IG tank integrated gas supply device

Technical specifications
(liquid oxygen, liquid nitrogen, liquid argon)

Qingdao Sains Gas Technology Co.,Ltd

2024

SAINS GAS

Technical Specifications

1、Cryogenic storage tank design technical parameters

1	Model		MT3	MT5	MT7.5	MT10
2	Type		Vertical flat bottom			
3	Standard		TSG 21、GB/T150、GB/T18442-2019			
4	Design pressure (inner/outer)		3B:1.6MPa/-0.1MPa	5B:1.6MPa/-0.1MPa	7.5B:1.6MPa/-0.1MPa	10B:1.6MPa/-0.1MPa
			3E:2.3MPa/-0.1MPa	5E:2.3MPa/-0.1MPa	7.5E:2.3MPa/-0.1MPa	10E:2.3MPa/-0.1MPa
			3F:3.3MPa/-0.1MPa	5F:3.3MPa/-0.1MPa	7.5F:3.3MPa/-0.1MPa	10F:3.3MPa/-0.1MPa
5	Maximum work pressure (inner/outer)		3B:1.7MPa/-0.1MPa	5B:1.7MPa/-0.1MPa	7.5B:1.7MPa/-0.1MPa	10B:1.7MPa/-0.1MPa
			3E:2.4MPa/-0.1MPa	5E:2.4MPa/-0.1MPa	7.5E:2.4MPa/-0.1MPa	10E:2.4MPa/-0.1MPa
			3F:3.4MPa/-0.1MPa	5F:3.3MPa/-0.1MPa	7.5F:3.4MPa/-0.1MPa	10F:3.4MPa/-0.1MPa
6	Minimum Design Metal Temperature		-196 ℃/50℃			
7	Full volume after stretching		2.99m³	4.99m³	7.49m³	9.99m³
8	Filling rate		95%			
9	Main material	Inner	S30408 GB/T24511			
10		Outer	Q345R GB/T713（Carbon steel housing） S30408 GB/T24511（Stainless steel housing）		Q345R GB/T713（Carbon steel housing）	
11	Filling Medium		LN2,LO2,LAR			
12	Interlayer medium		High vacuum multi-layer insulation			
13	Helium leak test		YES			
14	Vacuum interlayer leakage rate		≤1x10^{-8} Pa.m3/s			
15	Static evaporation rate (liquid nitrogen)		≤0.66%/d	≤0.45%/d	≤0.40%/d	≤0.35%/d
16	Inner container holding pressure when leave the factory		20KPa			
17	Factory vacuum degree		≤0.01Pa			
18	Paint brand film thickness		Jordan 200um			
19	Support form		Top suspension + support			
20	Dimension (L*W*H)m		≈2.1 ×1.9×2.7	≈2.3×2.1 ×3.3	≈2.7×2.5×3.3	≈2.9×2.8×3.4
21	Chassis size (L*W) mm		1700x1700	1900x1900	2250x2250	2600x2600
22	Equipment weight (including chassis bracket)		3B:≈1.7 Ton	5B:≈2.5 Ton	7.5B: ≈3.6 Ton	10B:≈4.4 Ton
			3E:≈1.9 Ton	5E:≈2.75 Ton	7.5E: ≈4.1 Ton	10E: ≈5.05 Ton
			3F: ≈2.15 Ton	5F:≈3 Ton	7.5F:≈4.65 Ton	10F: ≈5.85 Ton
23	Internal and external piping materials		S30408 GB/T14976			
24	Supercharger		20Nm3/h	25Nm3/h	25Nm3/h	30Nm3/h
25	Vaporizer		75Nm3/h	105Nm3/h	150Nm3/h	200Nm3/h

2. Valve and instrument list

Code	Name	Specification	Function	Material
V1	Cryogenic long-axis globe valve	DN25	Top filling valve	Stainless steel
V2	Cryogenic long-axis globe valve	DN25	Bottom filling valve	Stainless steel
V3	Cryogenic long-axis globe valve	DN15	Self-pressurizing inlet valve	Stainless steel
V4	Cryogenic short-axis globe valve	DN15	Self-pressurizing outlet valve	Stainless steel
V5	Corrugated tube globe valve	1/8"MPT	Regulated stop valve	Brass
V6	Cryogenic short-axis globe valve	DN20	Vaporizer outlet valve	Stainless steel
V8	Angle needle valve	1/4"M.NPT	Liquid level gauge gas phase valve	Brass
V9	Angle needle valve	1/4"M.NPT	Liquid level gauge balancing valve	Brass
V10	Angle needle valve	1/4"M.NPT	Liquid level gauge valve	Brass
V11	Cryogenic short-axis globe valve	DN15	Throttle valve	Stainless steel
V12	Cryogenic short-axis globe valve	DN15	Vent/Relief Valve	Stainless steel
V13	Cryogenic long-axis globe valve	DN15	Carburetor inlet valve	Stainless steel
V14	Cryogenic long-axis globe valve	DN15	Spare liquid valve	Stainless steel
V15	Three way ball valve	1/2"NPT	Three-way reversing valve	Stainless steel
CV-1	One-way valve	DN25	Check valve, filling line	Stainless steel
CV-2	One-way valve	DN15	Check valve, gas use	Stainless steel
PBC-1	Self turbocharger	See Table 2		Aluminum 6063
PBC-2	Vaporizer	See Table 2		Aluminum 6063
PCV-1	Boost valve	See Table 1 for set pressure	Cryogenic boost pressure regulating valve	Brass
PI-1	Pressure gauge	See Table 1	Pressure Gauge	Stainless steel
LI-1	Liquid level gauge	/	Liquid level gauge	Finished products
PSV-1A	Safety valve	See Table 1	Safety valve	Brass
PSV-1B	Safety valve	See Table 1	Safety valve	Brass
PSV-2A	Secondary safety valve	See Table 1	Safety valve	Brass
PSV-2B	Secondary safety valve	See Table 1	Safety valve	Brass
TSV-1,2	Pipeline safety valve	See Table 1	Pipeline Safety Valve	Brass
F-1	Filter valve	DN15	Filter valve	Stainless steel
VR-1	Vacuum gauge	1/8"NPT	Vacuum regulator	Finished products

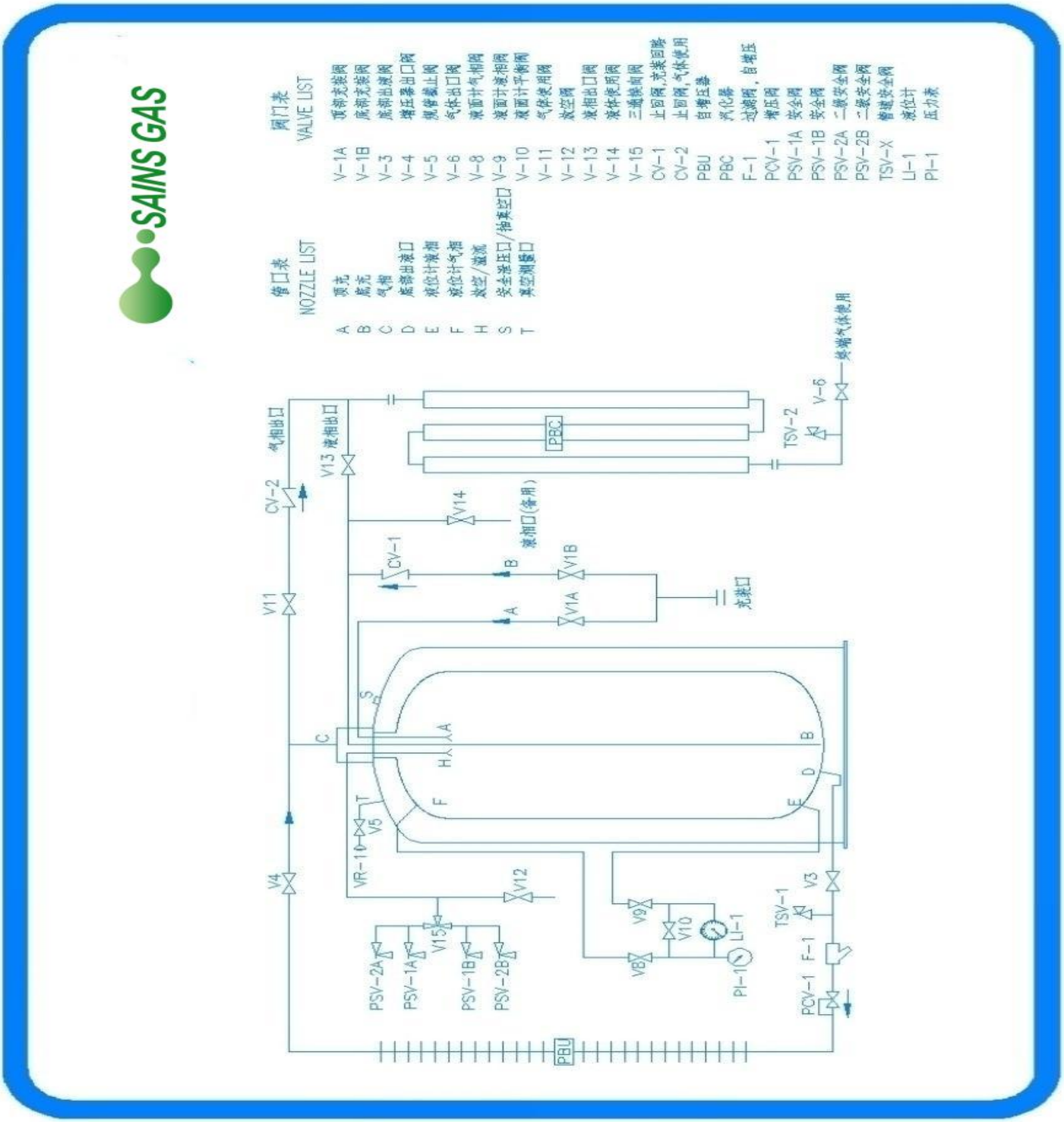
Table 1:

Code	MP Type（16bar）	HP Type（23bar）	VHP Type（33bar）
PCV-1	1.1MPa (Adjustable pressure range: 0.2~1.6MPa)	1.9MPa (Adjustable pressure range: 1.6~3.0MPa)	2.7MPa (Adjustable pressure range: 1.6~3.0MPa)
PI-1	0~2.5MPa	0~4.0MPa	0~6.0MPa
PSV-1A,1B	1.6MPa	2.3MPa	3.3MPa
PSV-2A,2B	1.75MPa	2.5MPa	3.5MPa
TSV-1,2	2.30MPa	3.3MPa	4.0MPa

Table 2:

Name	Supercharger PBU	Vaporizer PBC	
MT3	20Nm/h3	75Nm/h3	**The above configuration is our company's standard configuration.**
MT5	25Nm/h3	105Nm/h3	
MT7.5	25Nm/h3	150Nm/h3	**If you have special configuration and instructions, please communicate with the sales staff and make modifications.**
MT10	30Nm/h3	200Nm/h3	

3、Cryogenic Tank PID Diagram



4、GA picture

See attachment

5、Other technical features

(1) The tank body adopts high vacuum winding insulation design and auxiliary high-efficiency vacuum maintenance technology, which has good insulation effect and low IG evaporation;

(2) The tank body adopts a large diameter design and a low vertical transportation height to ensure product performance and save transportation costs;

(3) The main structure is compact, occupies a small area, and is quick and easy to install. It can be easily installed and used on the same day it arrives;

(4) The pipeline layout is neat and beautiful. The top adopts a whole forging welding structure to prevent gas or liquid leakage caused by thermal expansion and contraction.

(5) Compared with the traditional gas supply method of storage tank + vaporization pressure regulating skid, it has better cost performance;

(6) Liquid level and pressure remote monitoring can be installed to achieve digital and information management.

(7) The filling speed is 62% faster than that of peers, saving an average of 37.5% of filling time per unit.

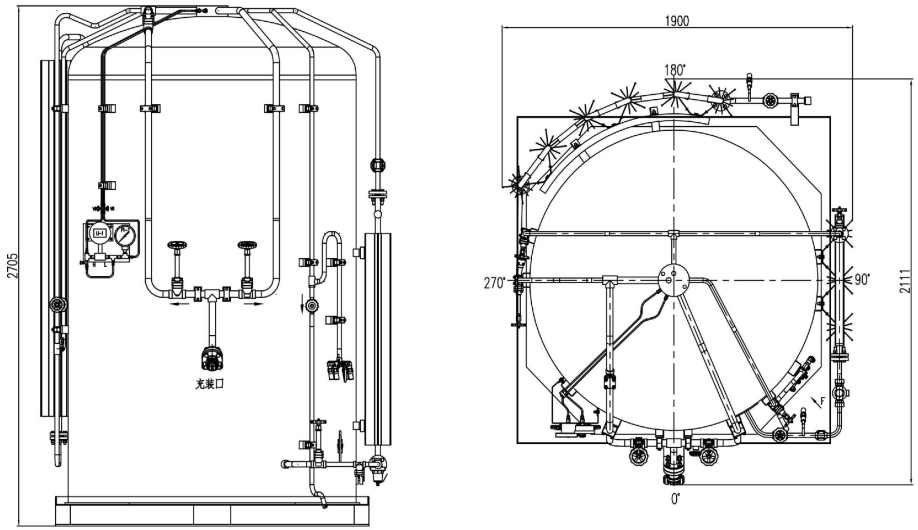
(8) The external pipeline valves are reasonably located and within easy reach. No need to climb to the top of the tank to operate the valves, reducing safety risks.

END!

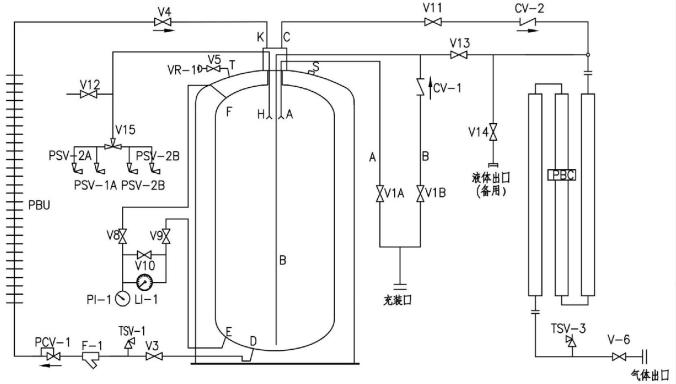
SAINS GAS

Technical Specifications

俯视图top view



流程图(P&ID)



阀门表 VALVE LIST

V-1A	顶部充装阀 VALVE,Top Fill	CV-1	止回阀,充装回路 Check valve , Top Fill
V-1B	底部充装阀 VALVE,Bottom Fill	CV-2	止回阀,气体使用 Check valve , Economic
V-3	底部出液阀 VALVE,PBU INLET	PBU	自增压器 PBU
V-4	增压器出口阀VALVE,PBU OUTLET	PBC	汽化器 VAPORIZER
V-5	规管截止阀 VALVE,Measuring vacuum	F-1	过滤阀 , 自增压 Strainer valve, PBU
V-6	气体出口阀 VALVE,VAPOR OUTLET	PCV-1	增压阀 regulating valve , Booster valve
V-8	液面计气相阀 VALVE,Vapor Phase	PSV-1A	安全阀 Safety valve
V-9	液面计液相阀 VALVE,Liquid Phase	PSV-1B	安全阀 Safety valve
V-10	液面计平衡阀 VALVE,Equilibrate	PSV-2A	二级安全阀 Safety valve
V-11	气体使用阀 VALVE,Economic	PSV-2B	二级安全阀 Safety valve
V-12	放空阀 VALVE,VENT&Full trycock	TSV-X	管道安全阀 Safety valve (pipe)
V-13	液相根部阀 VALVE, Liquid Phase Outlet	LI-1	液位计 Level garge
V-14	液体出口阀 VALVE, Liquid USE	PI-1	压力表 Pressure garge
V-15	三通换向阀 Safety valve switch		

技术要求Technical Requirements

1、本设备应根据<<固定式压力容器安全技术监察规程>>的要求定期检验、维护和抽真空。

1. The equipment shall be regularly inspected, maintained and vacuumed according to the requirements of the << Fixed Pressure Vessel Safety Technical Supervision Regulations >>

2、焊接应符合NB/T 47014-2011《承压设备焊接工艺评定》. NB/T47015-2011《压力容器焊接规程》及制造厂焊接工艺的要求，内容器焊接材料的选择必须符合GB/T 18442.7-2017的要求，并符合强化焊接工艺评定的要求。

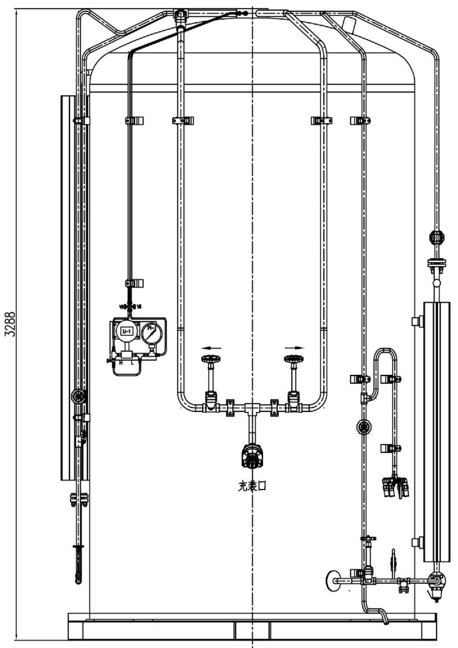
2, welding should comply with NB/T 47014-2011《Pressure equipment welding process assessment》, NB/T47015-2011《Pressure vessel welding procedures》 and the manufacturer's welding process requirements, the selection of internal container welding materials must meet the requirements of GB/T 18442.7-2017, And meet the requirements of enhanced welding process evaluation

设计参数表

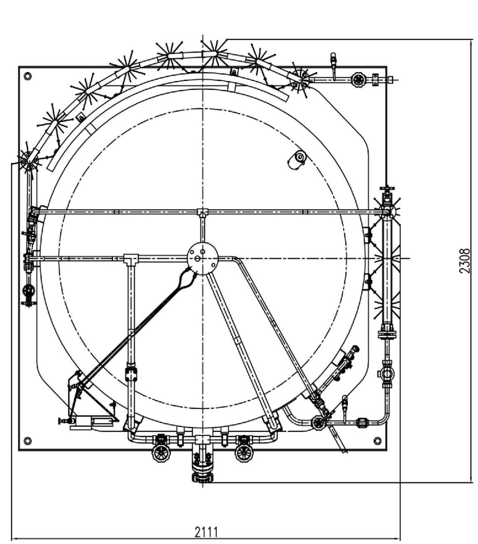
1	产品型号MODEL		MT3-CS
2	放置形式Tank Type		立式平底Vertical& Flat-Bottom
3	设计标准Design Standard		TSG21、GB/T150、GB/T18442-2019
4	设计压力Design Pressure (内容器INNER/夹套JACKET)	MT-3B	1.6MPa/-0.1MPa(INNER /JACKET)
		MT-3E	2.3MPa/-0.1MPa(INNER /JACKET)
		MT-3F	3.3MPa/-0.1MPa(INNER /JACKET)
5	最大工作压力MAWP (内容器INNER/夹套JACKET)	MT-3B	1.6MPa/-0.1MPa(INNER /JACKET)
		MT-3E	2.3MPa/-0.1MPa(INNER /JACKET)
		MT-3F	3.3MPa/-0.1MPa(INNER /JACKET)
6	最低设计温度MDMT		-196℃/50℃
7	全容积Volume		2.99
8	充装率FILLITNG RATIO		95%
9	主体材料	内筒体/封头INNER /HEAD	S30408 GB/T24511
10	MAIN Material	外筒体/封头JACKET/HEAD	Q345R GB/T713
11	充装介质FLUID NAME		液氮，液氧，液氩LIN , LOX , LAR
12	夹套保温型式Insulation Type of JACKET		高真空多层缠绕High vacuum multilayer winding
13	真空夹层漏气速率Leakage rate of vacuum interlayer		≤ $1x10^{-8}$Pa.m^3/s
14	静态蒸发率（液氮） NER (LIN)		≤ 0.66%/d
15	出厂真空度 VACUUM DEGREE		≤ 0.01Pa
16	产品外形尺寸boundary dimension		见右图
17	底盘尺寸(长x宽)pallet dimension(LxW)		1700mmx1700mm
18	设备空重weight		MT3B≈1.7吨，MT3E≈1.9吨，MT3F≈2.15吨
19	可充装介质重量Medium weight		LIN:2300Kg,LOX:3240Kg,LAR:3959Kg
20	增压器+汽化器(PBU+VAP)		20Nm^3/h+75Nm^3/h
21	内部管道材料(PIPE of inner)		S30408 GB/T14976
22	外部管道材料(PIPE of External)		S30408 GB/T14976

管口	Function	管口	Function
A	顶部充装 Top Fill	H	溢流/安全装置 VENT&Full trycock
B	底部充装Bottom Fill	K	气相 Economic
C	增压回气 PBU OUTLET	S	安全泄压/抽真空口 Dual Safety/Vacuum pumpout
D	底部出液 PBU INLET	T	测真空口Measuring vacuum
E	仪表液相 Liquid Phase of level Garge		液体出口 Liquid OUTLET
F	仪表气相 Vapor Phase of level Garge		气体出口 GAS OUTLET

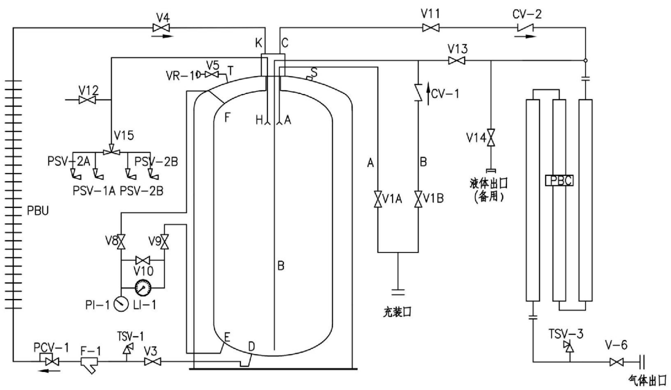
					工程名称	/	
设 计			低温液体贮罐		设计项目	MT3-CS	
校 核					设计阶段	/	
标准化					图 号	/	
审 核					版 次	1	重量(kg)
批 准			比 例 1:12	图 幅 A1	第1页	共1页	



俯视图top view



流程图（P&ID）



设计参数表

1	产品型号MODEL		MT5-CS
2	放置形式Tank Type		立式平底Vertical& Flat-Bottom
3	设计标准Design Standard		TSG21、GB/T150、GB/T18442-2019
4	设计压力Design Pressure（内容器INNER/夹套JACKET）	MT-5B	1.6MPa/-0.1MPa（INNER /JACKET）
		MT-5E	2.3MPa/-0.1MPa（INNER /JACKET）
		MT-5F	3.3MPa/-0.1MPa（INNER /JACKET）
5	最大工作压力MAWP（内容器INNER/夹套JACKET）	MT-5B	1.6MPa/-0.1MPa（INNER /JACKET）
		MT-5E	2.3MPa/-0.1MPa（INNER /JACKET）
		MT-5F	3.3MPa/-0.1MPa（INNER /JACKET）
6	最低设计温度MDMT		-196℃/50℃
7	全容积Volume		4.99
8	充装率FILLITNG RATIO		95%
9	主体材料 MAIN Material	内筒体/封头INNER /HEAD	S30408 GB/T24511
10		外筒体/封头JACKET/HEAD	Q345R GB/T713
11	充装介质FLUID NAME		液氮、液氧、液氩LIN，LOX，LAR
12	夹套保温型式Insulation Type of JACKET		高真空多层缠绕High vacuum multilayer winding
13	真空夹层漏气速率Leakage rate of vacuum interlayer		≤ $1x10^{-8}$Pa.m^3/s
14	静态蒸发率 （液氮）NER (LIN)		≤ 0.45%/d
15	出厂真空度 VACUUM DEGREE		≤ 0.01Pa
16	产品外形尺寸boundary dimension		见右图
17	底盘尺寸(长x宽)pallet dimension(LxW)		1900mmx1900mm
18	设备空重weight		MT5B≈2.5吨，MT5E≈2.75吨，MT5F≈3吨
19	可充装介质重量Medium weight		LIN:3848Kg,LOX:5425Kg,LAR:6620Kg
20	增压器+汽化器（PBU+VAP）		25Nm^3/h+105Nm^3/h
21	内部管道材料（PIPE of inner）		S30408 GB/T14976
22	外部管道材料（PIPE of External）		S30408 GB/T14976

管口	Function	管口	Function
A	顶部充装 Top Fill	H	溢流/安全装置 VENT&Full trycock
B	底部充装Bottom Fill	K	气相 Economic
C	增压回气 PBU OUTLET	S	安全泄压/抽真空口 Dual Safety/Vacuum pumpout
D	底部出液 PBU INLET	T	测真空口Measuring vacuum
E	仪表液相 Liquid Phase of level Garge		液体出口 Liquid OUTLET
F	仪表气相 Vapor Phase of level Garge		气体出口 GAS OUTLET

阀门表 VALVE LIST

V-1A	顶部充装阀 VALVE,Top Fill
V-1B	底部充装阀 VALVE,Bottom Fill
V-3	底部出液阀 VALVE,PBU INLET
V-4	增压器出口阀VALVE,PBU OUTLET
V-5	规管截止阀 VALVE,Measuring vacuum
V-6	气体出口阀 VALVE,VAPOR OUTLET
V-8	液面计气相阀 VALVE,Vapor Phase
V-9	液面计液相阀 VALVE,Liquid Phase
V-10	液面计平衡阀 VALVE,Equilibrate
V-11	气体使用阀 VALVE,Economic
V-12	放空阀 VALVE,VENT&Full trycock
V-13	液相根部阀 VALVE, Liquid Phase Outlet
V-14	液体出口阀 VALVE, Liquid USE
V-15	三通换向阀 Safety valve switch
CV-1	止回阀,充装回路 Check valve，Top Fill
CV-2	止回阀,气体使用 Check valve，Economic
PBU	自增压器 PBU
PBC	汽化器 VAPORIZER
F-1	过滤阀，自增压 Strainer valve, PBU
PCV-1	增压阀 regulating valve，Booster valve
PSV-1A	安全阀 Safety valve
PSV-1B	安全阀 Safety valve
PSV-2A	二级安全阀 Safety valve
PSV-2B	二级安全阀 Safety valve
TSV-X	管道安全阀 Safety valve (pipe)
LI-1	液位计 Level garge
PI-1	压力表 Pressure garge

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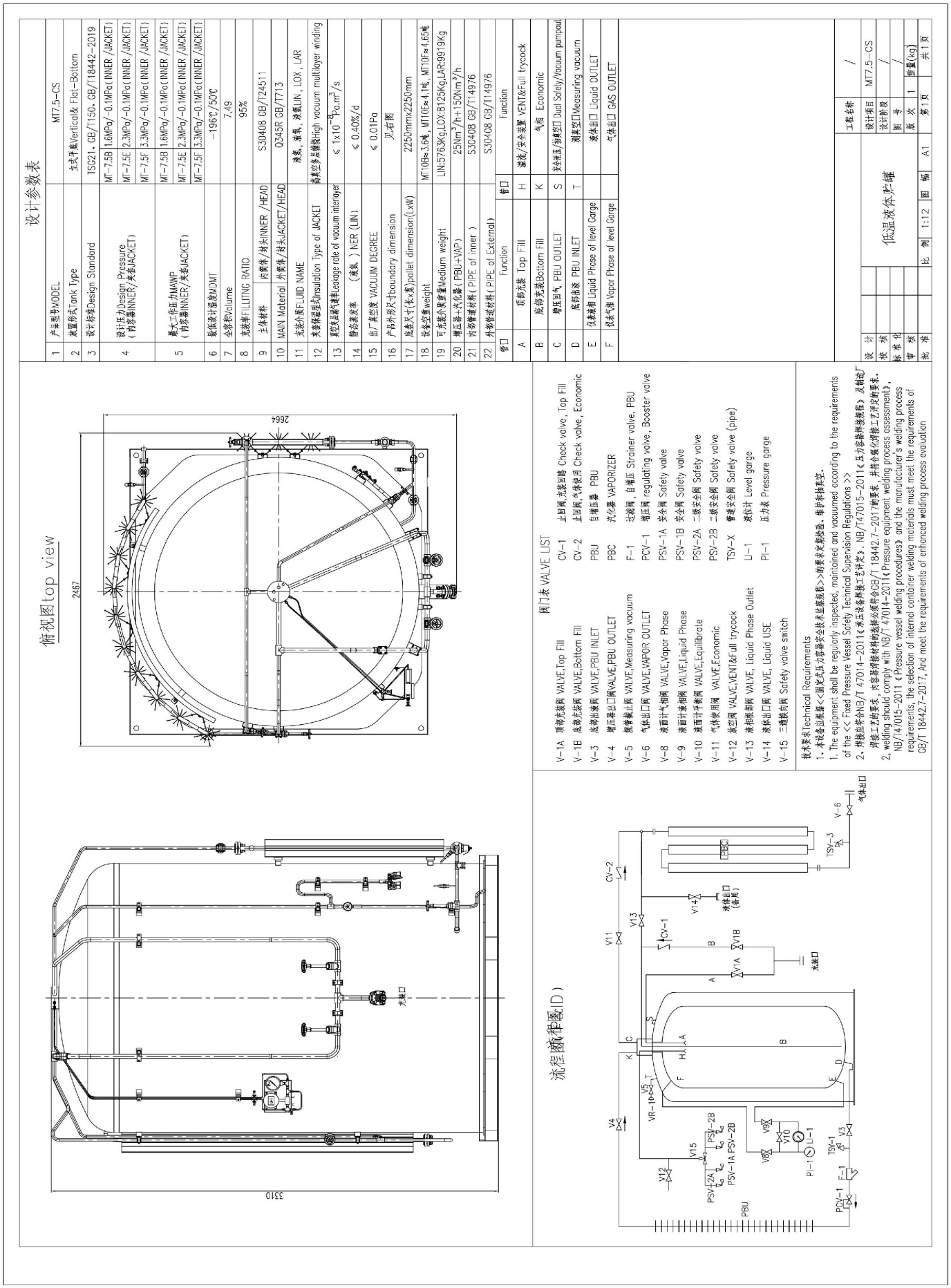
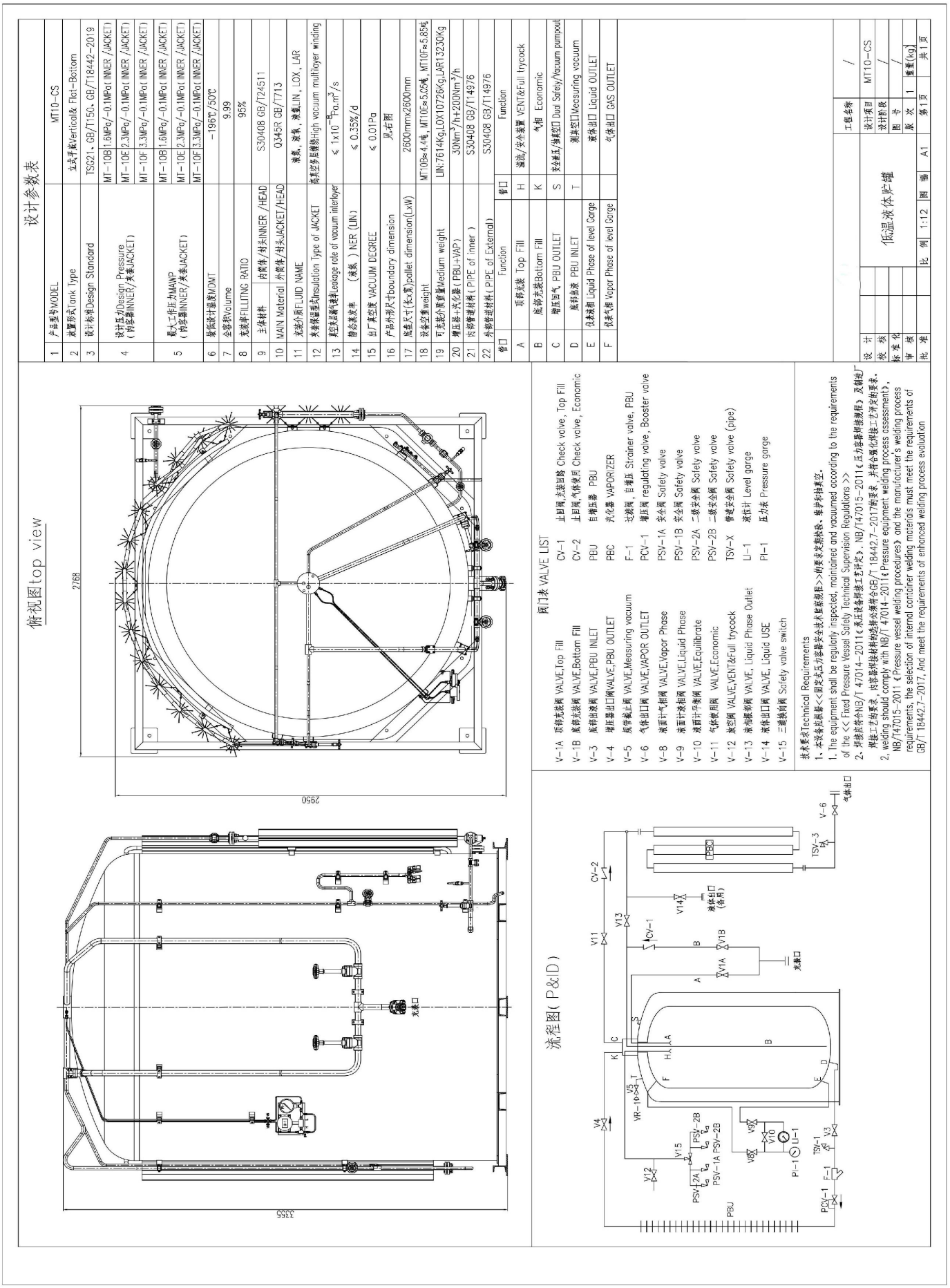
设 计		低温液体贮罐		工程名称	/
校 核				设计项目	MT5-CS
标 准 化				设计阶段	/
审 核				图 号	/
批 准				版 次	1 重量(kg)
		比 例 1:12	图 幅 A1	第1页	共1页


设计参数表
1 产品型号MODEL MT7.5-CS
2 液罩形式Tank Type 立式平底Vertical& Flat-Bottom
3 设计标准Design Standard TSG21-、GB/T150-、GB/T18442-2019
4 设计压力Design Pressure (内容器INNER/夹套JACKET) MT-7.5B 1.6MPa/-0.1MPa(INNER/JACKET)
MT-7.5E 2.3MPa/-0.1MPa(INNER/JACKET)
MT-7.5F 3.3MPa/-0.1MPa(INNER/JACKET)
5 最大工作压力MAWP (内容器INNER/夹套JACKET) MT-7.5B 1.6MPa/-0.1MPa(INNER/JACKET)
MT-7.5E 2.3MPa/-0.1MPa(INNER/JACKET)
MT-7.5F 3.3MPa/-0.1MPa(INNER/JACKET)
6 最低设计温度MDMT -196℃/50℃
7 全容积Volume 7.49
8 充装率FILLING RATIO 95%
9 主体材料 内筒体/材质INNER/HEAD S30408 GB/T24511
10 MAIN Material 外筒体/材质JACKET/HEAD Q345R GB/T713
11 充装介质FLUID NAME 液氧、液氩、液氮LIN、LOX、LAR
12 夹套保温型式Insulation Type of JACKET 高真空多层绕制High vacuum multilayer winding
13 真空层漏气速率Leakage rate of vacuum interlayer ≤ 1x10⁻⁸Pa.m³/s
14 静态蒸发率 (液氮) NER (LIN) ≤ 0.40%/d
15 出厂真空度 VACUUM DEGREE ≤ 0.01Pa
16 产品外形尺寸boundary dimension 见右图
17 底基尺寸(长x宽)pallet dimension(LxW) 2250mmx2250mm
18 设备空重weight MT10Bs:3.6吨, MT10Es:4.1吨, MT10Fs:4.65吨
19 可充装介质重量Medium weight LIN:5763Kg,LOX:8125Kg,LAR:9919Kg
20 增压器+汽化器(PBU+VAP) 25Nm³/h+150Nm³/h
21 内部管道材料(PIPE of inner) S30408 GB/T14976
22 外部管道材料(PIPE of External) S30408 GB/T14976
管口 Function 管口 Function
A 顶部充装 Top Fill H 罐底/安全装置 VENT&Full trycock
B 底部充装Bottom Fill K 气相 Economic
C 增压回气 PBU OUTLET S 真空低压/破真空口 Dual Safety/Vacuum pumpout
D 底部出液 PBU INLET T 测真空口Measuring vacuum
E 饮表液相 Liquid Phase of level Gorge 液体出口 Liquid OUTLET
F 饮表气相 Vapor Phase of level Gorge 气体出口 GAS OUTLET
俯视图top view
2467
2664
3310
阀门表 VALVE LIST
V-1A 顶部充装阀 VALVE,Top Fill CV-1 止回阀,液氧回路 Check valve, Top Fill
V-1B 底部充装阀 VALVE,Bottom Fill CV-2 止回阀,气体使用 Check valve, Economic
V-3 底部出液阀 VALVE,PBU INLET PBU 自增压器 PBU
V-4 增压器出口阀VALVE,PBU OUTLET PBC 汽化器 VAPORIZER
V-5 液体截止阀 VALVE,Measuring vacuum F-1 过滤阀 自增压 Strainer valve, PBU
V-6 气体出口阀 VALVE,VAPOR OUTLET PCV-1 增压阀 regulating valve, Booster valve
V-8 液面计气相阀 VALVE,Vapor Phase PSV-1A 安全阀 Safety valve
V-9 液面计液相阀 VALVE,Liquid Phase PSV-1B 安全阀 Safety valve
V-10 液面计平衡阀 VALVE,Equilibrate PSV-2A 二级安全阀 Safety valve
V-11 气体使用阀 VALVE,Economic PSV-2B 二级安全阀 Safety valve
V-12 放空阀 VALVE,VENT&full trycock TSV-X 管道安全阀 Safety valve (pipe)
V-13 液相截断阀 VALVE, Liquid Phase Outlet LI-1 液位计 Level garge
V-14 液体出口阀 VALVE, Liquid USE PI-1 压力表 Pressure garge
V-15 三通换向阀 Safety valve switch
流程图程图(ID)
技术要求Technical Requirements
1. 本设备应根据<<固定式压力容器安全技术监察规程>>的要求定期检验、维护和抽查.
1. The equipment shall be regularly inspected, maintained and vacuumed according to the requirements of the << Fixed Pressure Vessel Safety Technical Supervision Regulations >>
2. 焊接应符合NB/T 47014-2011《承压设备焊接工艺评定》、NB/T47015-2011《压力容器焊接规程》及制造厂焊接工艺评定要求. 内容器焊接材料按选择必须符合GB/T 18442.7-2017的要求. 并符合氩化焊接工艺评定的要求.
2. welding should comply with NB/T 47014-2011《Pressure equipment welding process assessment》, NB/T47015-2011《Pressure vessel welding procedures》 and the manufacturer's welding process requirements, the selection of internal container welding materials must meet the requirements of GB/T 18442.7-2017, And meet the requirements of enhanced welding process evaluation
设 计 审 核 标 准 化 审 定 批 准
低温液体贮罐
工程名称 /
设计项目 MT7.5-CS
设计阶段 /
图 号 /
成 次 1 重量(kg)
比 例 1:12 图 幅 A1 第1页 共1页


设计参数表
MT10-CS
1 产品型号MODEL
2 罐体形式Tank Type 立式平底Vertical& Flat-Bottom
3 设计标准Design Standard TSG21、GB/T150、GB/T18442-2019
4 设计压力Design Pressure (内容器INNER/夹套JACKET) MT-10B 1.6MPa(-0.1MPa) INNER /JACKET
MT-10E 2.3MPa(-0.1MPa) INNER /JACKET
MT-10F 3.3MPa(-0.1MPa) INNER /JACKET
5 最大工作压力MAWP (内容器INNER/夹套JACKET) MT-10B 1.6MPa(-0.1MPa) INNER /JACKET
MT-10E 2.3MPa(-0.1MPa) INNER /JACKET
MT-10F 3.3MPa(-0.1MPa) INNER /JACKET
6 罐体设计温度MDMT -196℃/50℃
7 全容积Volume 9.99
8 充装率FILLITNG RATIO 95%
9 主体材料 内筒体/封头INNER /HEAD S30408 GB/T24511
10 MAIN Material 外筒体/封头JACKET/HEAD Q345R GB/T713
11 充装介质FLUID NAME 液氮、液氧、液氩,LN、LOX、LAR
12 夹套保温型式Insulation Type of JACKET 高真空多层缠绕High vacuum multilayer winding
13 夹层真空度Leakage rate of vacuum interlayer ≤ 1x10⁻⁸Pa.m³/s
14 静态蒸发率 (液氮) NER (LIN) ≤ 0.35%/d
15 出厂真空度 VACUUM DEGREE ≤ 0.01Pa
16 产品外形尺寸boundary dimension 见右图
17 底盘尺寸(长x宽)pallet dimension(LxW) 2600mmx2600mm
18 装备空重weight MT10≈4.4吨, MT10E≈5.05吨, MT10F≈5.85吨
19 可充装介质重量Medium weight LIN:7614Kg,LOX10726Kg,LAR13230Kg
20 增压器+汽化器(PBU+VAP) 30Nm³/h+200Nm³/h
21 内部管道材料(PIPE of inner) S30408 GB/T14976
22 外部管道材料(PIPE of External) S30408 GB/T14976
管口 Function 管口 Function
A 顶部充液 Top Fill H 溢流/安全装置 VENT&Full trycock
B 底部充液Bottom Fill K 气相 Economic
C 增压回气 PBU OUTLET S 夹套真空/抽真空口 Dual Safety/Vacuum pumpout
D 底部进液 PBU INLET T 测真空口Measuring vacuum
E 仪表液相 Liquid Phase of level Gorge 液体出口 Liquid OUTLET
F 仪表气相 Vapor Phase of level Gorge 气体出口 GAS OUTLET
低温液体贮罐
设计 校核 审核 批准
比例 1:12 图幅 A1 第1页 共1页
工装名称 / MT10-CS
设计项目 设计阶段 图号 版次 1 重量(kg)
俯视图top view
2768
2950
3355
流程图(P&I)
阀门表VALVE LIST
V-1A 顶部充液阀 VALVE,Top Fill
V-1B 底部充液阀 VALVE,Bottom Fill
V-3 底部出液阀 VALVE,PBU INLET
V-4 增压器出口阀VALVE,PBU OUTLET
V-5 液相截止阀 VALVE,Measuring vacuum
V-6 气体出口阀 VALVE,VAPOR OUTLET
V-8 液面计气相阀 VALVE,Vapor Phase
V-9 液面计液相阀 VALVE,Liquid Phase
V-10 液面计平衡阀 VALVE,Equilibrate
V-11 气体使用阀 VALVE,Economic
V-12 放空阀 VALVE,VENT&Full trycock
V-13 液相限额阀 VALVE, Liquid Phase Outlet
V-14 液体出口阀 VALVE, Liquid USE
V-15 三通换向阀 Safety valve switch
CV-1 止回阀,充液回路 Check valve, Top Fill
CV-2 止回阀,气体使用 Check valve, Economic
PBU 自增压器 PBU
PBC 汽化器 VAPORIZER
F-1 过滤阀, 自增压 Strainer valve, PBU
PCV-1 增压阀 regulating valve, Booster valve
PSV-1A 安全阀 Safety valve
PSV-1B 安全阀 Safety valve
PSV-2A 二级安全阀 Safety valve
PSV-2B 二级安全阀 Safety valve
TSV-X 管道安全阀 Safety valve (pipe)
LI-1 液位计 Level garge
PI-1 压力表 Pressure garge
技术要求Technical Requirements
1、本设备应按照<<固定式压力容器安全技术监察规程>>和有关技术监察规定。
1. The equipment shall be regularly inspected, maintained and vacuumed according to the requirements of the << Fixed Pressure Vessel Safety Technical Supervision Regulations >>
2、焊接工艺评定NB/T 47014-2011《承压设备焊接工艺评定》, NB/T47015-2011《压力容器焊接规程》及制造厂焊接工艺的要求。
2. welding should comply with NB/T 47014-2011《Pressure equipment welding process assessment》, NB/T47015-2011《Pressure vessel welding procedures》 and the manufacturer's welding process requirements, the selection of internal container welding materials must meet the requirements of GB/T 18442.7-2017, And meet the requirements of enhanced welding process evaluation