

2013E+H仪表技术交流

温度产品



E+H优势--141年温度研发历史



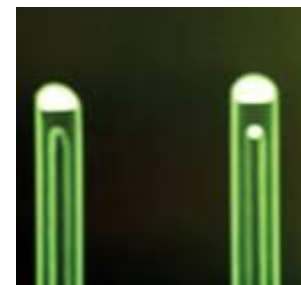
严格的测试及质量管理



水压测试



焊接质量检测



X射线检测



探伤测试

材质成份检测 (PMI)



XM3000T - 4.69 Second 10:14		
31.96		
0		
Class: Iron ID: 4		
Alloy: SS 316		
Ti	0.31	0.15
V	0.09	0.05
Cr	16.80	0.38
Mn	1.69	0.22
Fe	68.33	0.51
Co	0.35	0.23
Ni	10.59	0.39
Cu	0.71	0.13
W	0.16	0.06
Nb	0.02	0.01
Mo	2.06	0.07
File Setup About		

This equipment produces x-rays when energized. To be operated only by qualified personnel.

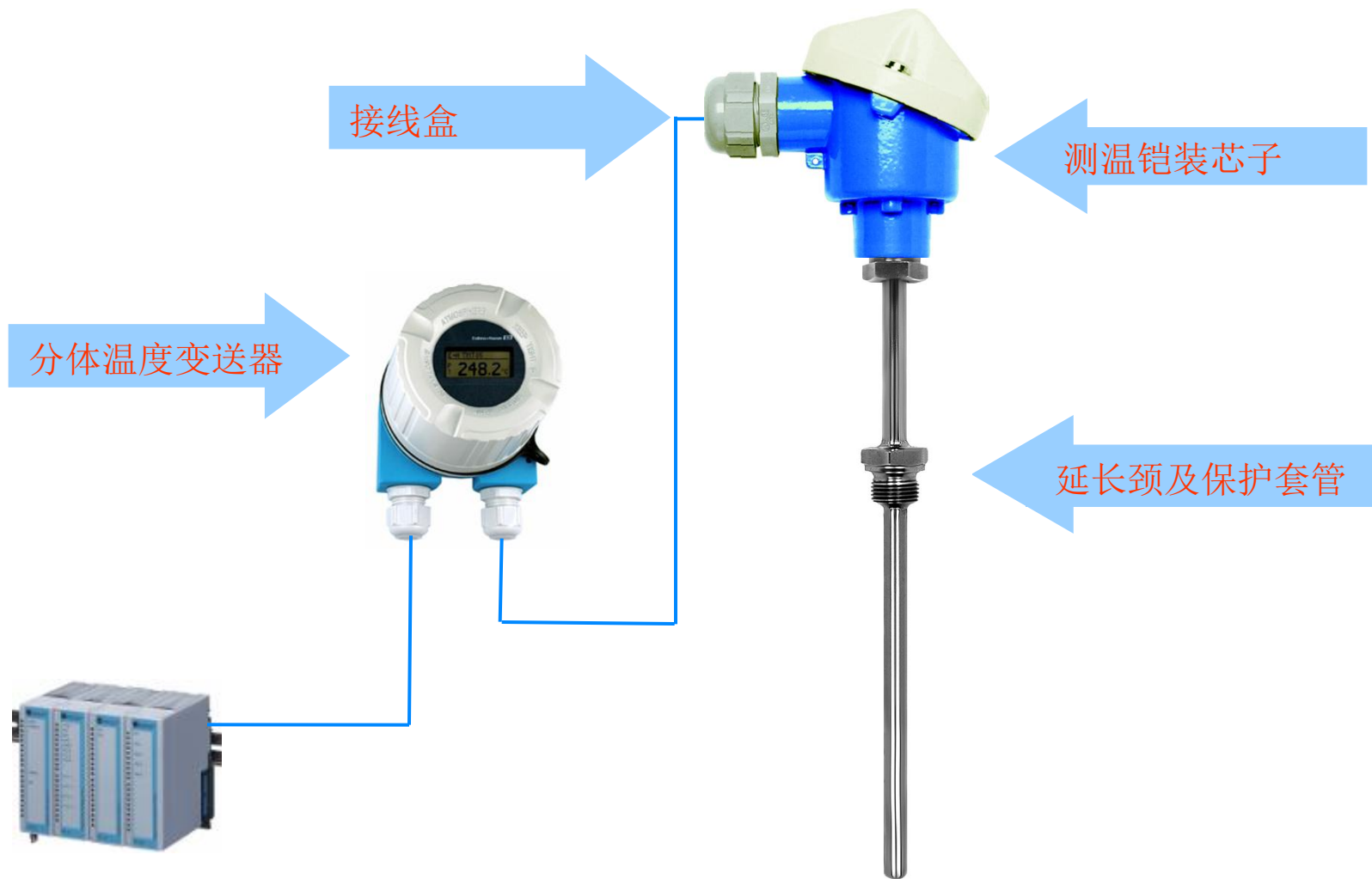
业绩概览

型号	最终用户	数量
TR62,TMT162,	扬子巴斯夫南京一期	2,350
TR62,TMT182	广东龙沙	1,300
TR62,TMT182,TMT82	寰球院总包海外项目：	3,322
TR62,TR13	扬子巴斯夫南京二期	2,300
TMT162R	中国石油天然气股份有限公司抚顺石化	4,998
TR62	延长石油项目	550
TR62,TMT162,TMT82	内蒙古君正化工有限公司	647
TR10,TR45	利乐包装（昆山）有限公司	621
TR10,TR12	斯蒂莫斯（上海）水处理设备有限公司	762
TR62,TMT182	中煤鄂尔多斯能源化工有限公司	600
TMT182,TR62	扬子石化－巴斯夫有限责任公司	888
TMT82,TMT182	云南先锋煤化工股份有限公司	1010

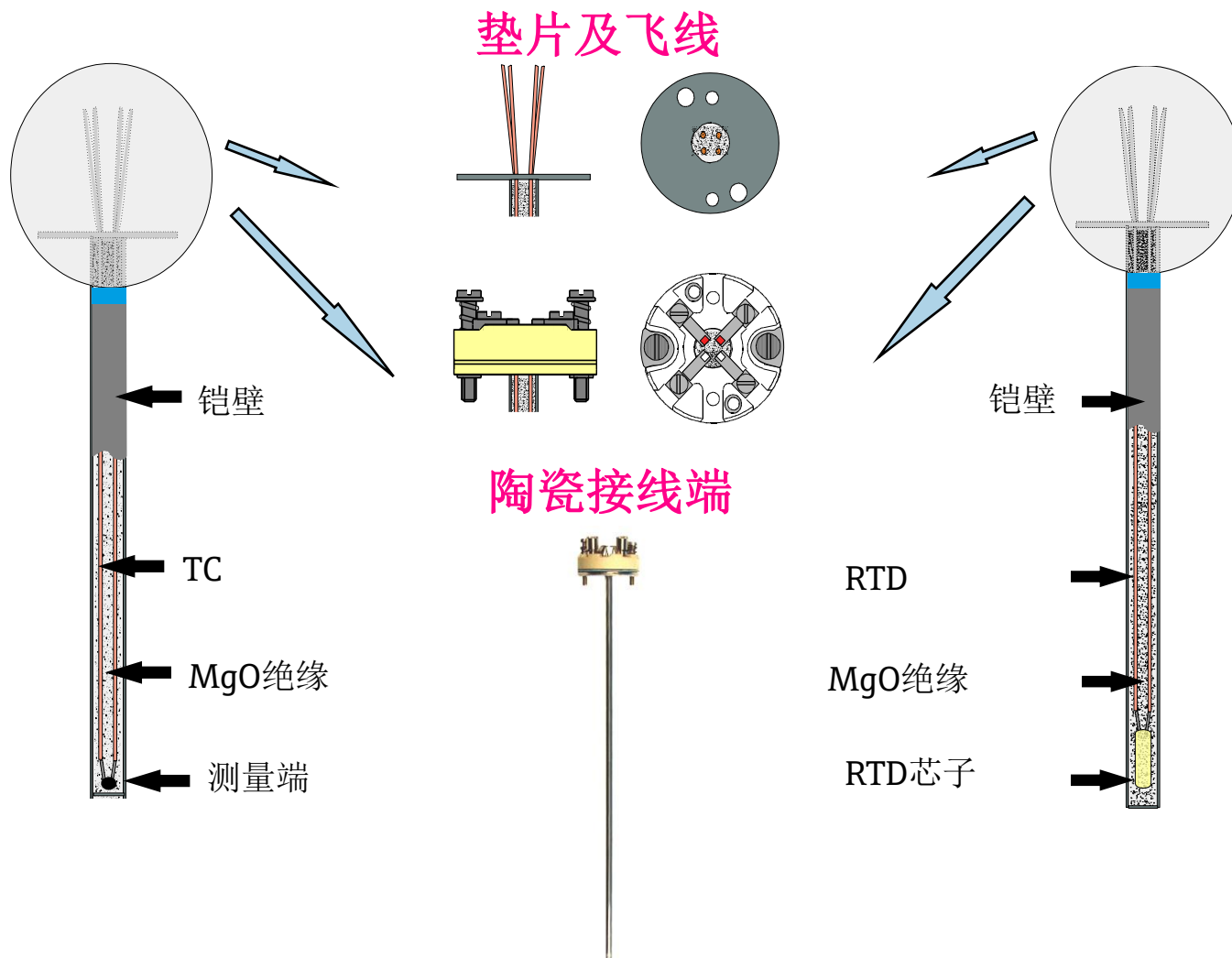
温度传感器



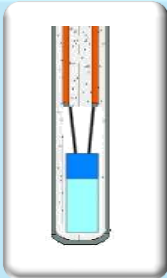
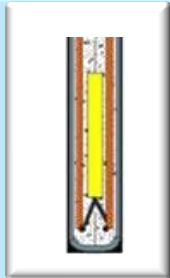
温度仪表结构



铠装芯子

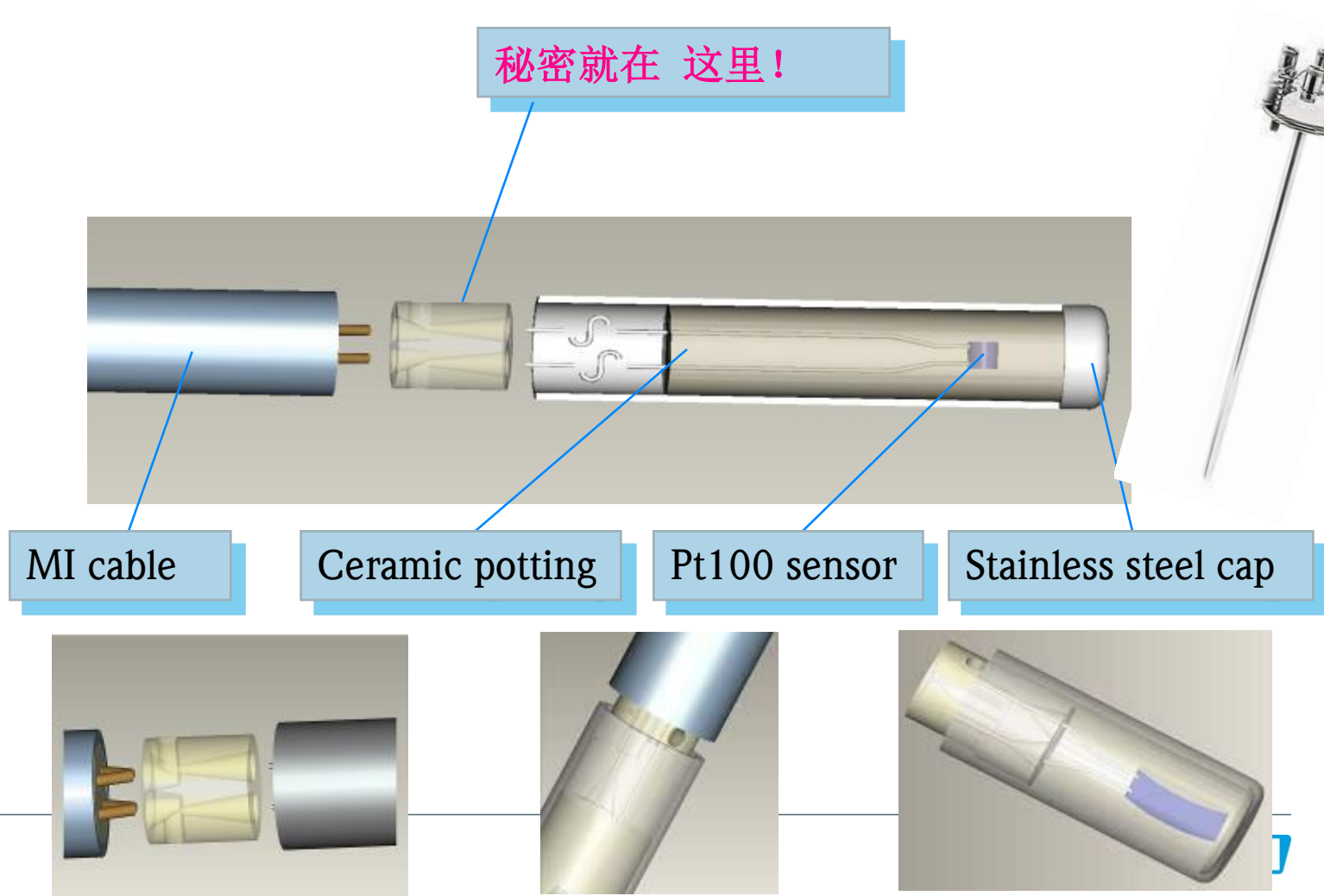


各种传感器芯子

				
Sensor Type	iTHERM® QuickSens	iTHERM® StrongSens	Standard Thin Film	Wire Wound
Measurement range	-50...+200 °C	-50...+500 °C	-50...+400 °C	-200...+600 °C
Number of sensors	1x Pt100			1x/2x Pt100
Electrical connection	3-/4-wires			
Insert diameter	3 mm / 6 mm	6 mm	3 mm / 6 mm	
Accuracy	Class A / AA			
Vibration resistance	3 mm: 3 g 6 mm: > 60 g	> 60 g	3 g	
Response times t ₉₀ (for 1x Pt100)	3 mm: 0.75 s 6 mm: 1.5 s	--- 6 mm: 9.5 s	3 mm: 5.5 s 6 mm: 13 s	3 mm: 5 s 6 mm: 11.5 s

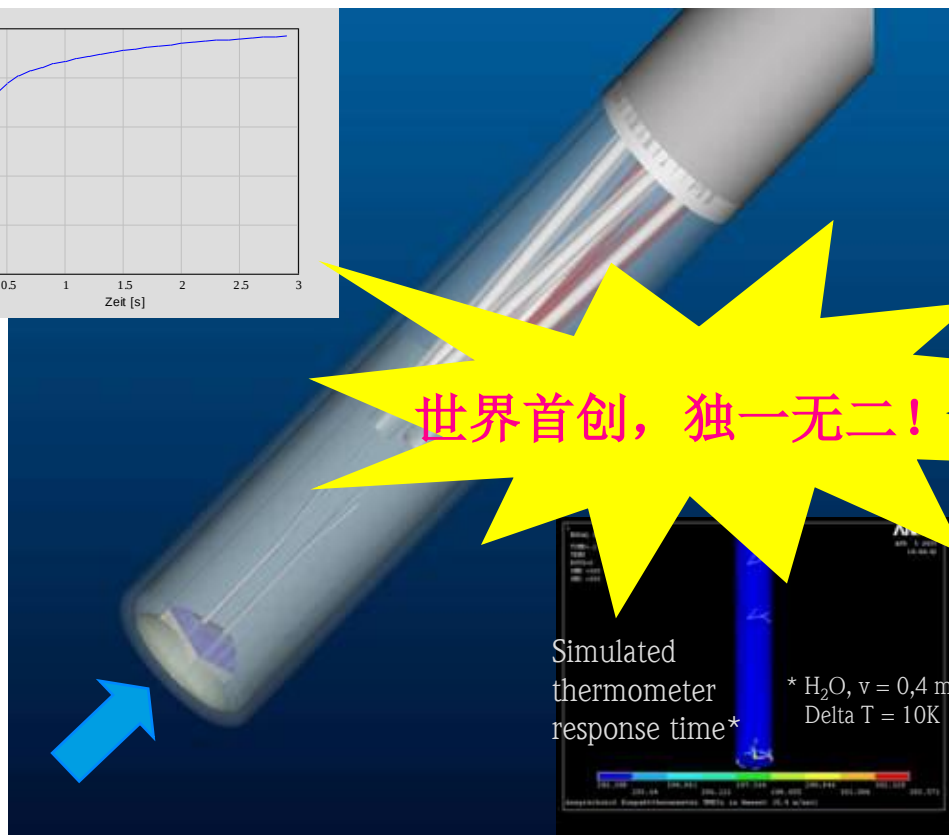
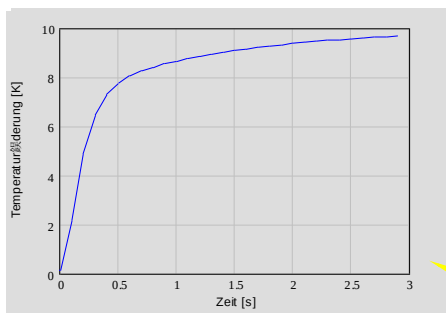
新生代温度传感器

- 高抗震芯子 **iTHERM® StrongSens TF**



新生代温度传感器

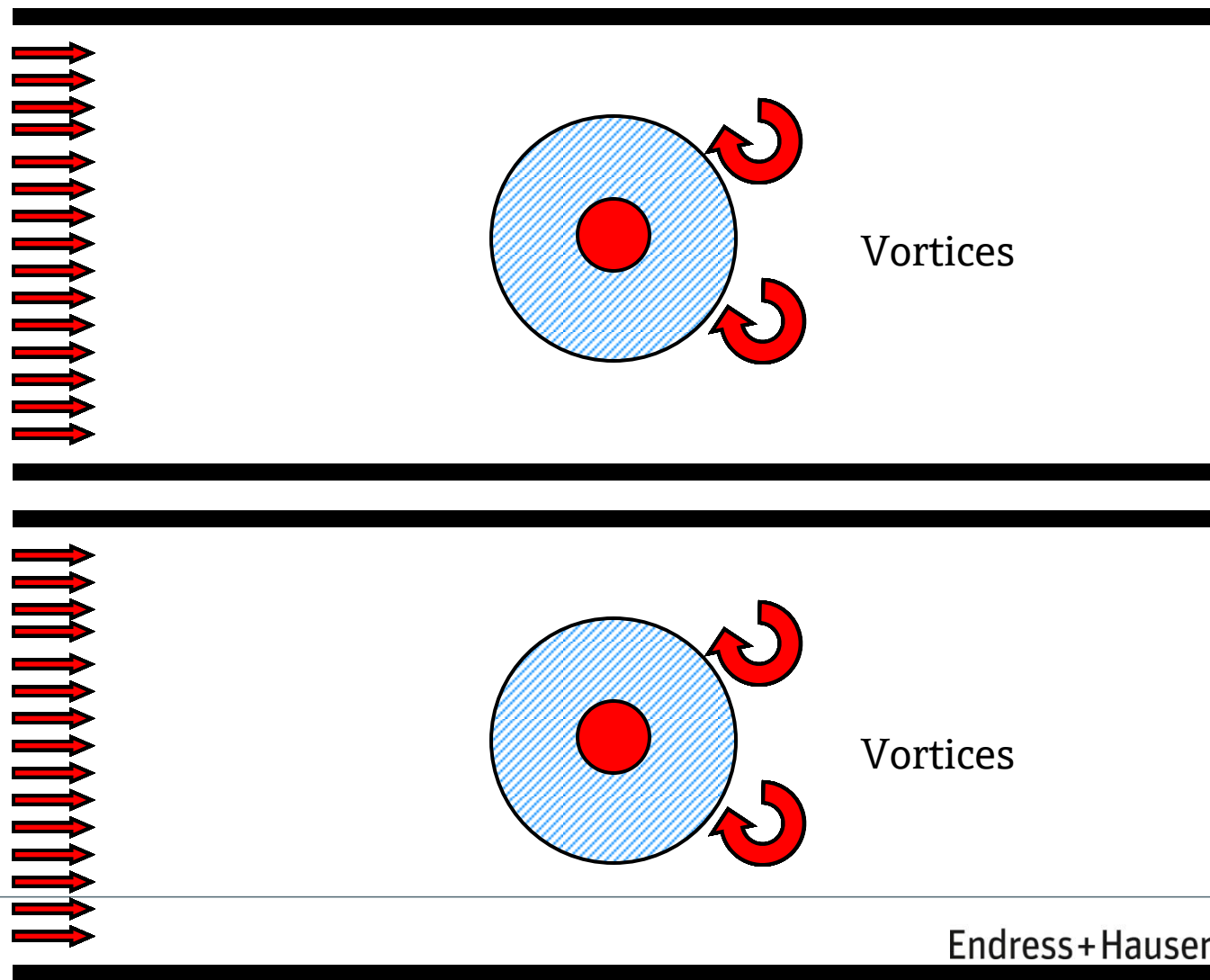
■ 快速响应芯子*iTHERM*® QuickSens TF



反应速度比标准热电阻快7倍!!!
极短的插入深度就可达到高精度测量值!!!

振动计算

Karman 震动结果



Deformata totale 2
Tipo: Deformata totale
Frequenza: 1157. Hz
Unità: mm
02/12/2008 14:21

200.2 Max
177.95
155.71
133.46
111.22
88.976
66.732
44.488
22.244
0 Min

ANSYS

$f_2=1157.0$ Hz

0.00 50.00
25.00 75.00

Deformata totale 4
Tipo: Deformata totale
Frequenza: 3706.7 Hz
Unità: mm
02/12/2008 14:23

200.27 Max
178.02
155.77
133.51
111.26
89.01
66.757
44.505
22.252
0 Min

ANSYS

$f_4=3706.7$ Hz

0.00 50.00 100.00 (mm)
25.00 75.00



Deformata totale - Tutti i corpi
Tipo: Deformata totale
Frequenza: 421.34 Hz
Unità: mm
02/12/2008 14:20

210.85 Max
187.43
164
140.57
117.14
93.713
70.284
46.856
23.428
0 Min

ANSYS

$f_1=421.34$ Hz

0.00 50.00 100.00 (mm)
25.00 75.00



Deformata totale 3
Tipo: Deformata totale
Frequenza: 2256.7 Hz
Unità: mm
02/12/2008 14:23

200.49 Max
178.21
155.93
133.66
111.38
89.105
66.829
44.552
22.276
0 Min

$f_3=2256.7$ Hz

0.00 50.00 100.00 (mm)
25.00 75.00



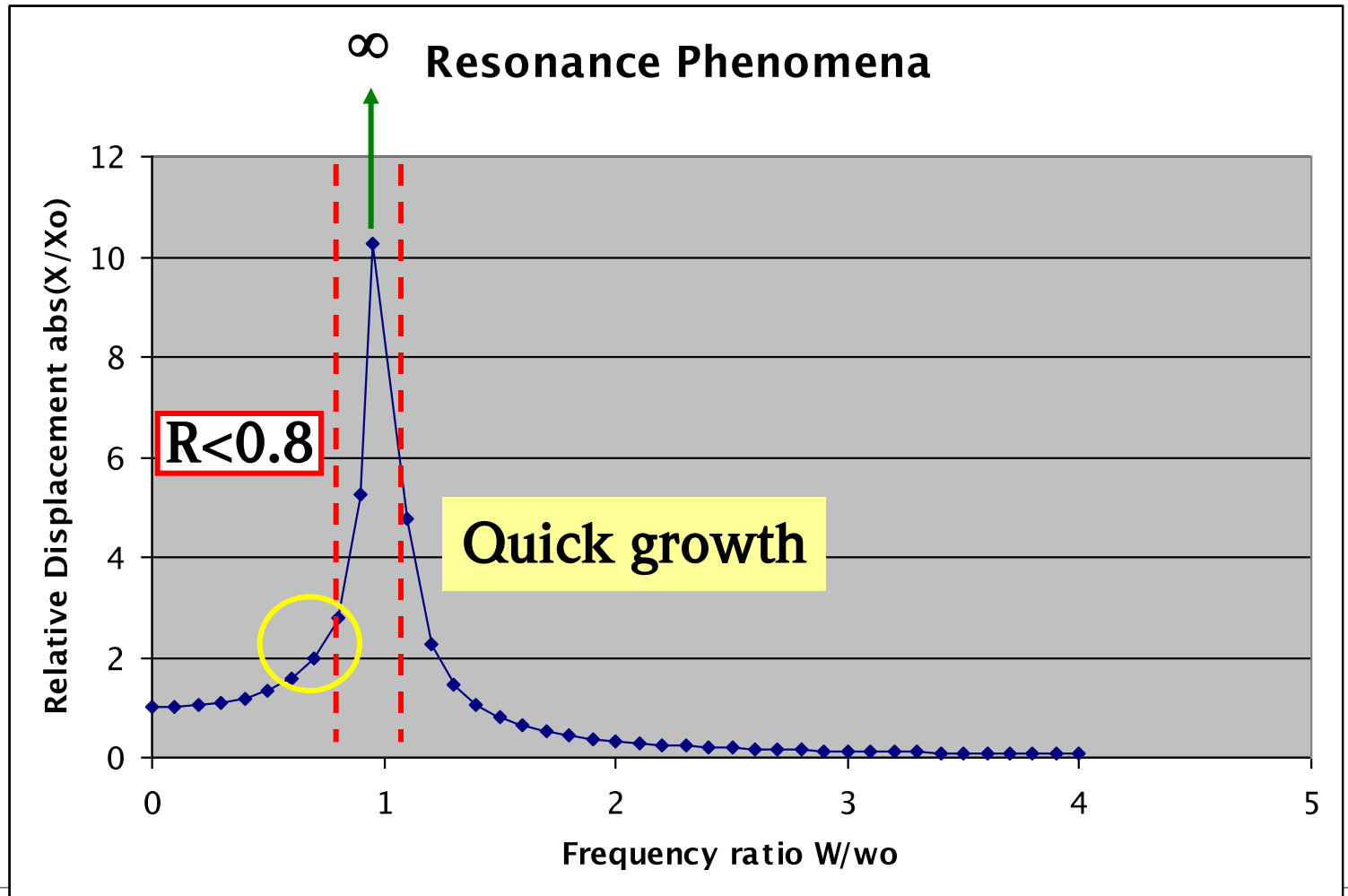
ANSYS

$f_5=5495.0$ Hz

0.00 50.00 100.00 (mm)
25.00 75.00



振动计算



ASME PTC 19.3

过程参数:

流速
压力
温度
密度
粘度

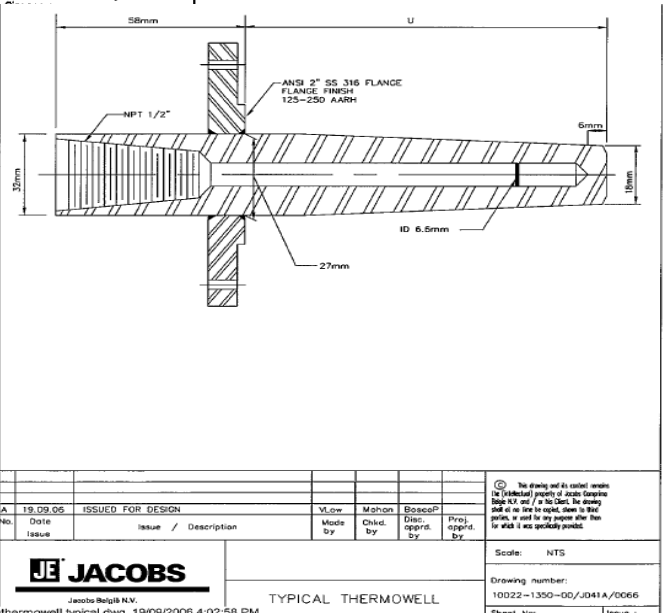
套管参数:

插深
材质
内径
外锥度

01- COMPLETE ASSEMBLY : YES		11- SINGLE OR DUAL ELEMENT : SINGLE	
HEAD		12- MOUNTING THREAD :	
02- SCREWED COVER : YES	OTHER :	13- CONNECTION : 2-WIRE ☐ 3-WIRE ☐	
03- AREA CLASSIFICATION : ZONE 2 IIB T3		14- LEAD WIRES ☒ RECEPTACLE ☐	
04- CASE MATERIAL : POLYURETHANE COATED LOW CU AL		15- CONSTRUCTION : SPRING LOADED	
05- COND. CONN. :		THERMOWELL	
06- NIPPLE SIZE : 1/2" NPT		16- MATERIAL : SS 316 / 316L	
UNION : YES		17- CONSTRUCTION : DRILLED BARSTOCK	
ELEMENT		TAPERED ☒ STRAIGHT ☐	
07- PLATINUM ☒ NICKEL ☐ OTHERS :	BUILT-UP ☐ CLOSED-END ☐		18- DIMENSION (NOTE 1) : D1 : 22mm
08- ICE POINT RESISTANCE : 100 Ohms		19- INTERNAL THREAD : 1/2" NPT	
TOLERANCE SPEC : CLASS B IEC 751		20- PROCESS CONNECTION : 1" WELD-IN TYP	
09- LEADS : STD ☒ POTTED ☐ HERM. SEALED ☐			
10- SHEATH MATERIAL : MFR STANDARD			
INSULATION : MFR STD			
NOTES			
1.) FOR INSTALLATION DETAILS REFER ATTACHMENT 1.			
2.) TRANSMITTER NOT REQUIRED			
3.) VENDOR SHALL SUBMIT THERMOWELL DRAWING FOR REVIEW DURING BID SUBMISSION			
4.) VESSEL MOUNTED THERMOWELL IS WELDED TO BLIND FLANGE BY OTHER			
5.)			

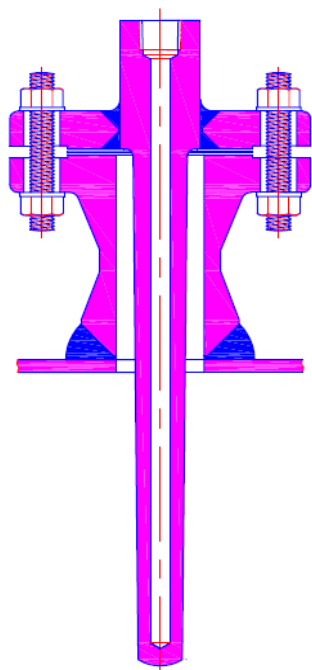
THE ABOVE INFORMATION IS COMMON DATA FOR THE INSTRUMENTS LISTED BELOW

TAG NUMBER	Service	PID Dwg. Line/Equipment No.	Nozzle / Socketlet Ht (mm)	Well Dimension (mm)			Element Insulation Length (mm)	Thk (mm)	Temperature (Deg C)			D (E)
				"U"	"T"	"N"			MIN	NOR	MAX	
X2924-T-11	HOT GLYCOL DRUM TEMPERATURE	3022.9.008 X292M901, D, 2"	180	200	80	VTA	VTA	-	0	130	200	
X2834-T-51	CHILLED WATER DISCHARGED FROM X203MP10	3022.9.008 10"-A1A-29228-WCS	33.4	110	80	VTA	VTA	13	1	4	50	
X3824-T-41	X392MP02 DISCHARGE TEMPERATURE	3023.9.004 6"-A1A-29149-WGS	33.4	110	80	VTA	VTA	50	-18	-13	50	

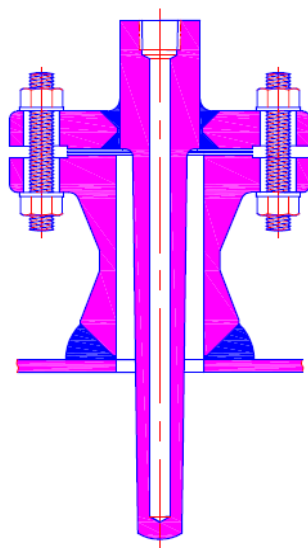


修改方法

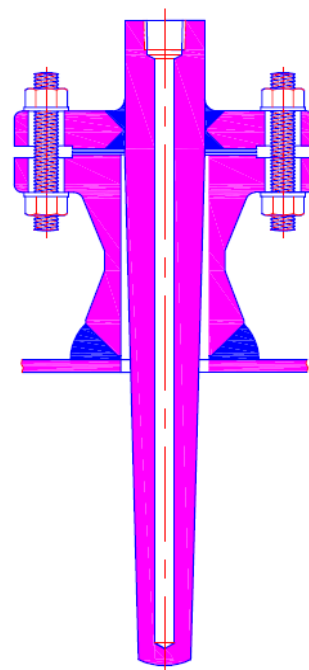
当频率强度计算不通过时:



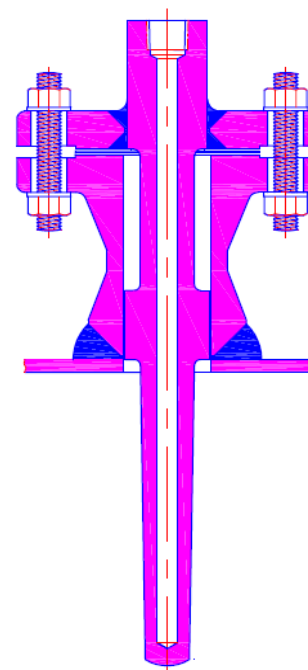
Standard
Thermowell



Reduced
Immersion length



Increased
Stem diameters

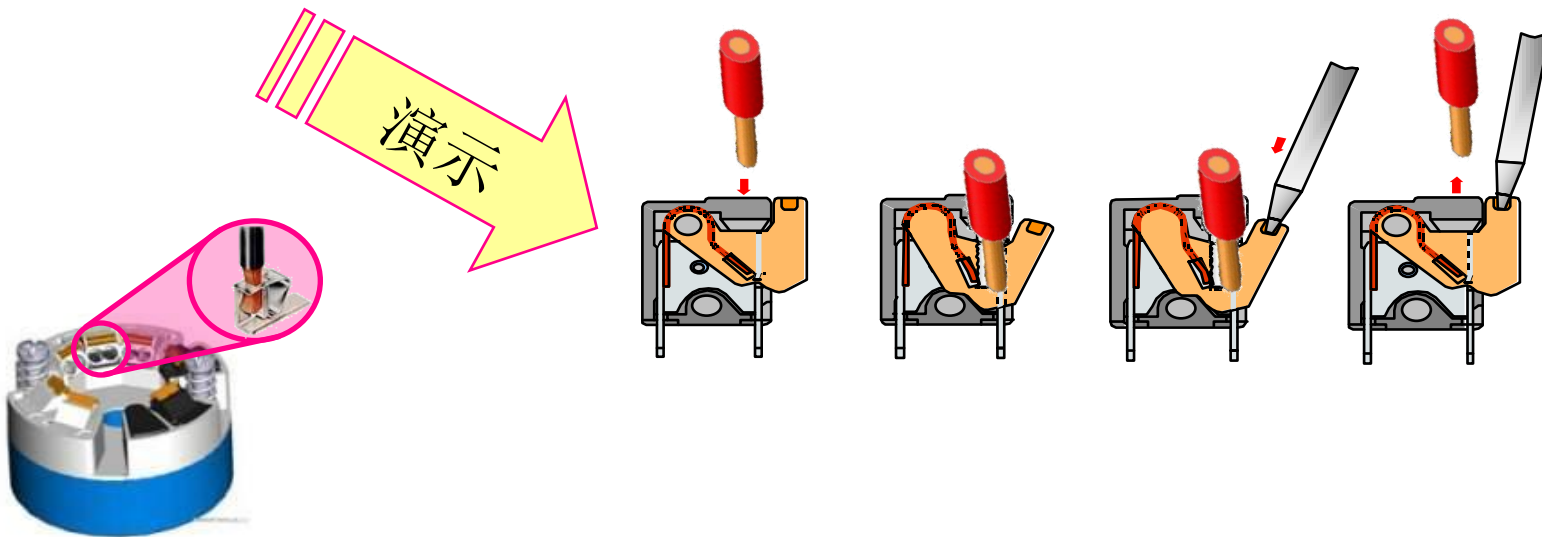


Velocity
Collar

温度变送器



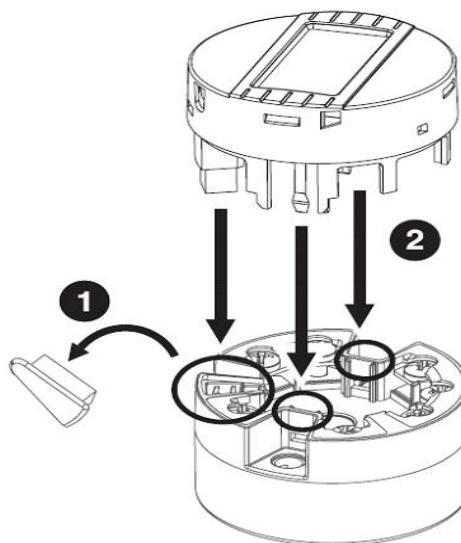
TMT82/84/85



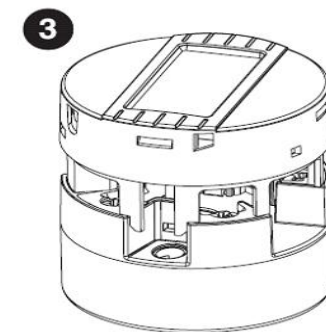
显示模块TID10



- 无需额外供电
- 像素：80x32
- 工作温度：-40 to 85 °C
- 防护等级：IP20
- 故障报警（黑白颜色对调）
- DIP开关可设置变送器地址

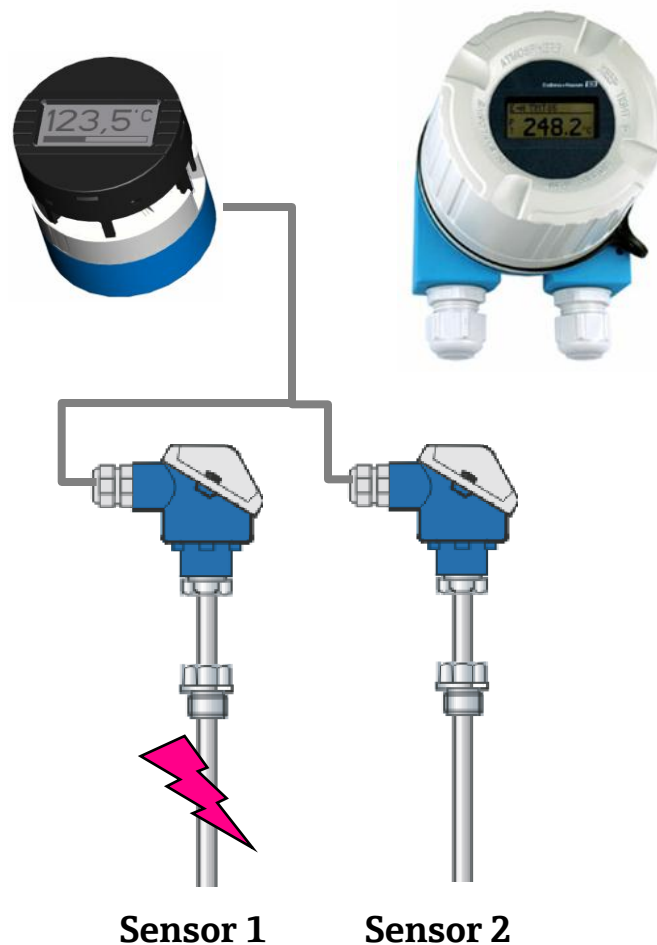


- ① 把盖打开
- ② 插上显示器
- ③ 自动运行



TMT82/84/85

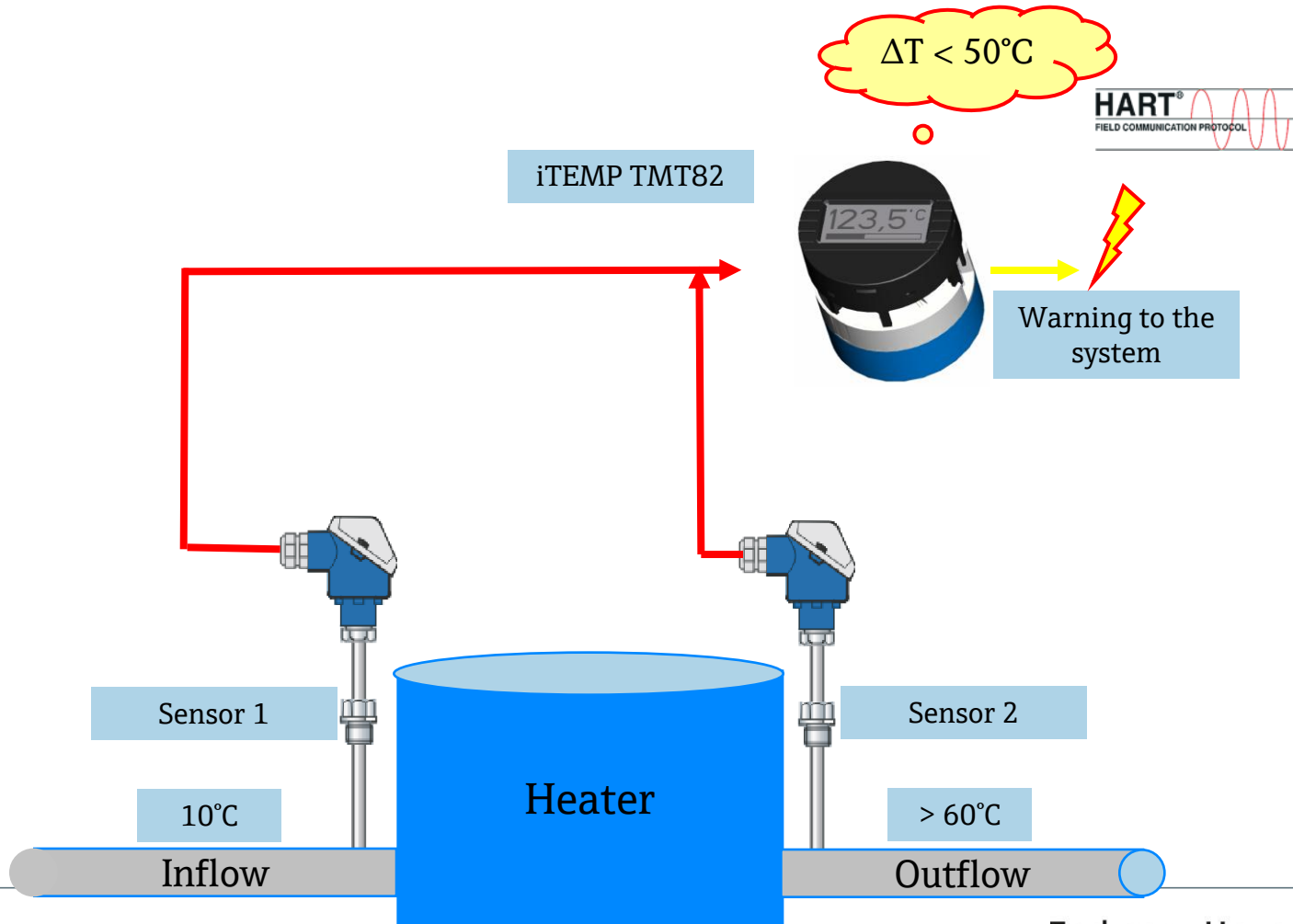
- 精度: 0.1K
- 通道数: 2
- 带显示模块
- 齐全防爆认证
- 可分体安装, 墙装或管装
- 电气绝缘: 2000V
- 通讯协议: HART6/PA/FF
- 传感器-变送器匹配
- 平均值, 差值, 逻辑运算输出
- 高级自诊断
 - 传感器热备份
 - 开路、短路检测
 - 传感器偏差检测
 - 环境温度检测
 - 传感器测温范围监测
 - 腐蚀性监测



TMT82高级功能

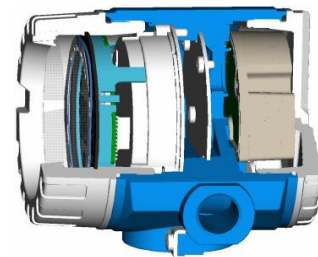
应用举例：

传感器 1和传感器 2 如果温差小于50° C, 则输出报警信号。



现场型变送器-TMT162

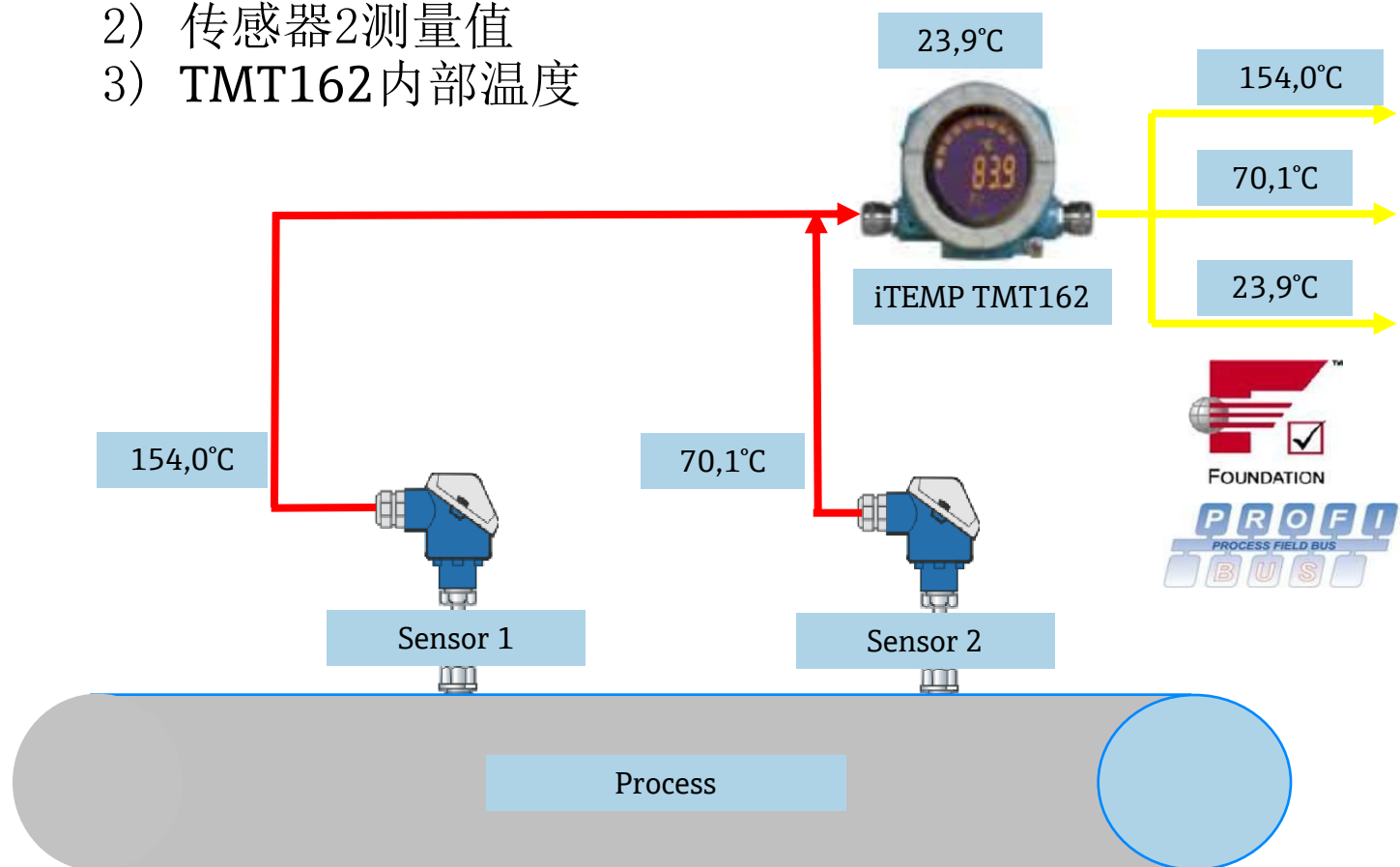
- 精度0.1K
- 双通道输入
- 电气绝缘2000VAC
- 背光显示，360 ° 旋转显示模块
- 可调显示模式
- 双腔室结构
- 镀金接线端子，镭射接线图
- 齐全认证：SIL2, Ex d, Ex ia, FM, NE 21, NE 43, NE 89, GL
- 铸铝或316L不锈钢外壳
- 完善的通讯协议
- 平均值，差值，逻辑运算输出
- 传感器变送器匹配
- 高级自诊断功能



现场型变送器-TMT162

通过总线进行多变量传输

- 1) 传感器1测量值
- 2) 传感器2测量值
- 3) TMT162内部温度



TMT125

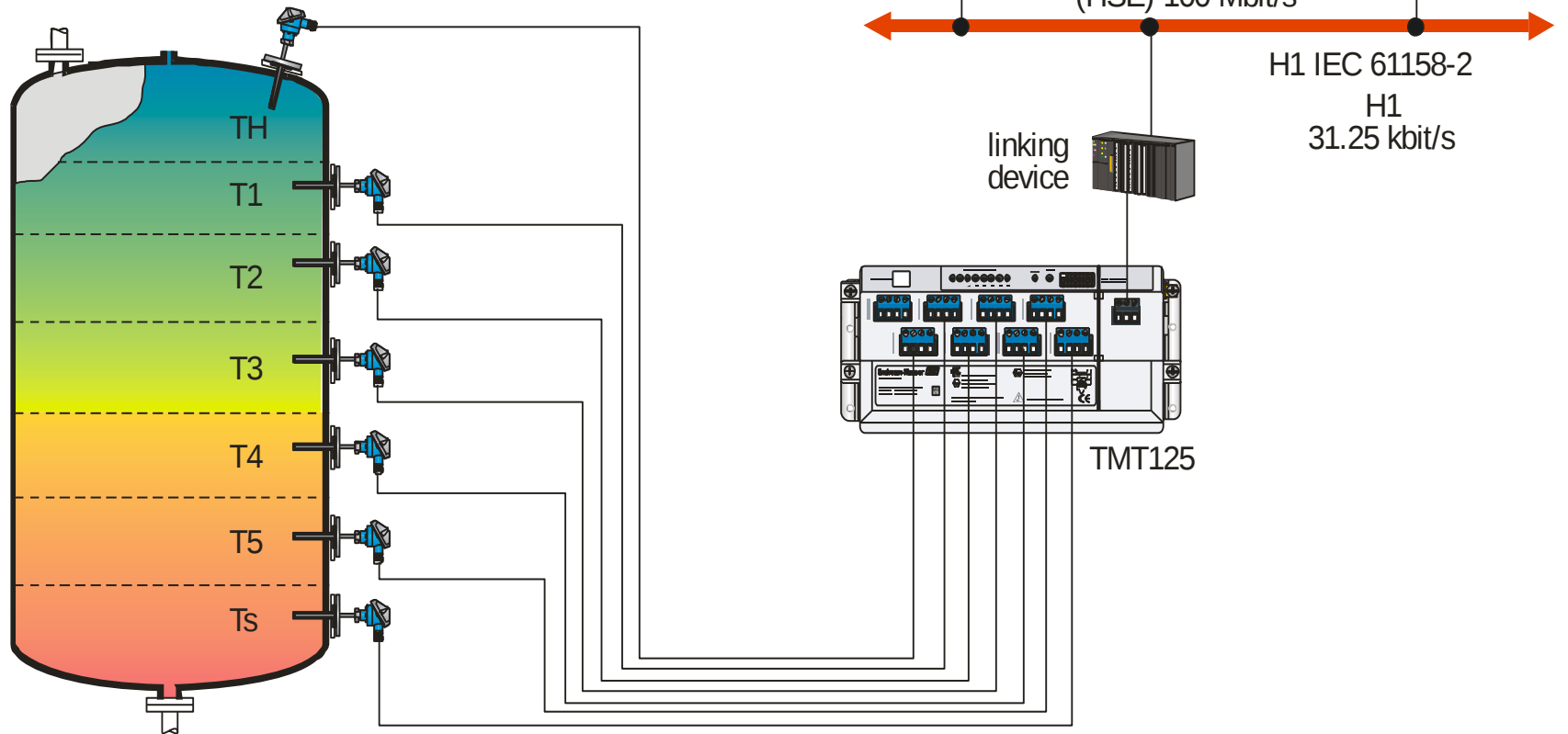


- 8通道输入
- FF总线输出
- 导轨式安装
- Exia/ExnA防爆认证
- 可选铸铝外壳，现场型IP67，
墙壁安装
- 带M16不锈钢葛兰头



TMT125

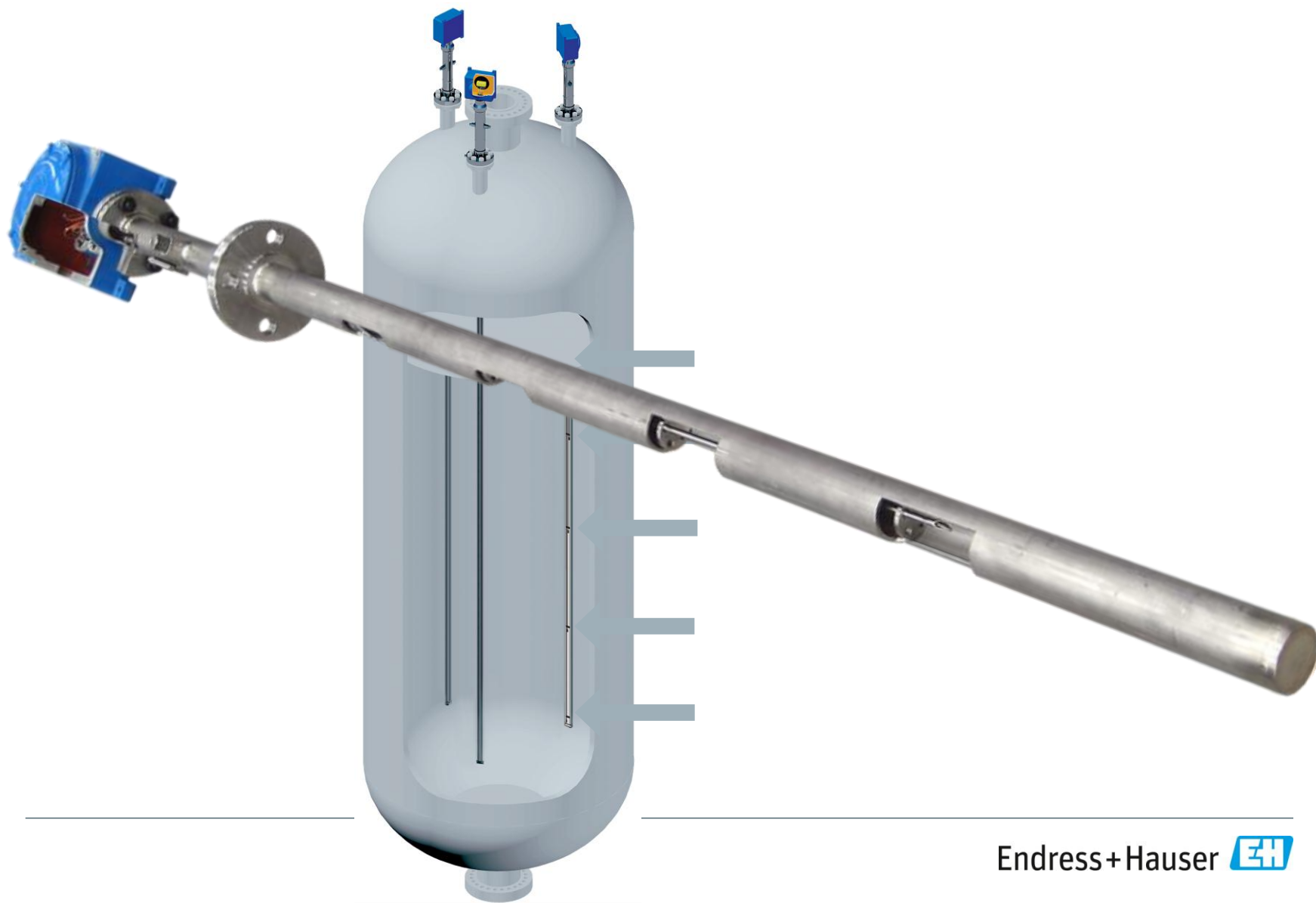
蒸馏（精馏）罐温度测量



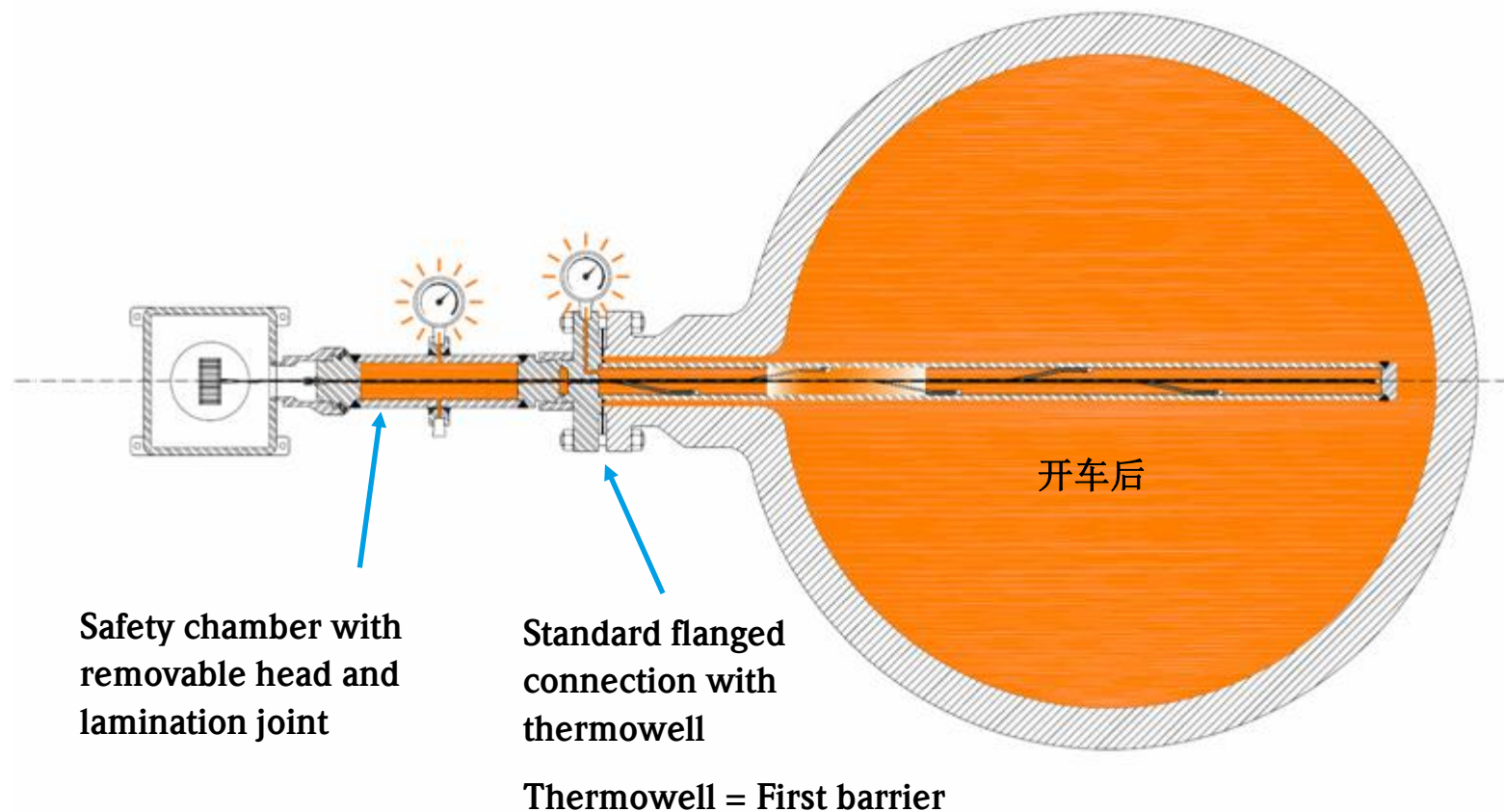
特殊温度产品



多点刚性热电偶

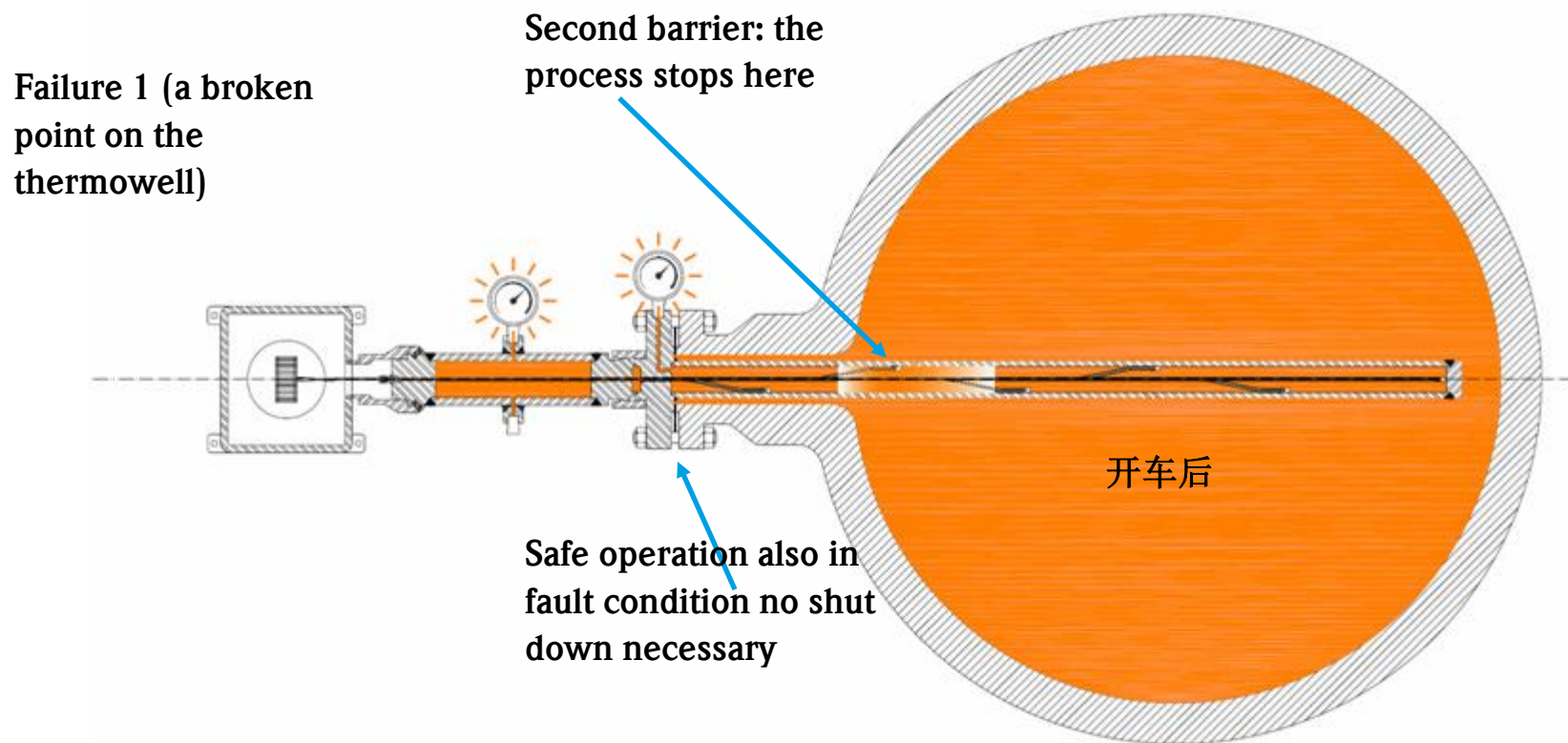


三层安全防护



三层安全防护

三层安全防护



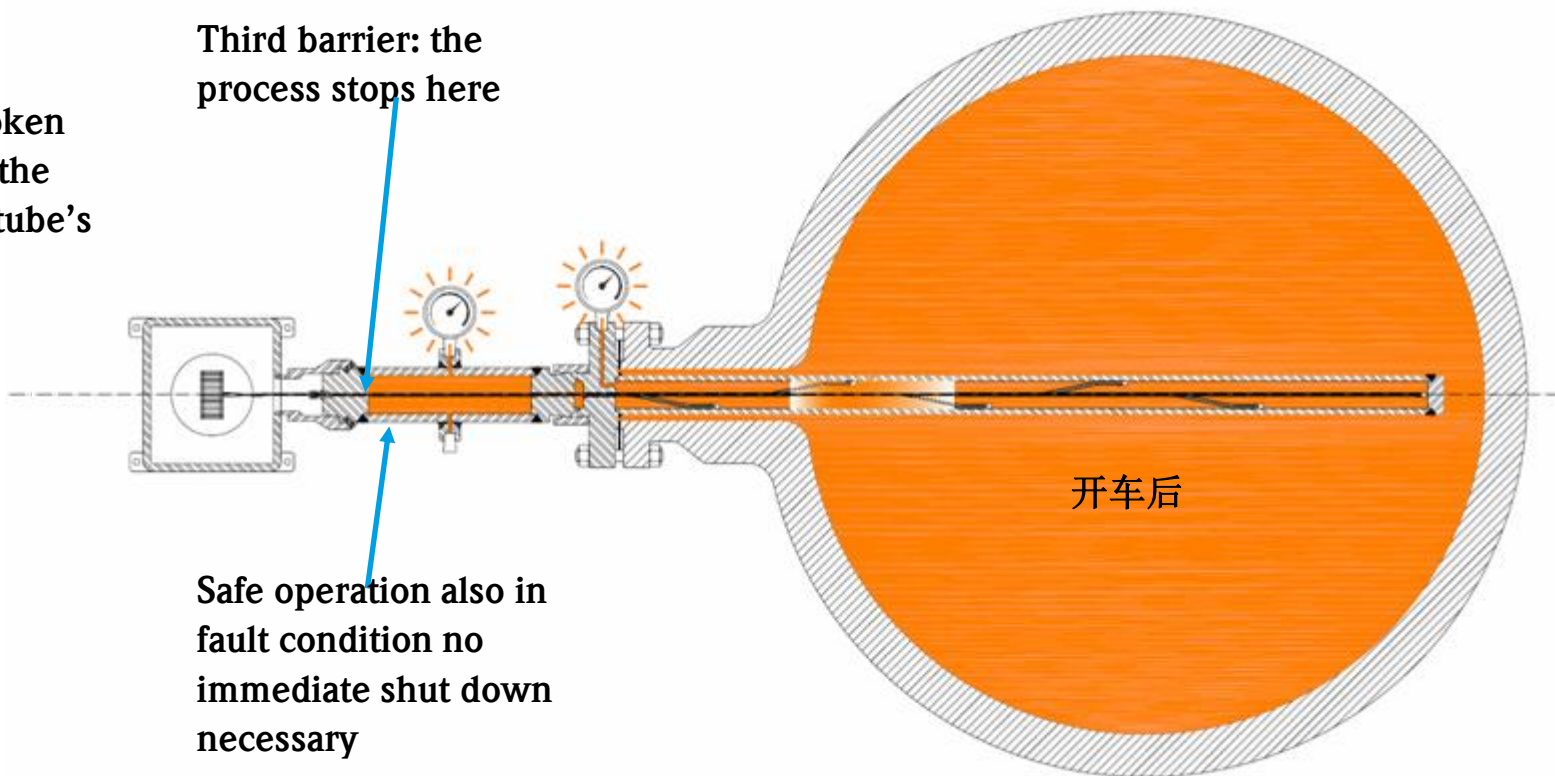
三层安全防护

三层安全防护

Failure 2 (a broken point between the flange and the tube's welding)

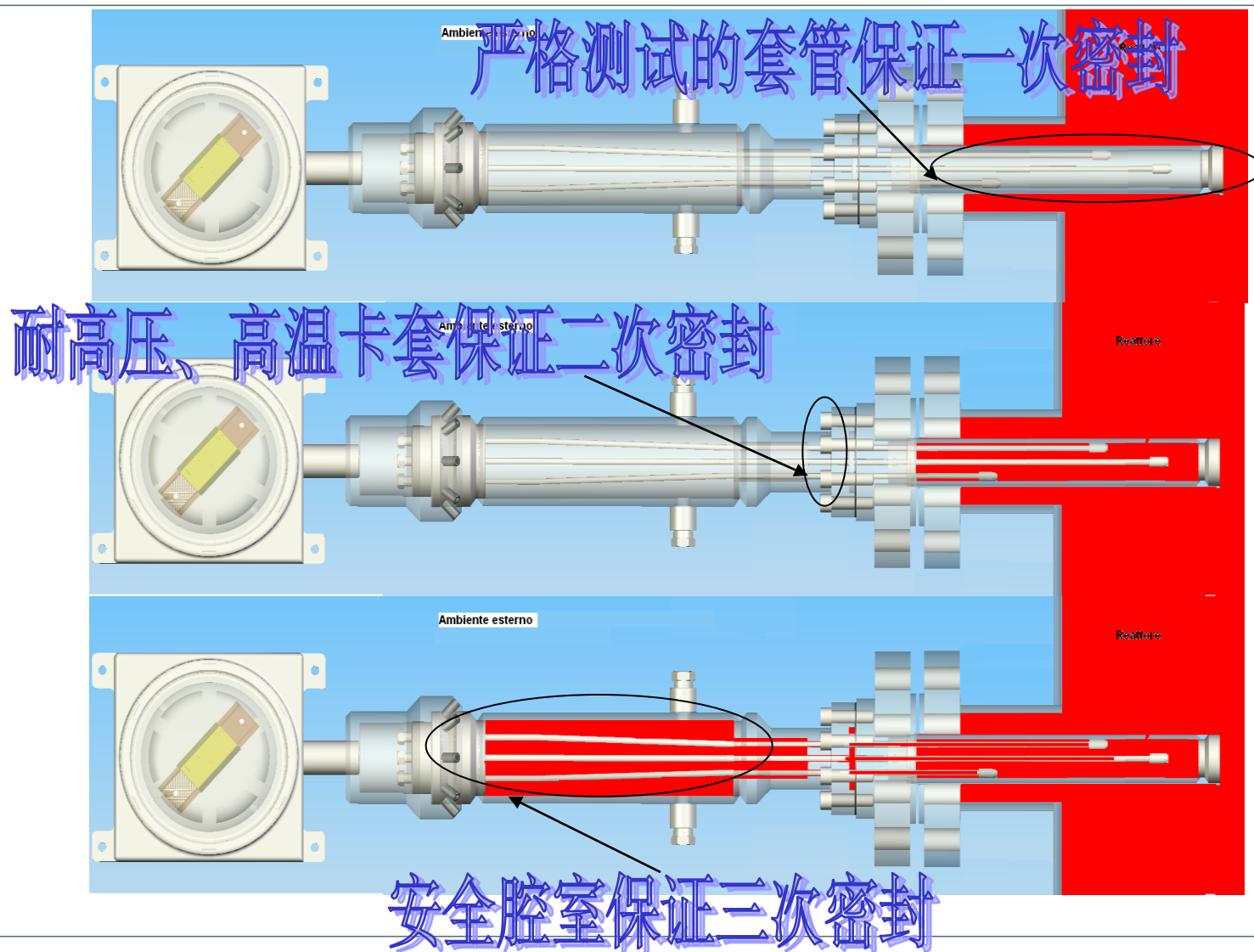
Third barrier: the process stops here

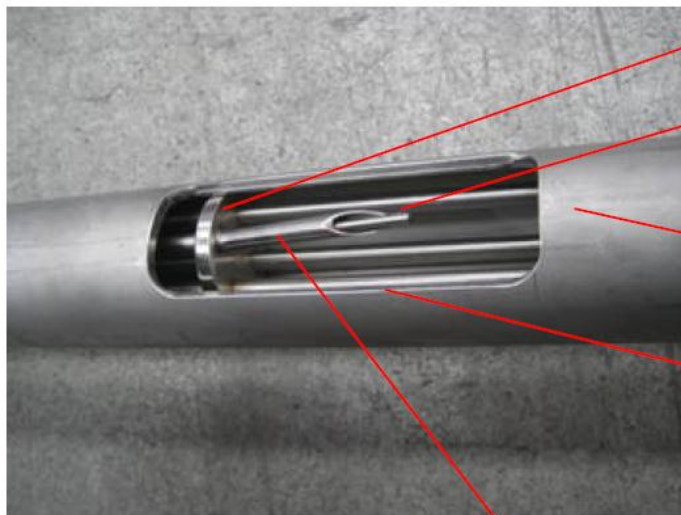
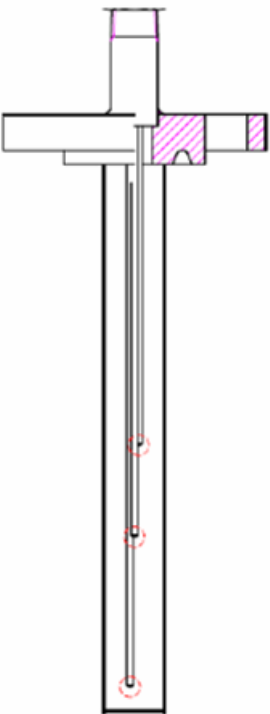
Safe operation also in fault condition no immediate shut down necessary



三层安全防护

三重安全防护





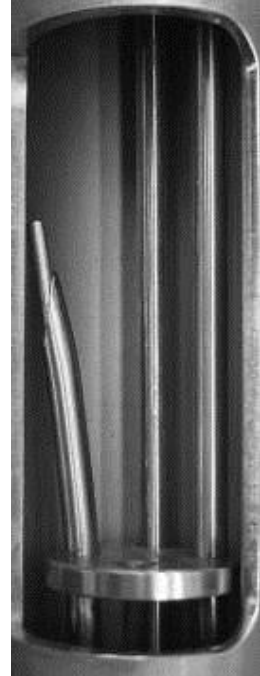
热电偶支架及托盘

热电偶测温端

套管

展示内部结构用开口，产品
本身没有该开口

热电偶安装导引管及特殊设计的弯头



整体图



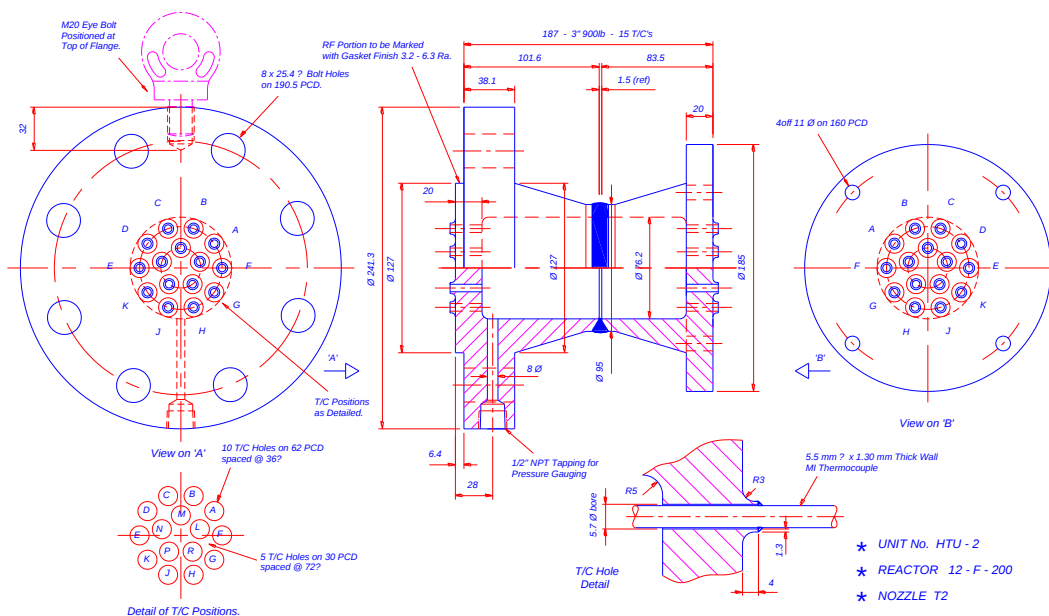
接线盒

温度变送器



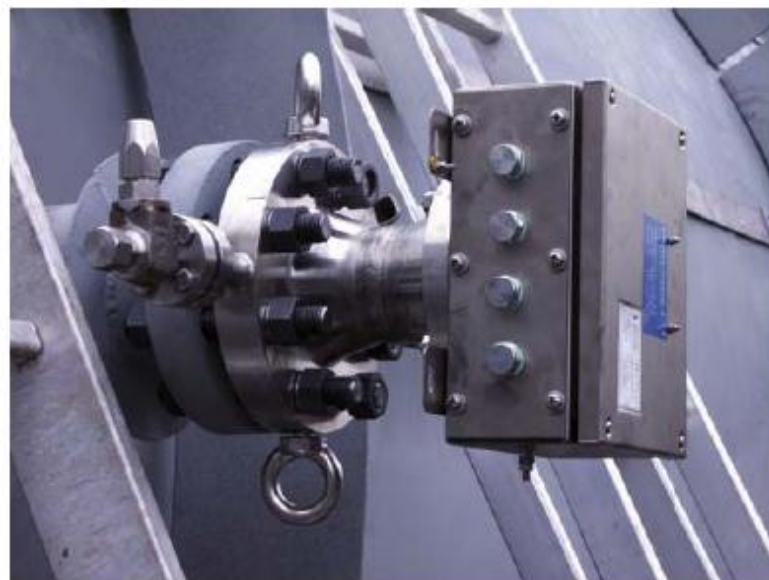
反应器多点柔性热电偶

用于炼油厂、石化厂和化工厂反应器等复杂苛刻工况温度



E+H多点热电偶特点

- 整表的PED压力设备认证
 - 可靠的一次密封
 - 冗余的安全腔室二级密封
 - 安全阀门及压力表监测
 - 氦气泄漏检测
- 响应时间快：2~4秒
- 使用寿命长：8~10年
- 整表的本安认证
- 针对不同的反应器设计可靠安装支架



E+H Octoplus型多点热电偶



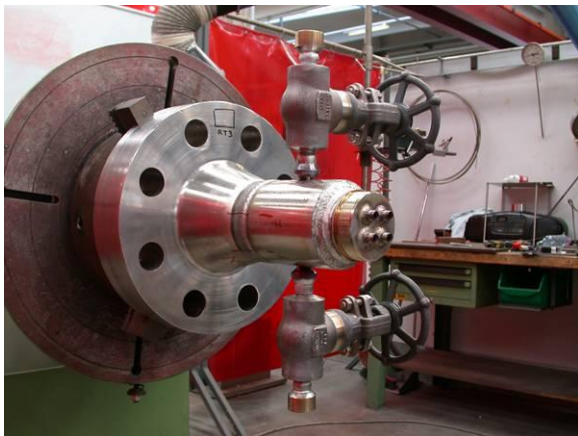
1. Process connection concentric reduction (1 1/2" x 4", Sch XXS)



2. Safety chamber GTAW qualified welding



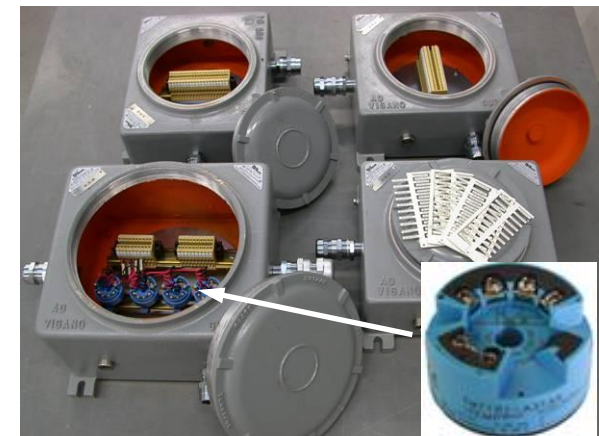
3. Safety chamber SMAW qualified welding



4. Safety chamber final assembling and welding phases



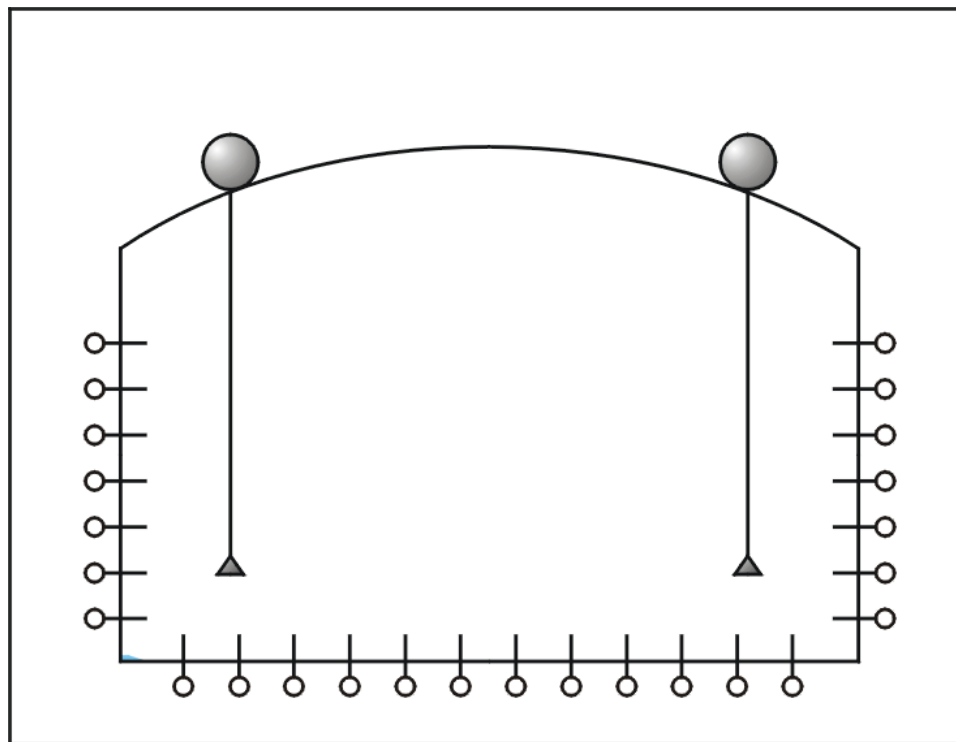
5. Thermocouples 'interruption' with Kapton connection



6. ATEX certified junction box (1 with TMT 182) **Endress+Hauser** 

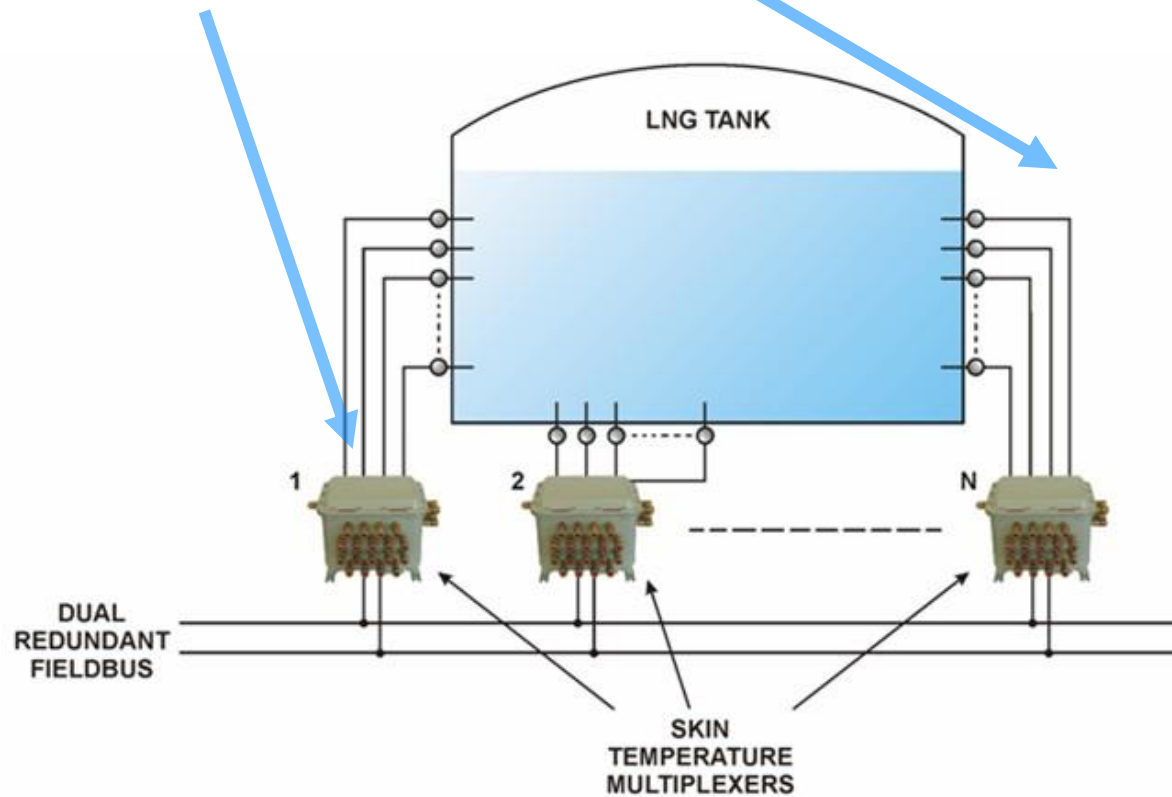
E+H表面温度计测量

- 通常用于LNG初始冷却阶段
- 当填充罐时，可看到罐内温度均匀变化
- 可以监控任何一个传感器发出的不寻常的读数



罐表面温度测量监控

- 可弯曲热电阻传感器(RTD)
- 温度分路器



Thank you for your attention !

