7 (400 AT -50F)	8.62 (1250 AT -70F)	/	DESIGN PRESSURE 设计压力 MPa(gag)					2.76(400)			
FASTENER 紧固件	EXT. BOLTS 外螺栓	SA-320 G4.7	ASME B182.1	DEVELOPED TURNER 退火	硬度1000M2	/	/	/	/	/	MAWP 最高允许工作压力 MPa(gag)					2.76(400)				
	EXT. NUTS 外螺母	SA-194 Gr7H	ASME B182.2	DEVELOPED TURNER 退火	/	/	/	/	/	/	MAEW 最高允许工作压力 MPa(gag)					2.76(400)				
FABRICATION AND INSPECTION REQUIREMENT 制造与检验要求										FABRICATION AND INSPECTION REQUIREMENTS FILLER METALS HAVE CHEMICAL COMPOSITIONS,MECHANICAL PROPERTIES MATCHED WITH THOSE OF THE BASE METALS, FOR DETAIL OF WELDING MATERIAL TYPE,SEE WFS										
ADDITIONAL FABRICATION REQUIREMENT 附加制造技术要求										WELDING MATERIAL 焊接材料										
PAINTING 涂装	SHIELD 壳程	FINISH COATING 防腐涂层	NEET MULTI-POLYMER MATRIX	LIGHT GRAY RAL 7035	100	49	/	/	/	/	MEDJUN CHARACTERISTIC 中特性					NON-LETHAL 非致命性介质				
	TUBE 管程	FINISH COATING 防腐涂层	NEET MULTI-POLYMER MATRIX	LIGHT GRAY RAL 7035	100	7	/	/	/	/	CORRALLOWANCE 腐蚀裕量 mm(inch)					3(0.118)				
	OTHER FABRICATION AND INSPECTION REQUIREMENTS 其他制造与检验要求										TEST RATIO 试验比例									
	1. UNLESS OTHERWISE NOTED, ALL DIMENSIONS ON THE DRAWINGS ARE IN MILLIMETER; 除注明外,图中所有尺寸单位为毫米;										TEST MEANS 试验方法									
	2. ALL FLANGE BOLTHOLES SHALL STRADDLE THE PRINCIPAL CENTERLINES OF THE VESSEL; 所有法兰螺栓孔均须跨中布置;										GRADE 合格级别									
3. THE THINNER THICKNESS OF CONNECTING PLATES, AND SHOULD BE CONTINUOUS; 除注明外,所有连接板厚度均等于较薄板厚度,且为连续;										SHELL SIDE 壳程										
4. ALL JOINTS TYPE SHALL BE DETERMINED BY FABRICATOR AND SHALL BE FULL PENETRATION; 所有焊接接头形式可由制造厂自行决定,但须保证全焊透形式;										TUBE SIDE 管程										
5. BEFORE HEAT TREATMENT ALL STRUCTURAL PARTS SHOULD BE WELDED TO EQUIPMENT; AFTER HEAT TREATMENT, NO WELDED ON EQUIPMENT; 热处理前应仔细检查所有焊接于壳体内部及外部,不得增漏;热处理后,禁止在设备上施焊;										TEST TYPE 试验种类										
6. IMPACT TESTING(CHARP V)OF THE PRODUCTION CARBON STEEL BASE METAL,WELDS&HAZ SHALL BE SATISFY THE FOLLOWING:TEST TEMPERATURE -51°C,CHARP IMPACT VALUE:AVERAGE VALUE OF 3 SPECIMEN SHALL BE MORE THAN 41J;ONE OF THE VALUE COULD LOWER THAN 41J,BUT NOT LOWER THAN 30J; 设备碳钢母材,对接接头及热影响区冲击试验(夏比V形缺口)应符合一下规定:试验温度:-51℃,冲击功:3件试样平均值大于等于41J,允许其中一件试样冲击功小于41J,但不小于30J;										HYDROSTATIC TESTING PRESSURE (H) 水压试验压力 (MPa)										
7. THE WELDING OF SHELL SIDE SHOULD HAVE THE TEST PIECE FOR WELDING. 壳程的焊接须管理焊接试块;										POST WELD HEAT TREATMENT 焊后热处理										
8. CARBON STEEL BOLT AND NUT WHICH CONTACT WITH STAINLESS STEEL SHOULD ADD PIPE GASKET. 所有与不锈钢接触的设备螺栓螺母需加不锈钢氟乙橡胶垫;										CAPACITY 设备容积 m³										
9. HEAT TREATMENT AFTER WELDED (EXCEPT TUBE BUNDLE); 换热器不允许焊接,壳体焊接完毕应进行整体消除应力热处理(不包括管束);										IMPACT TEST 冲击试验										
10. HYDRAULIC TEST SHALL BE CONDUCTED ON EACH PIECE OF TUBE,AND THE TEST PRESSURE SHALL BE 11.21 MPa; U形换热器管束前必须做水压试验,试验压力为:11.21MPa;										EARTHQUAKE ZONE 地震区域										
11. TUBESHEET AND WELD AMMONIA CONCENTRATION:15%;TEST PRESSURE:0.6MPa,MAINTAIN TIME:6H. 壳侧须进行氨渗透试验以检查管束,氨气浓度:15%,试验压力:0.6MPa,保压时间6h;										REMARK 备注										
12. PRESSURE CAN BE 11.21 MPa; 水压试验顺序按照TEMA标准执行,水压试验压力详见技术要求表;										MARK 代号										
13. THE HYDROSTATIC TEST PRESSURE SHALL BE MAINTAINED FOR NOT LESS THAN 60 MINUTES AT EACH SIDE;THE CONTENT OF CHLORIDE ION IN WATER SHALL BE LESS THAN 25PPM; 壳侧水压试验保压时间不少于60分钟;试验水氯离子含量不大于25ppm;										SERVICE 用途										
14. HOT INSULATION OF HEAT EXCHANGER SHALL BE IN ACCORDANCE WITH NPG-000-PIP-15.03-0004-00-C; 换热器的保温按NPG-000-PIP-15.03-0004-00-C的要求进行;										NPS. 公称尺寸										
15. FROM GREASE, WELD SPATTER, SCALE, SLAG, RUST AND ANY OTHER FOREIGN MATTER; 换热器制造完后内外应清理干净,不得有油脂、焊渣、烧块等杂物;										QTY. 数量										
16. AFTER COMPLETION OF ALL TEST AND INSPECTION THE HEAT EXCHANGER SHALL BE CLEANED, DRIED. ALL FINISHED SURFACES SHALL BE COATED WITH RUST PREVENTANTS; ALL FLANGE FACING SHOULD BE PROTECTED WITH GASKET AND COVER PLATE (WATER TIGHT); 所有试验和检验完成后,换热器必须清理干净并干燥;所有法兰必须用防蚀漆保护;所有法兰面均须用防蚀盖保护;										FLANGE TYPE&CONNECTION 法兰类型及密封面型式										
17. HELIUM GAS LEAKAGE TEST SHALL BE CONDUCTED ON THE SHELL SIDE, TEST PRESSURE:35KPa 壳体氦气泄漏试验氦气试验,试验压力:35KPa.										PROJ FROM 外件高度										
NOTE: 注:	1. THICKNESS OF HEAD IN THIS DRAWING ARE MIN. AFTER FINAL FORMATION; 图所示封头厚度为最终成型后的最小厚度;										MATCH FLANGE 配对法兰									
	2. ALL THE WEAR PLATE OF THE HEAT EXCHANGER SHALL HAVE M2 WEEP HOLES; 所有换热器上穿板的包板上必须有M6的排气孔;										MATERIAL 材质									
3. ALL FLANGES SHALL BE MARKED ON O.D.SURFACES,AS:DN50(2")-300LB-WN-RF-SCH160; 所有法兰外必须做标记,例如, DN50(2")-300LB-WN-RF-SCH160;										NECK SIZE 颈规格										
4. EXPOSED EDGES SHALL BE ROUNDED R-3. 所有尖角倒圆R=3;										REMARK 备注										
5. THE DESIGNED SERVICE LIFE OF THE EQUIPMENT IS 25 YEARS (EXCEPT TUBE BUNDLE); 设备的设计使用寿命为25年(不包括管束);										0 IFC- Issued For Construction										
6. THE LIQUID RESIDENCE TIME OF THE SHELL SIDE IS 182.8 MIN. 壳程液体的停留时间182.8分钟;										Rev. Revision Description Date Originate By Review By Approve By										
EPCC Contractor 工程承包商										Project 项目名称 巴基斯姆NASHPA项目										
Client 业主 HBP										Client project NO.业主项目编号										
Shanghai Lushan Petrochemical Equipment Co., Ltd.										Project 项目 OED2016-13										
Prepared 设计 何文忠										Sub-Title 副标题										
Reviewed 审核 王树强										Scale 比例 1:20										
Approved 批准 王树强										Weight 重量 22670 Kg										
Job No. 工号 BU16-										DWG NO: 图号 U-16-20-00										
Draw 制图 王树强										Phase 阶段 Construction										
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