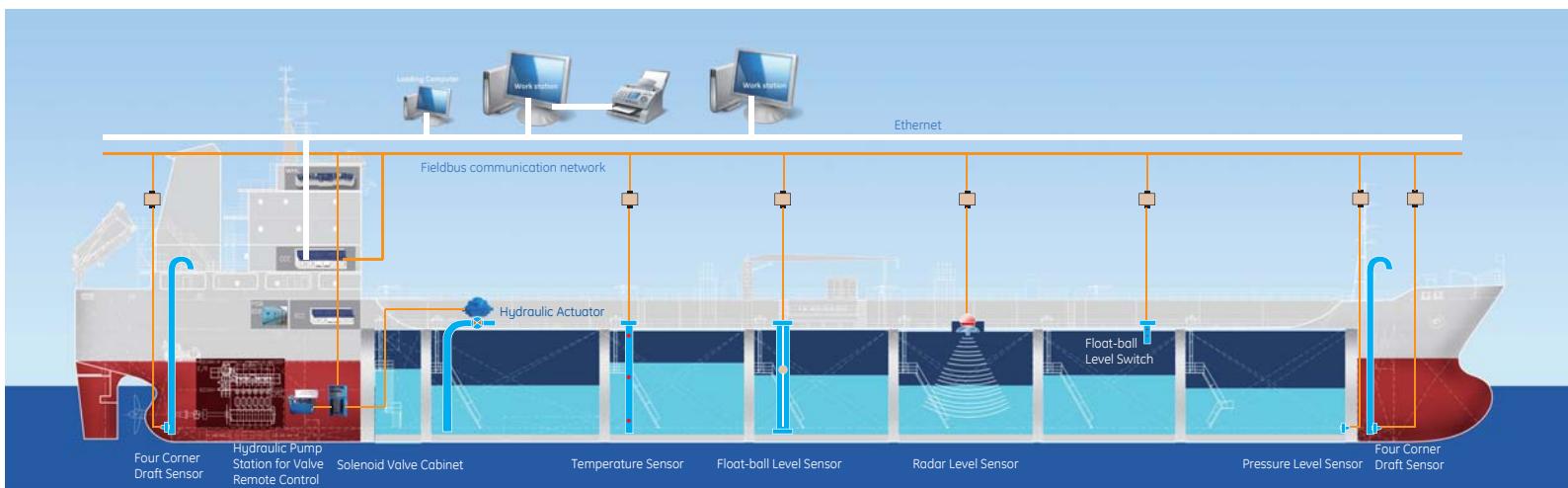


货控系统

Cargo Control System (CARGOPRO)



倍豪船舶作为丹佛斯在船舶领域的流体控制 (Water Control) 的系统集成商, 为船东、船厂、设计公司提供一系列的液位遥测及阀门遥控系统, 包括液压、电液、电动、气动阀门遥控系统。

Powermaster is recognized by Danfoss as marine & offshore water control system integrator, focused on ship owner, shipyard, Design company's requirement of level indication & valve remote control system, including hydraulic, Electrical-hydraulic, Electrical, Pneumatic actuator-valve remote control system(VRC).

Danfoss Water Controls in shipbuilding



Butterfly valves on all networks

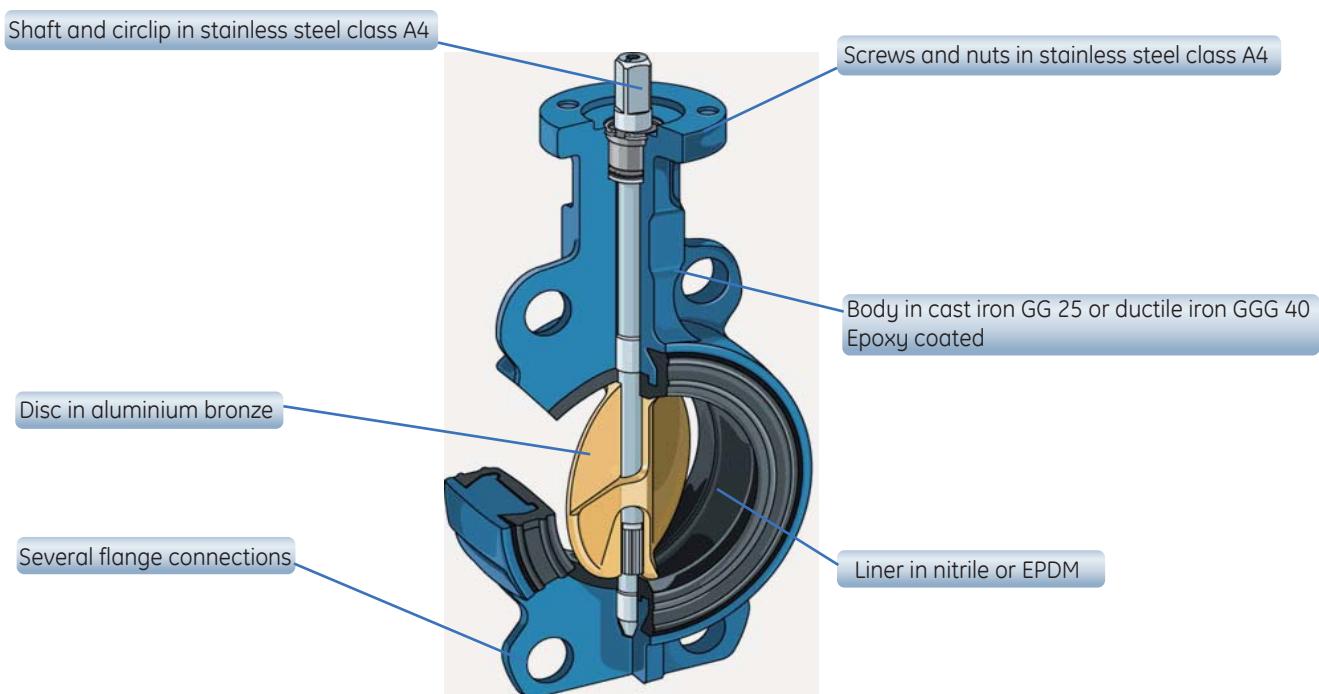


Non-return valves on pump protection



Backflow preventers for onboard drinking water network

The Marine butterfly valves



目录

Contents

货控系统概述 Cargo Control System (CARGOPRO)	01
液位遥测系统 Liquid Level Indication System (LEVELMASTER)	03
独立高位及高高位报警系统 Cargo Tank Independent High Level & Overfill Alarm System	05
货舱进水报警系统 Cargo Infall Alarm System (CARGOSAFE)	06
阀门遥控系统 Valve Remote Control System	08
阀门遥控系统 (液压式) Valve remote control system (HYDRAULIC)	10
阀门遥控系统 (电液式) Valve remote control system (Electro-hydraulic)	17
阀门遥控系统 (电动式) Valve remote control system (Electrical)	21
高品质的系统软硬件 High quality Software & Hardware	22
业绩表 Performance List	35

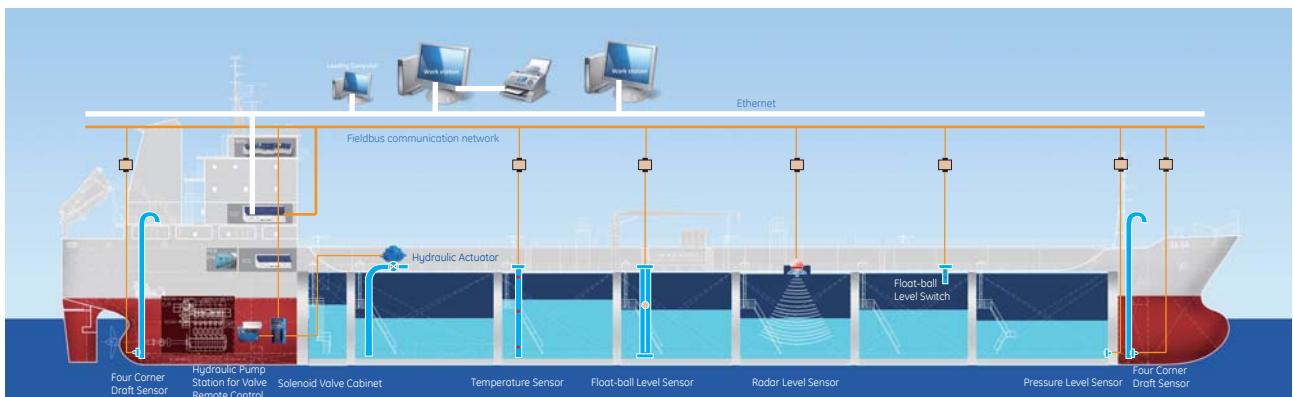
货控系统

Cargo Control System (CARGOPRO)

货控系统概述

作为船舶自动化中最重要的子系统之一的货控系统(Cargo control system), 主要用于实现船舶四角吃水检测, 液货舱液位显示与报警, 压力报警, 温度测量与报警, 阀门遥控及阀位指示, 货舱进水报警, 液货舱独立高位高高位报警等一系列的检测, 报警功能。

Cargo control system (CARGOPRO), which is one of the most important sub-systems in vessel automation, is used for vessel four-corner draft checking, liquid cargo tank temperature measure and alarm, pressure alarm, cabin level display and alarm, valve remote control and valve position indication, cargo infall alarm, liquid cargo tank independent high level and overfill alarm and other measure, alarm and control function.



货控系统(CargoPro)组成

我们的货控系统(CargoPro)采用先进的模块化设计。一方面, 系统可以独立运行; 另一方面, 也可以作为全船监测报警的子系统。我们的货控系统 (CargoPro) 主要由以下的四个子系统组成:

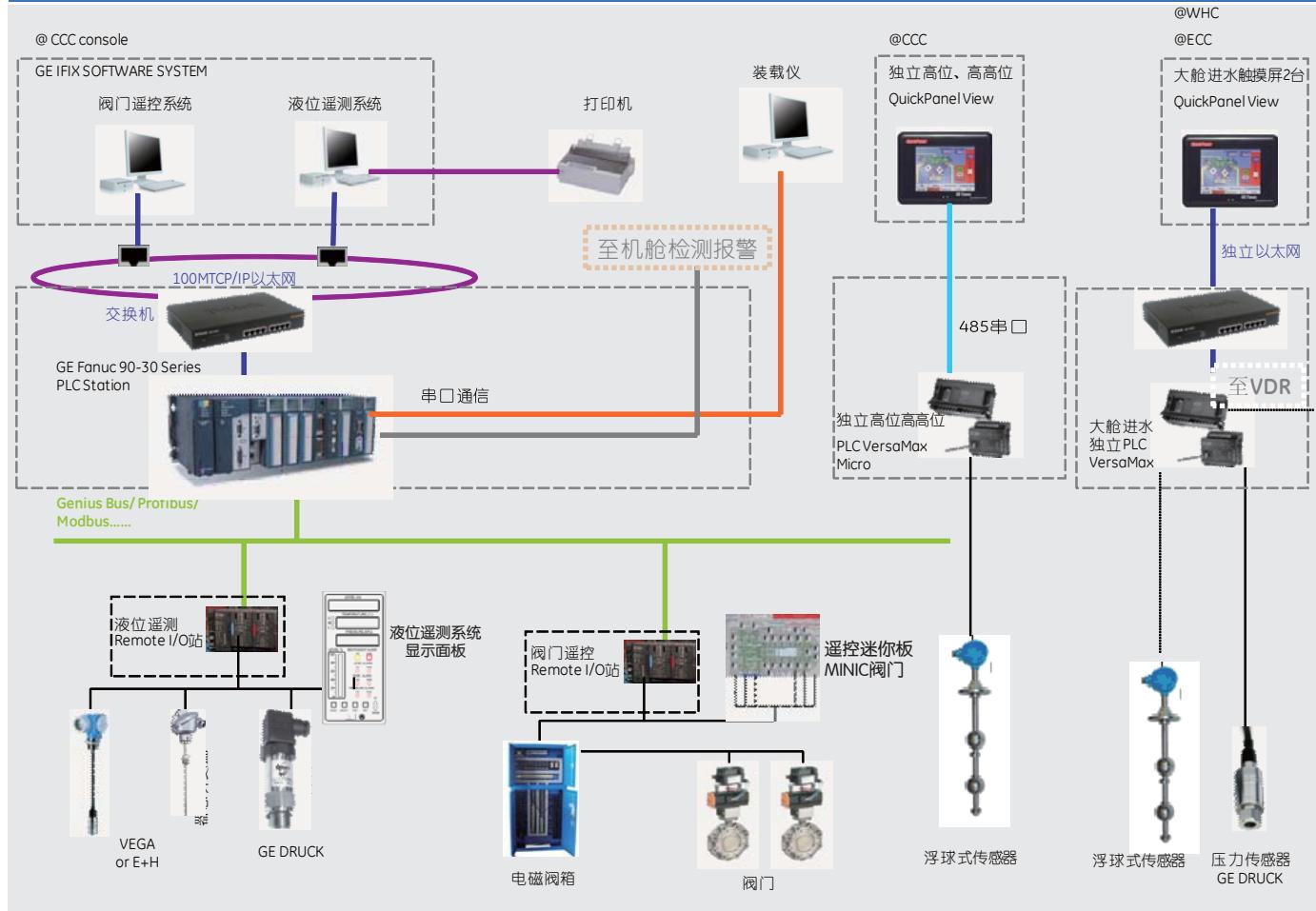
Our CargoPro adopts modularity electric package design. On the one hand, this system can work independently; on the other hand, it can work with other systems by seamless connection, such as E/R monitor & alarm system and so on. Our cargo control system consists mainly of the following four sub-systems:

- 液位遥测系统;
- 阀门遥控系统;
- 货舱进水报警系统;
- 独立高位高高位报警系统;
- Level indication system
- Valve remote control system
- Cargo hold infall alarm system
- Cargo tank independent high level & overfill alarm system

- 各子系统之间的内部通信极为方便。
- 以上的各个子系统都可以独立运行, 也可以根据客户的需要, 选择相应的子系统。
- The internal communication between these subsystems is convenient.
- These subsystems can work independently; at the same time, every subsystem can connect with others seamlessly according to customer's requirement.

货控系统 Cargo Control System (CARGOPRO)

系统图 System Diagram



我们的货控系统优点：

- 采用通用型可编程控制器作为控制和信号采集模块，最大限度保证了系统运行的稳定性和安全性；
 - 分散采集，集中控制的设计，使得各种信号的采集与控制准确、方便；
 - 兼容多种通用的总线协议，如：Genius Bus, Mod Bus, ProfiBus等，大大扩展了系统的适用范围；
 - 先进的模块化打包设计，使得各子系统之间相对独立，可以单独运行，同时各子系统之间也可以无缝连接，协调工作，能满足根据客户的特殊需要，实现个性化的组合；
 - 多种人机界面，如：IPC、触摸屏、MIMIC板等，确保了操作人员能方便，快捷地获取信息并实现控制；
 - 采用高品质的软硬件组成系统，安全可靠，性能优越；统一的管理完善的全球维护；

Benefit of Cargo Control System:

- Adopt PLC as controller and signal acquisition module to ensure system stability and security.
 - The design concept that decentralized data acquisition and centralized control makes signal acquisition and control accurate and convenient;
 - Compatible with many kinds of general bus protocols, such as: Genius Bus, Mod Bus, ProfiBus and so on. It widely extends the application scope of our system;
 - Because of advanced modularity electric package design, subsystems can work independently; at the same time, every subsystem can connect with others seamlessly. This feature can satisfy customer's especial requirements;
 - Many kinds of HMIs, such as: IPC, touch screen, MIMIC panel and so on, provide operator more choices to acquire monitoring information and realize system control.
 - System is composed of high quality software and hardware, which are safety and reliability with perfect performance.
 - Unitive management and perfect global care.

液位遥测系统

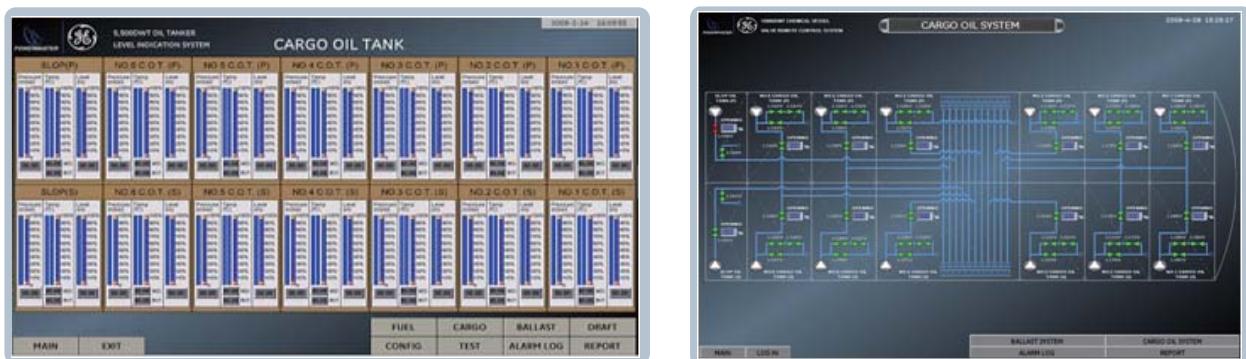
Liquid Level Indication System (LEVELMASTER)

液位遥测系统对相应液货舱的液位、压力、温度以及四角吃水等进行检测与报警。所有的信号都通过安装在各个采集箱中的远程输入/输出模块（Remote I/O）进行采集，保证所采集信号的准确性。远程输入/输出（Remote I/O）模块通过总线与安装在货控台的PLC主站通信，将所采集的信号发送到PLC的CPU模块。CPU经过运算将控制信号经总线发送到Remote I/O模块，实现远程遥测。

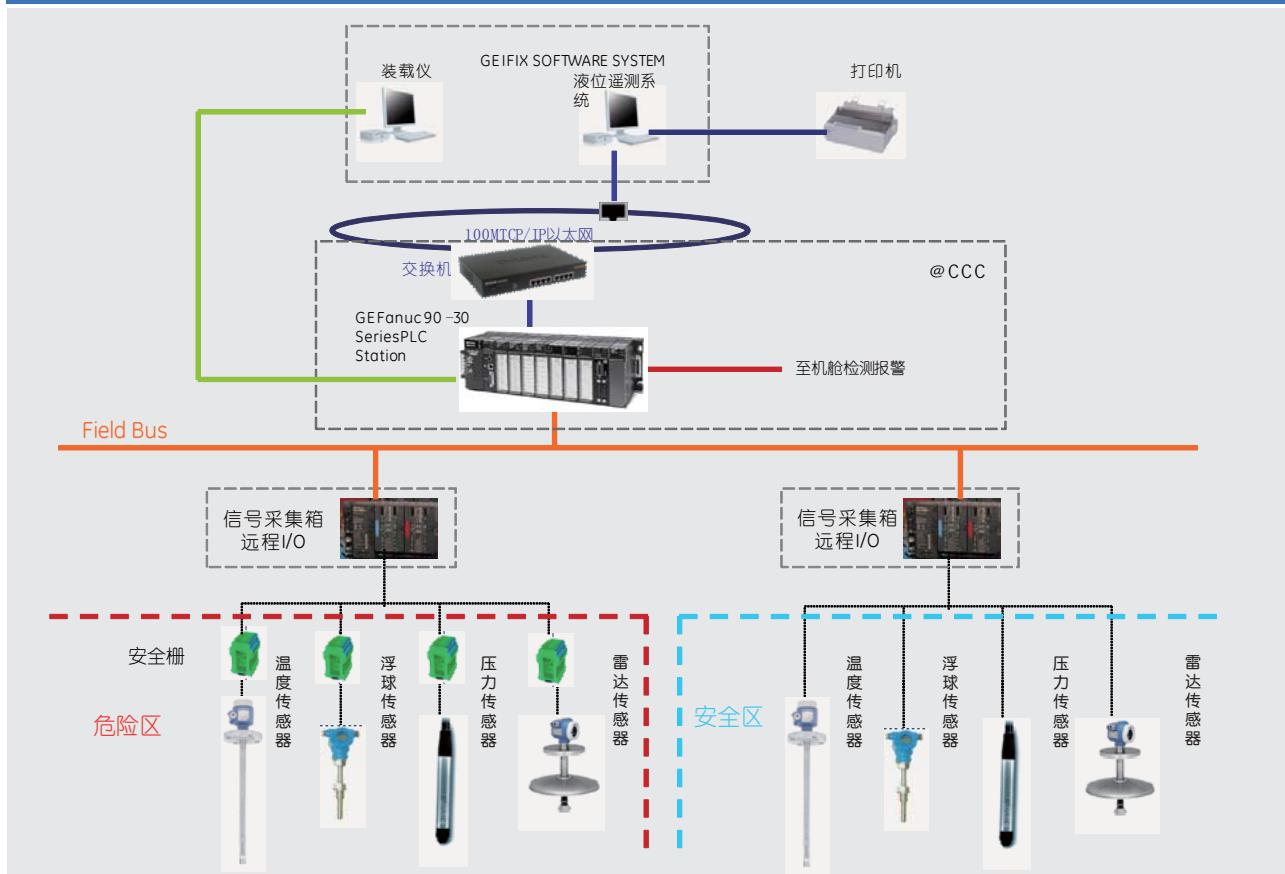
安装在工控机上的人机界面，可以实现操作者对监测信号的实时获取以及对报警信息的处理（包括存储、打印、备份）。

Liquid level indication system is used for relevant cabin level, temperature and four-corner draft measure and alarm. All signals are acquired by remote I/O installing at acquisition unit for accuracy. Remote I/O communicate with PLC control station at CCC for data exchange to realize remote control.

HMI is for signal display and alarm message disposal.



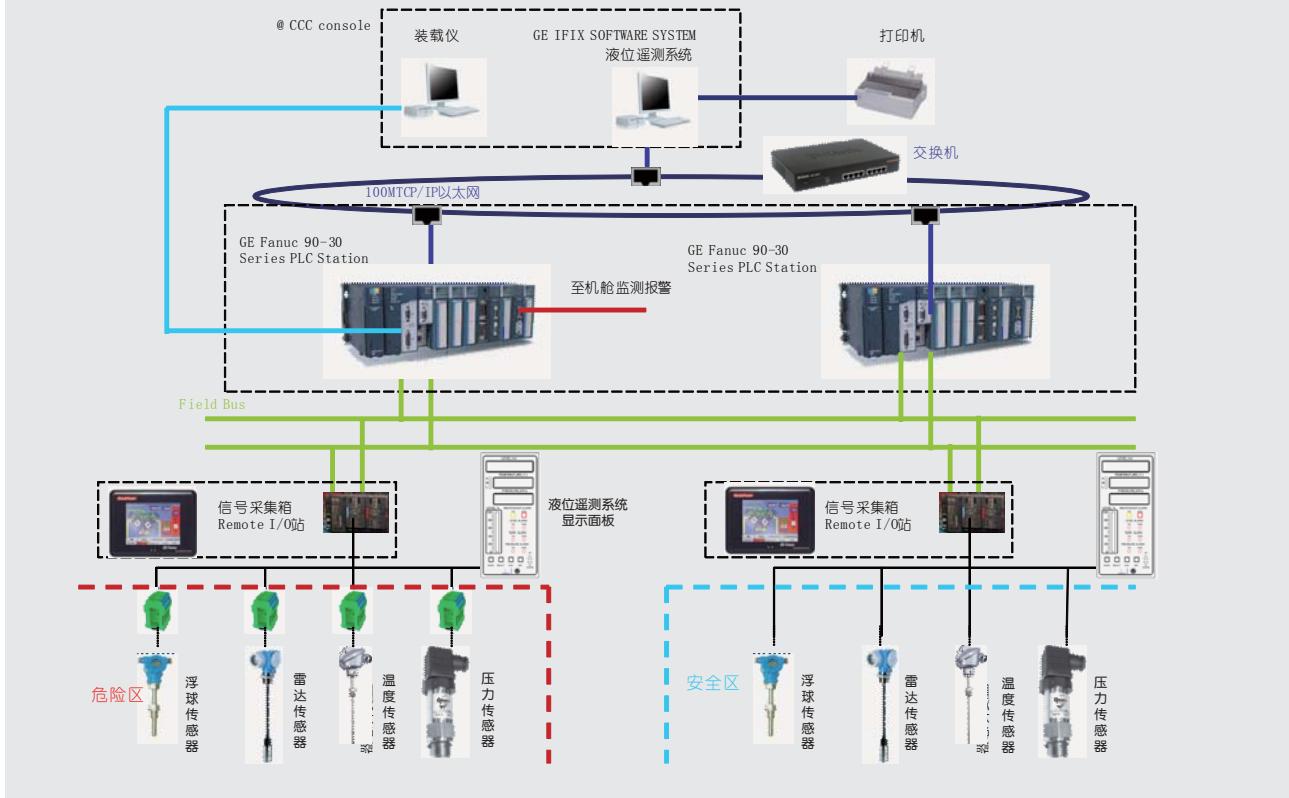
标准方案：PLC+远程数据采集 Standard Plan PLC+Remote data acquisition



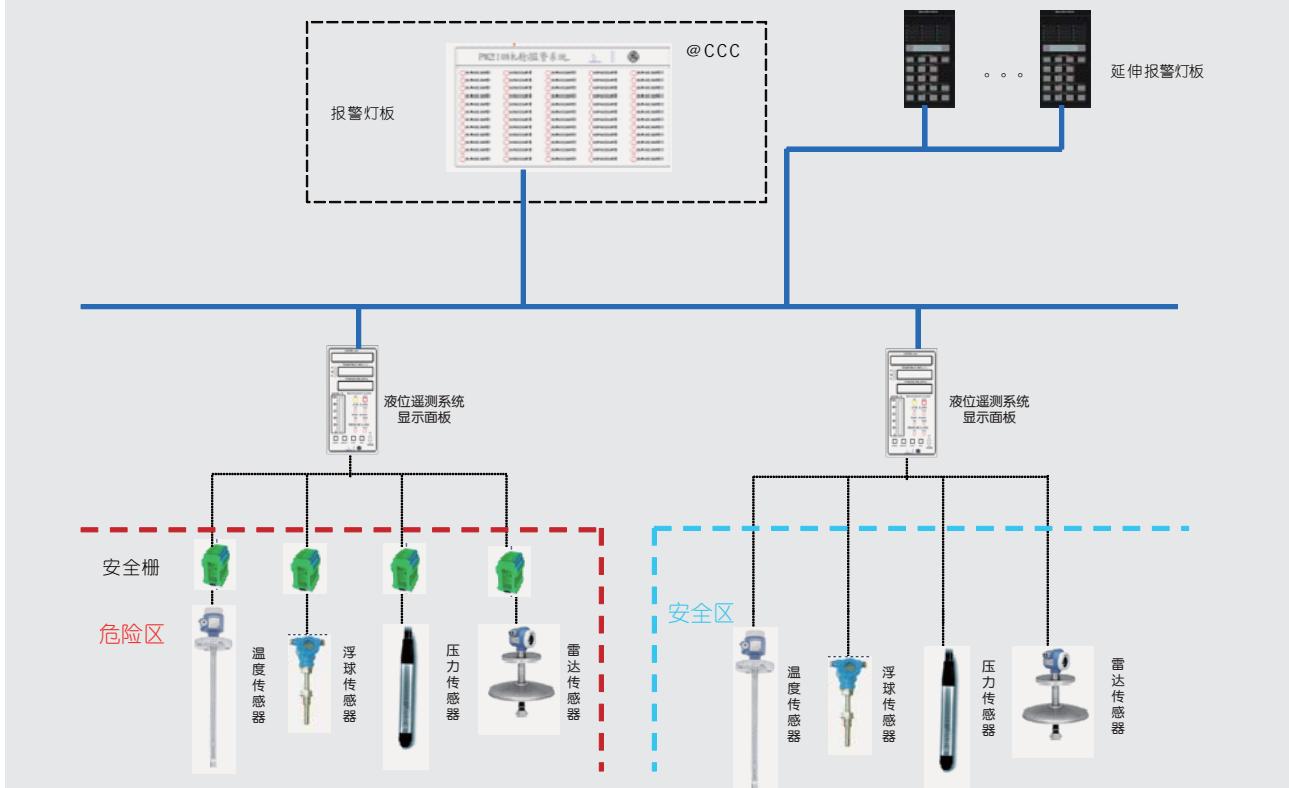
液位遥测系统

Liquid Level Indication System

升级方案：冗余PLC+独立显示单元与IPC双重显示+就地触摸屏指示
 High Level Plan: Redundant PLC + Independent IPC + Touch Panel



经济方案：液位显示单元与IPC+报警灯板 Economic Plan: IPC + Alarm Panel

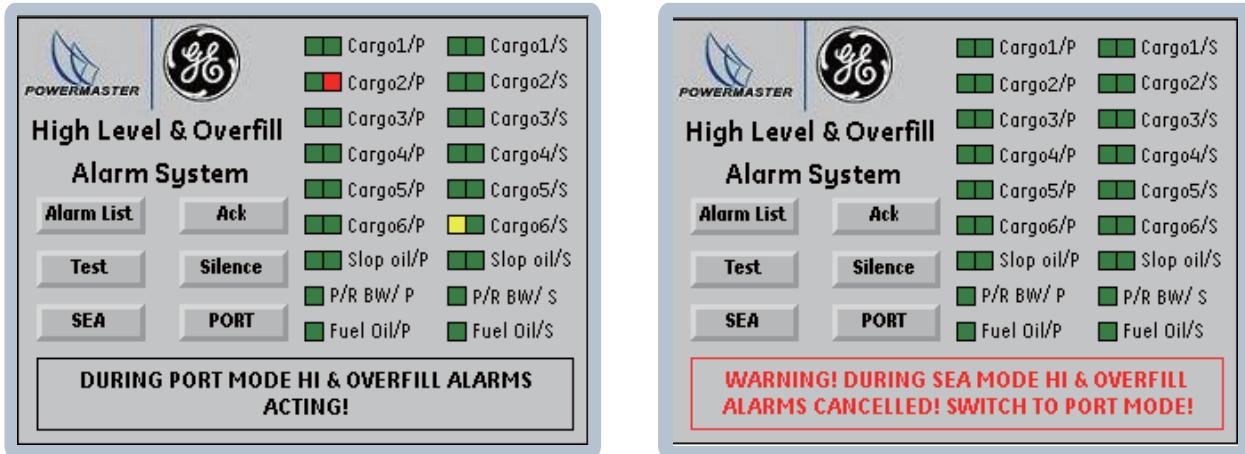


独立高位及高高位报警系统（用于化学品船/成品油船）

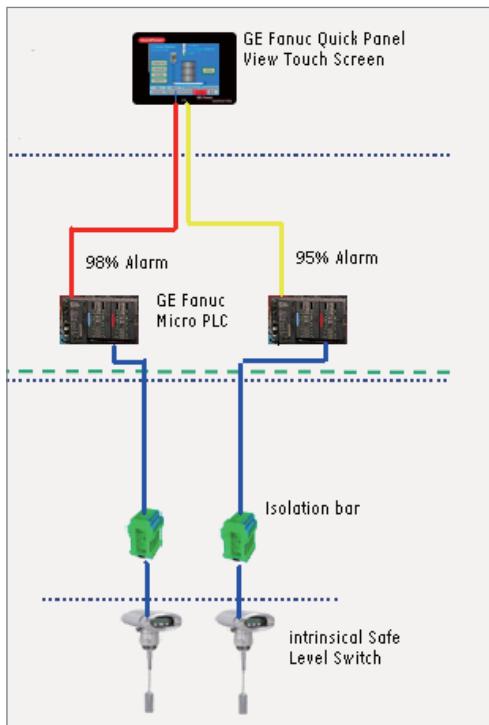
Cargo Tank Independent High Level & Overfill Alarm System — For chemical tanker

该系统通过采集独立的报警信号，对液货舱、污水舱、压载水舱等舱室的高液位及高高液位信号进行报警。采用独立的紧凑型PLC作为控制器，触摸屏作为HMI，构成了一个相对独立的控制系统，实现相应报警信号的显示和控制。所有报警信号的显示以及操作员对系统的操作在一个触摸屏上完全实现，使得整个系统极为精简。

This system acquire cargo oil tank, slop tank, ballast tank high level & overfill alarm (95% and 98% signal). The independent PLC and Touch Panel will be used as an independent alarm system. All of display are integrate in the Touch Panel.



解决方案 Solutions



特点 Features :

- 95%液位报警与98%液位报警采用独立的PLC控制
- 采用本安型的浮球式传感器，确保报警信号的正确采集
- 各舱室液位报警信号的独立显示
- 声光报警
- 95% & 98% level switch to PLC
- Intrinsical safe level switch
- Each tank independent display
- Flash & Sound alarm

货舱进水报警系统（用于散货船）

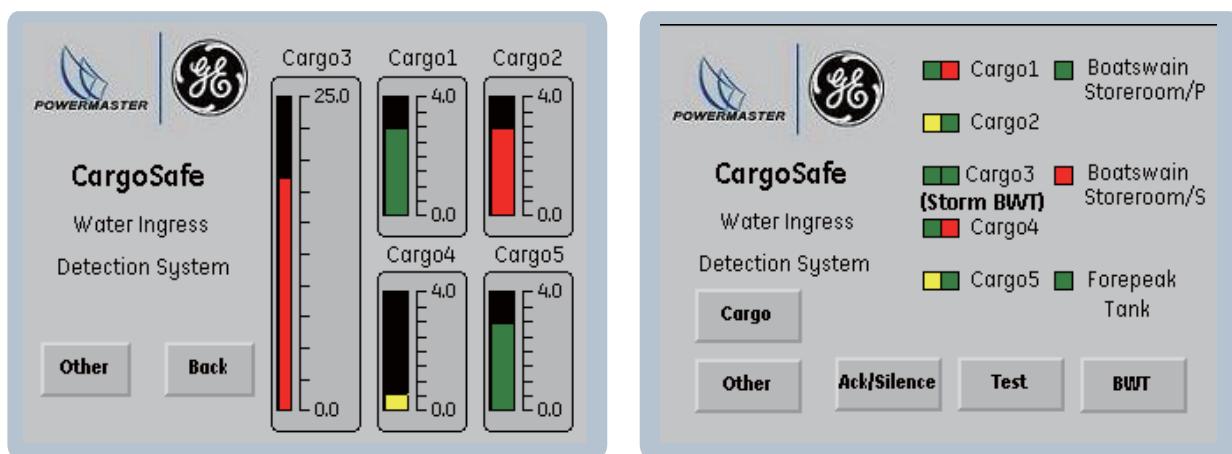
Cargo Infall Alarm System (CARGOSAFE)—For Bulk Carrier

系统利用压力式液位测量原理，将压力信号转换成4-20mA电流信号，送至货控台上的独立紧凑型PLC控制站，PLC控制站与触摸屏通过总线通信，实现报警信号的显示与控制。

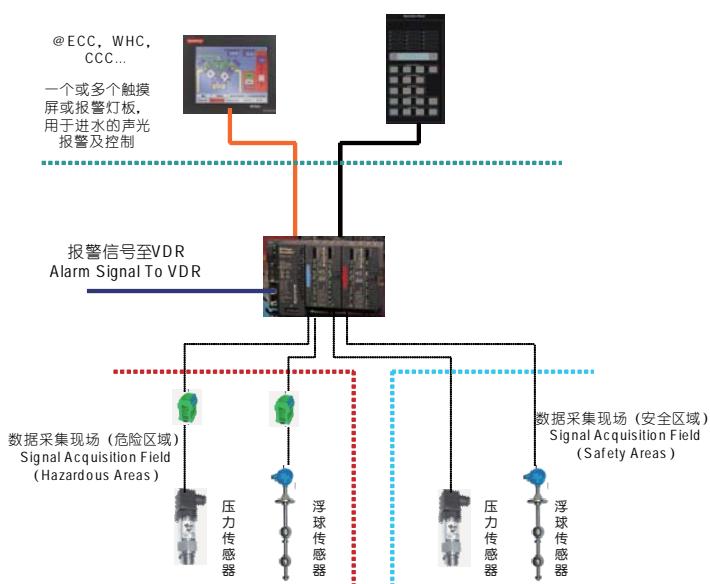
整套系统可以实现独立的液位显示，报警及控制。

The cargo hold level will be indicated by pressure level sensor, which converts the pressure signal into 4-20mA current signal and then send the current signal to independent compact PLC at CCC. PLC communicates with touch screen for alarm display and control.

The whole system can realize independent level display, alarm and control.



解决方案 Solution



特点:

- 0.5m与2m进水报警
- 采用独立的紧凑型PLC实现进水报警
- 专用的GE Druck压力传感器用于水位信号的采集
- 两块触摸屏分别安装在集控台与驾控台显示相关的报警信号,
- 实现多地控制
- 越控选择功能
- 声光报警
- SOLAS最新修正案及IACS URS24

Feature:

- 0.5m & 2m infall alarm
- Independent compact PLC for infall alarm
- Special GE Druck pressure sensor for liquid level acquisition
- two touch screen at ECC and WHC for alarm signal display
- and multi-location control
- override selection function
- audible and visual alarm
- meeting to the SOLAS latest amend XII & IACS URS24

液位测量仪面板 Level Indication Meter

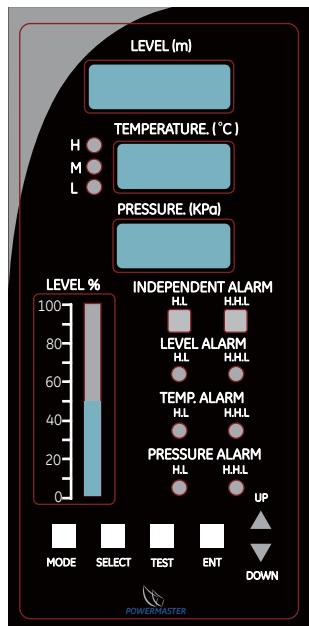
我们自行开发的液位测量仪表是基于现场总线系统，具有高效单片机开发的具有高可靠性，多功能的液位测量系统。此仪表由I/O模块，信号处理单元，电源单元，数据显示单元等组成，它用作对液货舱的监测及管理等。

此仪表用于对液位，压力和温度的测量，并且传输4~20mA信号到信号处理单元，显示在仪表上，用于对站点的监测和控制。主要功能包括对货舱、压载舱、燃油舱的吃水和倾斜的监测，显示及报警功能，不仅对船舶也包括海洋平台。此仪表可以独立显示也可以通过HMI工作站显示。

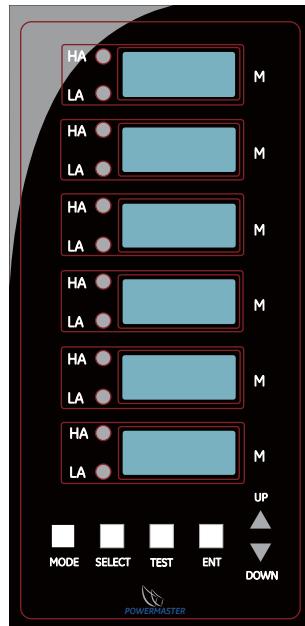
Our product Level Indication Meter is based on CAN bus, with high efficient SCM, to be part of high reliable and multi function level indication system. This meter is composed by I/O modules, signal handling unit, power modules, data display unit etc, which used for cargo tanks' monitoring and management.

The Meter will be used for level, pressure and temperature measurement, and transmit into 4~20mA Signal for input and signal handling, and display on the Meter, which used for site monitoring and control. Main function will include monitoring, display and alarm function for cargo tanks, ballast tanks, fuel tanks, draft and heeling monitoring, not only for marine ships but also for offshore platforms.

The meters could be displayed individually and also display by work station HMI.



PMM0801



PMM0802 (A,B,C)

阀门遥控系统

Valve Remote Control System

我们的阀门遥控系统采用先进的模块化电气打包设计。一方面，系统可以独立运行；另一方面，也可以与其他的系统实现无缝连接，如液位遥测系统，机舱监测报警系统等。用户可选择多种阀门驱动形式：包括液压式，电液式和全电式。阀门的控制方式也可以根据客户的要求选用开/关控制或开度控制。

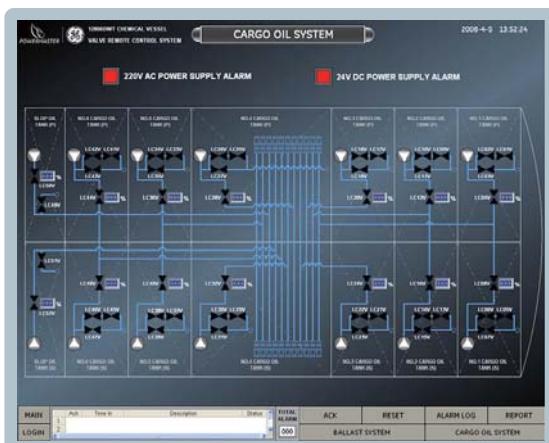
Our valve remote control system is designed by advanced electric-packing. The system can run independently or run with other systems seamlessly, such as liquid level indication system, E/R monitor & alarm system and so on. Several kinds of valve actuators can be selected by customer, including hydraulic, electro-hydraulic and electrical types. The control types include open/shut or opening.

本系统用于对管道阀门的驱动控制及监视：

- a) 驱动阀门的开和关
- b) 控制阀门的开度大小
- c) 监视阀门的工作状态

This system is used for valve driving and monitoring:

- a) Driving valve for shutting and opening
- b) Control the valve opening
- c) Monitoring the valve operation status



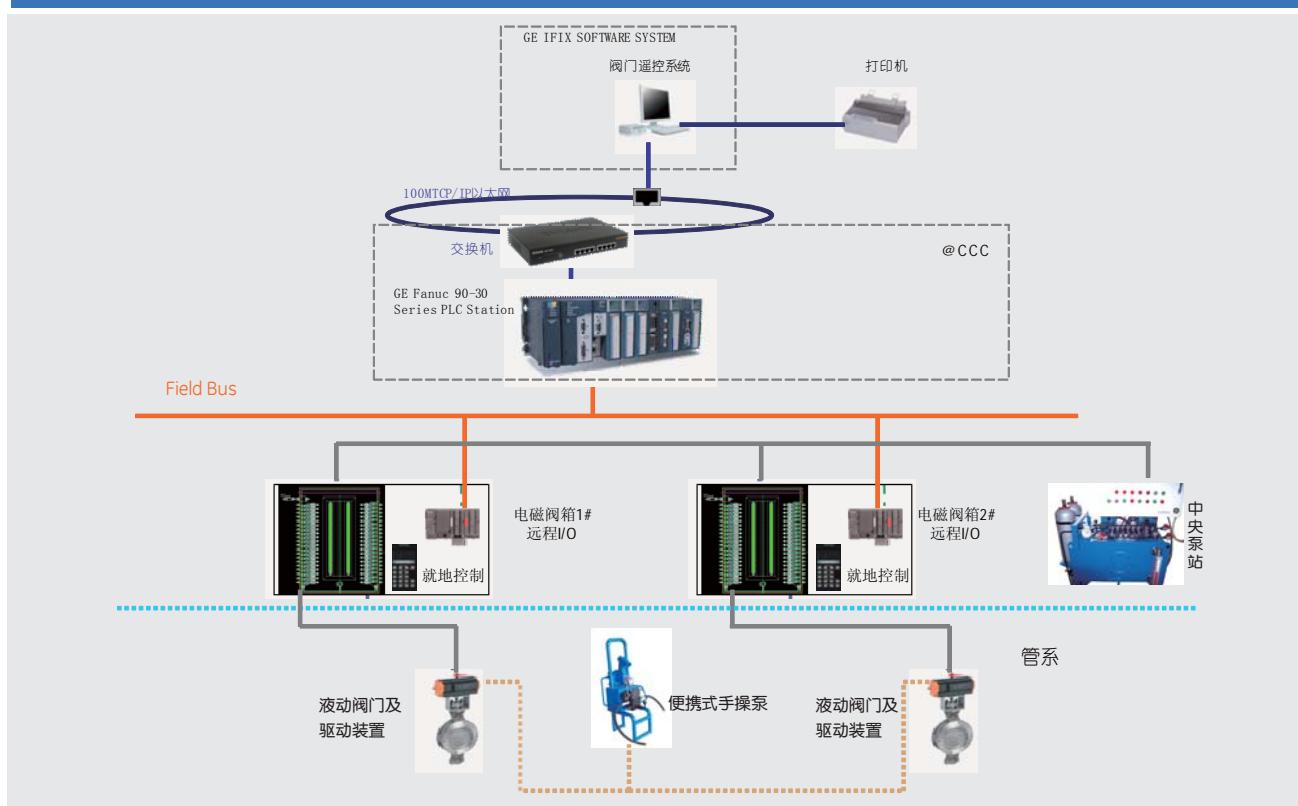
液压式阀门遥控系统为标准配置，一般有电气遥控部分和液压控制部分。

- 电气遥控部分: 控制台PLC主站、电磁阀箱远程I/O站、工控机人机界面。
- 液压控制部分: 液压泵站、电磁阀箱、应急阀块、液压驱动装置及手动泵组成。

Hydraulic valve remote control system is the standard configuration, including:

- Electric remote control: console PLC station, solenoid valve cabinet I/O station, IPC HMI
- Hydraulic control: hydraulic pump station, solenoid valve cabinet, emergency block, hydraulic actuator and hand pump.

解决方案 Solution



阀门遥控系统（升级方案） Valve remote control system (Upgrade Plan)

所有类型的阀门遥控系统（采用专用控制模块的除外）都可以选用MIMIC控制及显示或MIMIC/IPC双重控制及显示。可以采用冗余PLC配置，提高系统的稳定性。

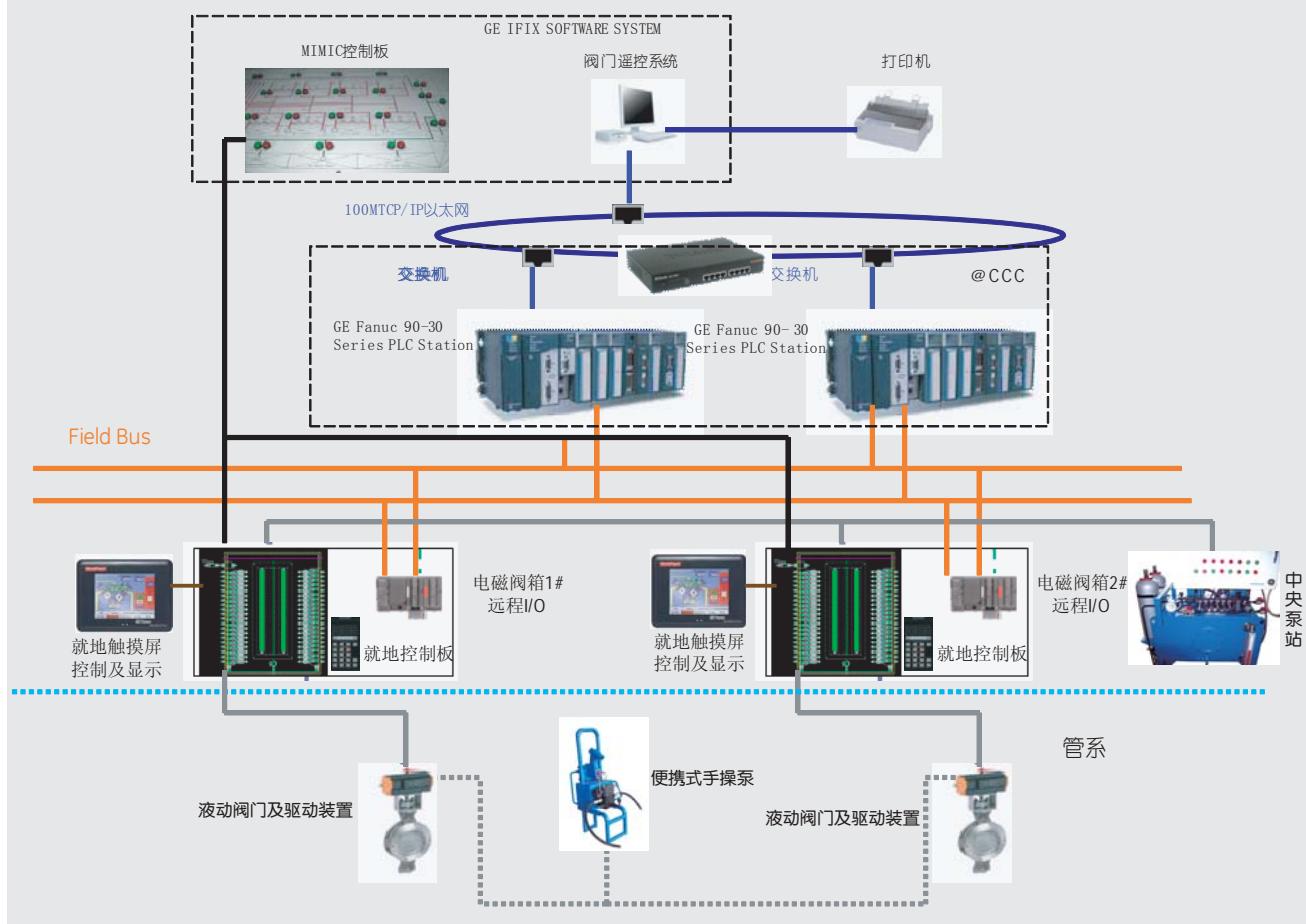
就地触摸屏/就地控制板可以在阀控箱位置操作阀门开关，并读取阀门位置反馈。

All type valve remote control system (excluding special module design) can select MIMIC panel for redundancy control and display.

Redundancy PLC can be configured for system stability.

Local touch screen/local control panel can use for valve action and position indication.

解决方案 Solution



多种驱动方式:

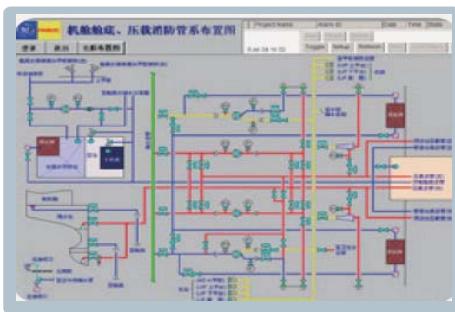
Large selection of actuators :

- 不锈钢手柄或齿轮箱
Notched hand lever or stainless steel gear box
- 电动、气动或液压驱动
Actuators : pneumatic, hydraulic or electric



阀门遥控系统（液压式）

Valve remote control system (HYDRAULIC)



电气遥控部分

在控制台处可对遥控阀进行开关操作。PLC主站的阀门控制命令及远程I/O站采集的阀门状态信号，均通过PLC主站与远程I/O站之间的总线连接传输，实现控制相应电磁阀的瞬间通电换向并锁位，从而控制油路进出方向，达到开关阀门并反馈阀门状态的目的。

安装在工控机上的人机界面，可以将阀位状态实时反馈给操作者，并实现操作者在控制台遥控阀门开关，还可以对系统报警信息进行及时的处理。

除遥控外，安装在电磁阀箱的就地控制及便携式手操泵保证了在系统故障时对阀门的有效操作。

Electric remote control

The operation is available at console. The control order from PLC station and the valve position signal acquired by remote I/O are transferred by field bus for solenoid valve working and position locking to control oil pipe direction and valve action. The IPC HMI can indicate valve position and control valve action. The system alarm information is also available at HMI. The local control at solenoid valve cabinet and hand pump can operate the valves when remote control is failure.

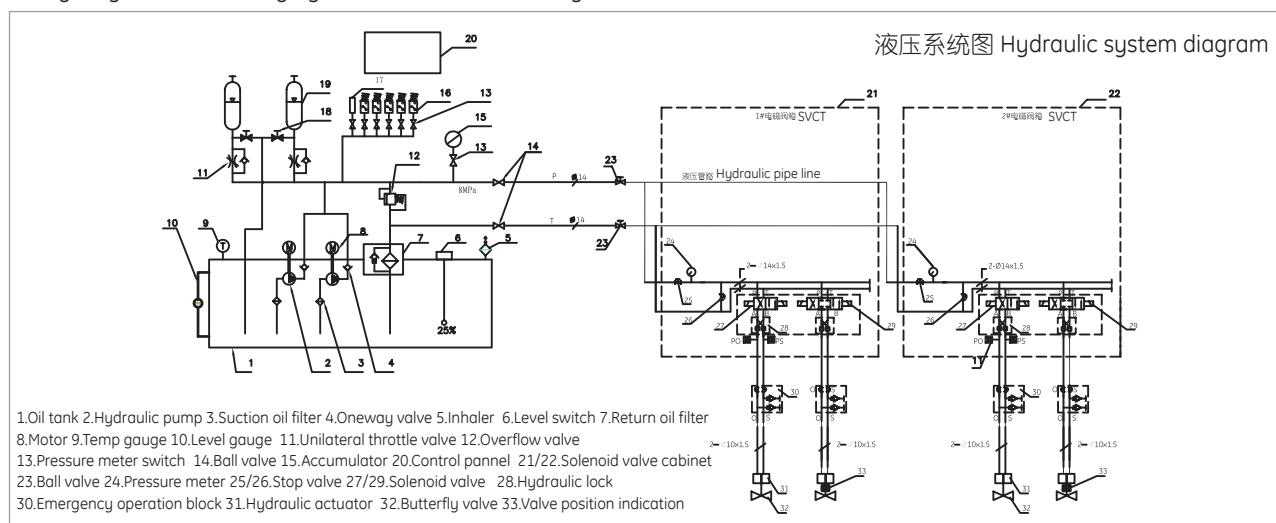
液压控制部分

液压泵站为系统提供液压动力，压力油经高压油管流出，系统回油经回油管流回油箱。液压泵站输出的压力油，经高压油管到达电磁阀箱，电磁阀箱可根据需要控制压力油通过不同的油管（OPEN、SHUT）流出，并实现压力油保压和对压力油的监测。

压力油从电磁阀箱流出后，经应急阀块至达液压执行机构，来控制执行机构的动作。应急阀块可在紧急情况下使用，使用时将阀块上两截止阀关闭，截断液压执行机构与电磁阀箱的油路连接，这时可将手动泵接入应急阀块，通过操作手动泵来控制液压执行机构的动作。

Hydraulic control

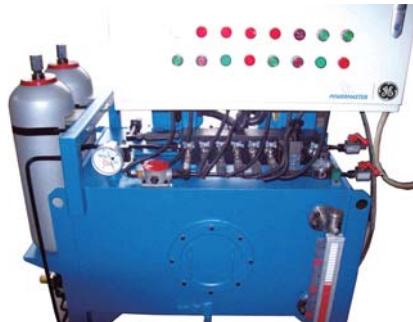
The system is powered by hydraulic pump station. High pressure oil flows out through high pressure oil pipe, and system scavenge oil flow back to oil tank through overflow pipe. The pressure oil from hydraulic pump station flows to solenoid valve cabinet through high pressure oil pipe. The pressure oil flow is controlled through different oil pipe (OPEN, SHUT) according to different operation requirements, and the pressure oil pressure maintaining and monitoring are also available in solenoid valve cabinet. The pressure oil from solenoid valve cabinet flows to hydraulic actuator to control actuator action through emergency block. The emergency block can be used in emergency condition. When the emergency block is in use, shut two stop valves on the block to cut off the connection between hydraulic actuator and solenoid valve cabinet oil pipe. Then connect hand pump to emergency block for driving hydraulic actuator manually.



根据不同的需要，我们还可以为客户设计电液式或全电式的阀门遥控系统

Electro-hydraulic and electrical type valve remote control system can be designed according to customer's requirements

液压泵站 Hydraulic Power Unit (HPU)



液压泵站型号:	PM/CARGOPRO-HPU-8	Type :	PM/ CARGOPRO-HPU-8
外型尺寸(本体):	(L) 1195x (W) 725x (H) 1500	Exterior Size(Neumann):	(L) 1195x (W) 725x (H) 1500
重量 (本体) :	约520Kg	Weight(Neumann):	About 520Kg
颜色:	海兰色	Color:	Blue
额定流量:	13.2L/min	Rated flow:	13.2L/min
回油进口油管:	Φ14×1.5	Oil Return Inlet Pipe:	Φ14×1.5
压力油出口油管:	Φ14×1.5	Pressure Oil outlet Pipe:	Φ14×1.5
出口压力:	8.0MPa	Outlet Pressure	8.0MPa
回油滤器精度:	5um	Oil Return Filter Precision:	5um
电源供应:		Power Supply:	
电压:	三相 380V/440V	Voltage:	Three Phase 380V
频率:	50Hz/60Hz	Frequency:	50Hz
总功率:	10 KW	Total Power:	10 KW
1#油泵功率:	3 KW	1# Oil Pump Power:	3 KW
2#油泵功率:	3 KW	2# Oil Pump Power:	3 KW
自控部分功率:	4 KW	Automatic Control Power:	4 KW

测点信号 Measuring point signal

- 1) 油温高测点: 设定值60°C
oil high temperature: setting valve 60°C
- 2) 滤器堵塞报警: 0.35Mpa
filter block alarm: 0.35MPa
- 3) 液位高报警: 400mm (距底面)
level high alarm: 400mm (to bottom)
- 4) 液位低报警: 200mm (距底面)
level low alarm: 200mm (to bottom)
- 5) 液位低低报警并停机: 100mm (距底面)
level low low alarm and stop run: 100mm (to bottom)
- 6) 油压工作压力测点: 7Mpa、8.5Mpa (油压升至8.5Mpa主泵停, 油压降至7Mpa主泵自启动)
oil working pressure: 7MPa, 8.5MPa
(main pump stop when oil reaches 8.5MPa, main pump run when oil pressure fall to 7MPa)
- 7) 油压高报警: 9Mpa
- 8) 油压低启备用泵测点: 5.5Mpa
- 9) 油压低报警并停机测点: 5Mpa
- 10) 压力传感器

电磁阀箱 Solenoid Valve Cabinet (SVC)



电磁阀箱型号:	PM/ CARGOPRO-SVP-40
外型尺寸:	(L) 1000×(W) 400×(H) 2000
重量:	约510Kg
颜色:	海兰色
压力油管:	Φ14×1.5
回油油管:	Φ14×1.5
电磁阀电压	24VDC
Type :	PM/ CARGOPRO-SVP-40
Exterior Size:	(L) 1000×(W) 400×(H) 2000
Weight:	about 510Kg
Color:	Blue
Pressure Oil Pipe:	Φ14×1.5
Return Oil Pipe:	Φ14×1.5
Solenoid Valve Power Supply:	24VDC

1. 落地式电磁阀箱 Floor mounted solenoid valve cabinet

电磁阀箱内分布两个阀组，分别安装在左右两侧，如图五。每个阀组包括1个油路块及安装在其上的数个电磁阀、液压锁和压力开关（测执行机构A、B腔压力），数量可根据设计需要增减。与液压驱动器油管路相连的管接头分布在阀箱两侧，分别与阀组电磁阀的A、B油口相通，通过对电磁阀A、B油口的控制可实现对执行机构开、关的控制，具体对应关系是：

A口（通压力油）——（执行机构）关；

B口（通压力油）——（执行机构）开；

Two valve group, which are installed on two sides, are in one cabinet. Every valve group includes one oil block and several solenoid valve, hydraulic lock, pressure switch (measure the actuator A, B pipe pressure), which are installed on the oil block. The quantity can be modified by design. The pipe connector connected with hydraulic actuator arranged on two sides with valve group solenoid valve A, B oil pipe. Solenoid valve A, B oil pipe is used for actuator open and shut. The detailed relation is:

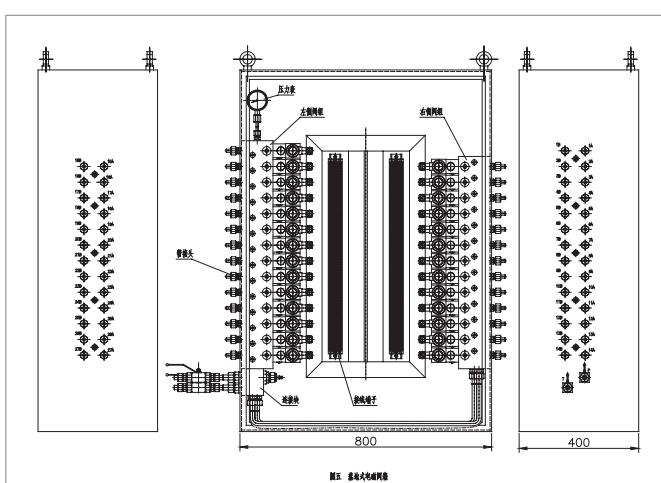
A (connected with pressure oil)—(actuator) shut

B (connected with pressure oil)—(actuator) open

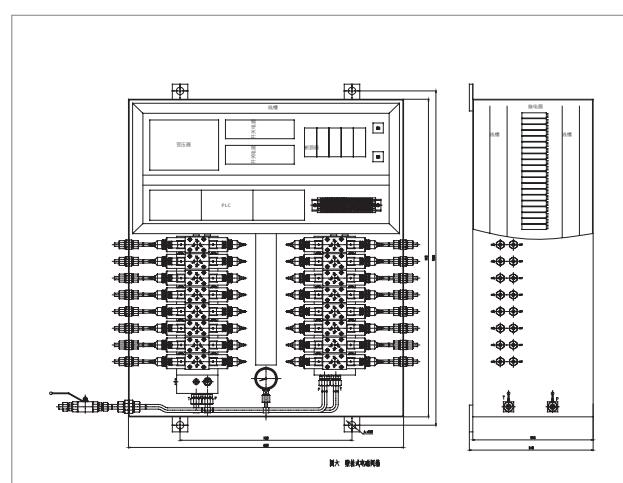
2. 壁挂式电磁阀箱 Wall mounted solenoid valve cabinet

壁挂式电磁阀箱除安装型式与落地式电磁阀不同之外，其两个阀组固定在阀箱的后板上，其余与落地式电磁阀相同。

Wall mounted solenoid valve cabinet is the same with the flood mounted cabinet except installation type. The two valve group is fixed at the back board.



1. 落地式电磁阀箱 Floor mounted solenoid valve cabinet



2. 壁挂式电磁阀箱 Wall mounted solenoid valve cabinet

应急阀块 Emergency Block

应急阀块由阀块、截止阀、直通管接头和单向管接头组成。

Emergency bloc is consisted with valve block, stop valve, conduction pipe connector and single direction pipe connector.

外型尺寸 Exterior Size:	(L)80×(W)80×(H)98
材料 Material:	STEEL / SS
重量 Weight:	约3Kg
外接油管 External Oil Pipe:	Φ 10×1
手动泵软管连接	
Portable Pump Hose Coupling:	M16×1.5



图示左侧两个管接头与电磁阀箱接管相连，上下两管接头与液压执行机构相连，右侧两单向管接头可在急情况下接手动泵。使用手动泵时，关闭应急阀块上两截止阀，这时可通过操作手动泵组控制液压执行机构，从而控制阀门的开或关。

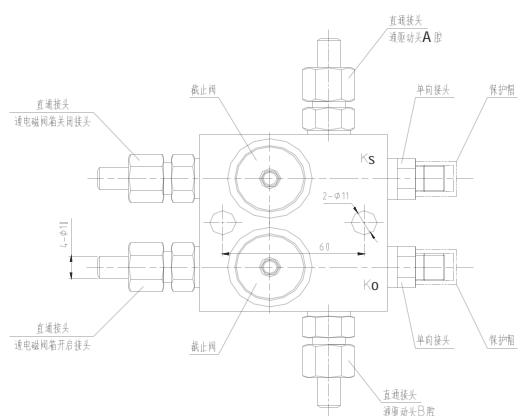
直通管接头: Φ10×1.5 焊接式

单向管接头: M16×1.5 旋入式

The two pipe connector on the left is connected with solenoid valve cabinet, the pipe connector on the top is connected with hydraulic actuator, the pipe connector on the right side is connected with hand pump when in emergency. When the hand pump is used, shut down the two stop valves on the emergency block, then operate hand pump to control hydraulic actuator for valve shut/open.

Conduction pipe connector: Φ 10×1.5 welding

Single direction pipe connector: Φ 10×1.5 welding



图七 应急阀块

手动泵 Hand Pumps

手动泵组由支架、2L油箱、柱塞泵、换向阀及压力表等组成，如图八所示。使用时将标有A口的软管与应急阀块上标有Ks的单向管接头相连，标有B口的软管与应急阀块上标有Ko的单向管接头相连，将换向阀的手柄推向开或关的位置即可控制液压执行机构，使阀门开或关。拆手动泵组时，应使手动泵先卸压（用手操杆将手动泵右侧卸荷阀逆时针旋转既可）

Hand pump is consisted with bracket, 2L oil tank, plunger pump, reversing valve and pressure meter. When in use, the soft pipe marked A should be connected with single direction pipe connector marked Ks on emergency block, the soft pipe marked B should be connected with single direction pipe connector marked Ko. Pull the handle to the open/shut position to control hydraulic actuator for valve shut/open. When the hand pump is removed, the hand pump should be decompression first (contra rotate the unloading valve by handle)



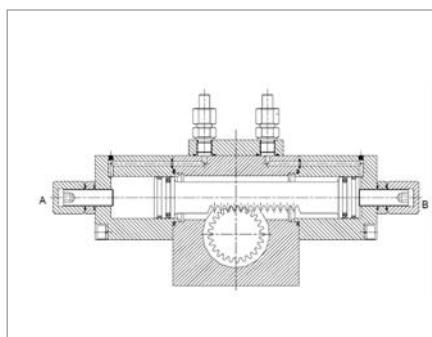
外型尺寸 Exterior Size:	(L)40×(W)30×(H)40
重量 (满油) Weight (Full Oil) :	约14Kg
容积 Cubage :	2L
排量 Emission:	12ml/次
额定压力 Rated Pressure:	16MPa

液压驱动头 Hydraulic Actuators

双作用式平稳直角转动液压驱动头

Powermaster DHA Series Hydraulic double-acting balanced rotary actuator

90° quarter-turn



结构、功能及概述

本驱动装置采用液压驱动、双作用结构形式，如图所示，主要由壳体、缸筒、活塞杆、齿轮轴、调节装置及管接头等部件组成。该装置采用液压油推动活塞杆移动，从而带动齿轮轴转动。控制压力油经管接头进入，通过一节流孔到达活塞端部，推动活塞杆向另一侧移动，改变节流孔的大小可调整活塞杆移动速度。

齿轮轴转动角度最大90°，可通过调节装置调整。

控制压力油进入B腔（图示状态）使阀门打开，进入A腔则使阀门关闭。

Construction, Function and Summarize

The actuator is hydraulic drive, two action, which is consisted of body, jar, piston rod, gear shaft, regulation device and pipe connector. The equipment is powered by piston rod move to drive gear shaft. Control pressure oil ingress form pipe connector to piston top by throttle hole to pull piston rod move. The piston rod speed can be adjusted by throttle hole size.

The max rotate angle of gear shaft is 90°, which can be adjusted by regulation device.

The valve will open when control pressure oil ingress into B, and the valve will shut when control pressure oil ingress into A.

结构特点:

- 独特而简单的设计
- 高转矩输出
- 可靠而且耐用
- 转速可调
- 能在海面上和海水中操作
- 对所有知名的蝶阀都能很容易的应用
- 灵活的置动

可选标准:

- 液压开/关就地指示
- 使用过滤的连接模块
- 可双操作的不归零的阀门
- 双排气阀
- 双节流阀
- 通过轻便泵来快速连接应急操作
- 外置的应急操作手泵
- 可用于浸没式的罩子
- 环氧涂层

structural features:

- Unique and simple design with
- High-torque output
- Reliable and rugged
- Adjustable speed of rotation
- Will operate in sea air as well as sea water
- Easy adaption to all well-known quarter-turn valves
- Unlimited mounting position

Standard optionals:

- Hydraulic on/off indication (bypass)
- Connection block with e.g. filter
- Double pilot operated non-return valve
- Double release valve
- Double throttle valve
- Quick connection for emergency operation with portable hand pump
- Built-on emergency operation hand pump
- Submersion cover
- Epoxy coating

液压驱动头 Hydraulic Actuators

入级 Classification

满足主要的船级社的需求还有权威的的正式批准如：
Meets the requirements from the major classification
and approval authorities like:

- 中国船级社 CCS
- 挪威船级社 Det Norske Veritas
- 英国劳氏船级社 Lloyd's Register of Shipping
- 美国船级社 American Bureau of Shipping
- 意大利船级社 RINA
- 俄国船级社 Russian Register of Shipping
- 法国船级社 Bureau Veritas
- 德国劳氏船级社 Germanischer Lloyd
- 美国海岸警卫队 U.S. Coast Guard

温度范围	-20°C to +80°C, seals NBR (other temp. ranges on request)
Temperature range	-20°C to +80°C, 密封的NBR (其他的温度范围见需要)
壳体 Housing	ZG45
活塞杆 Piston	40Cr
齿轮轴 Output shaft	40Cr
指示轴 Indicator shaft	45
连接法兰 Intermediate flange	45
涂层 Coating	Primer (表面) : Min. 40 micron, type Hempel EE 13140 Top coat (顶部的涂层) : min. 25 micron alkyd, red no. 51320

驱动头安装控制设备

Actuator mounted control equipment

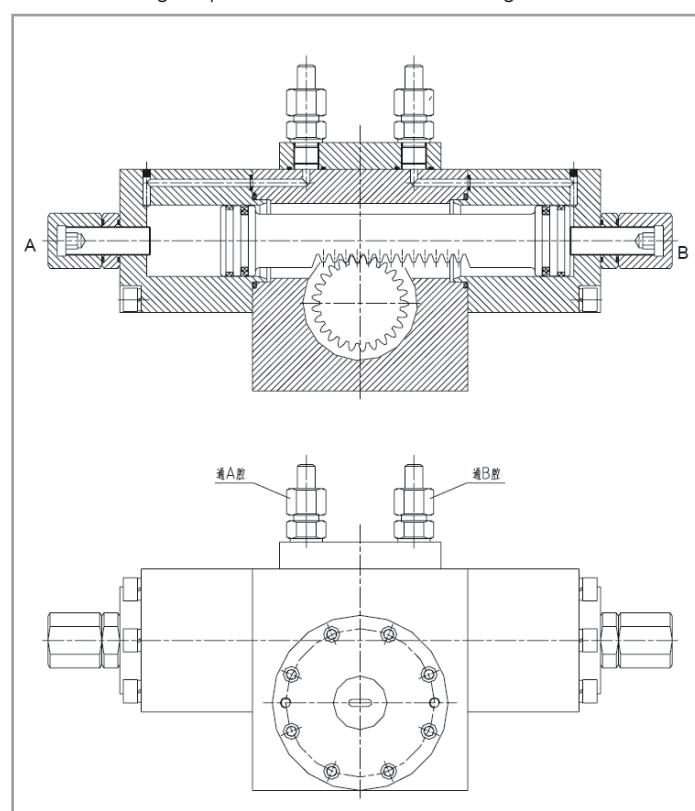
看整个范围的控制模块的分离的数据单表和其他的驱动头安装控制构成 (Cetop的3阀门界面)
See separate data sheet for the whole range of control blocks and other actuator mounted control components.(Interface for Cetop 3 valves).

转变相关方向到“A”和“B”

Turning direction in relation to "A" and "B"

液压油通到A腔—指示槽顺时针转动—阀门关闭而且指示槽与活塞杆平行

Take the hydraulic oil to A with the clockwise of the indication trough and close the valve. The indication trough is paralleled with the connecting rod



液压油通到B腔—指示槽逆时针转动—阀门开启而且指示槽与活塞杆垂直

Take the hydraulic oil to B with the counterclockwise of the indication trough and open the valve.

The indication trough is paralleled with the connecting rod

液压驱动头 Hydraulic Actuators

单作用液压驱动头 Single Acting Hydraulic Actuators

90度转动带弹簧复位 900 turn, spring opened

Pressure 压力: 80BAR

Connection with Yard Hydraulic pipe: OD10 SS Pipe 与船厂提供的OD10的不锈钢钢管连接

MODEL型号为:

- SHA-125 (For <= DN125 VALVE)
- SHA-200 (For <= DN200 VALVE)
- SHA-250 (For <= DN250 VALVE)
- SHA-300 (For <= DN300 VALVE)
- SHA-400 (For <= DN400 VALVE)

阀门开度位置指示器

Valve Position Indicator



- 直接安装于驱动头上 Direct mounted on the actuator

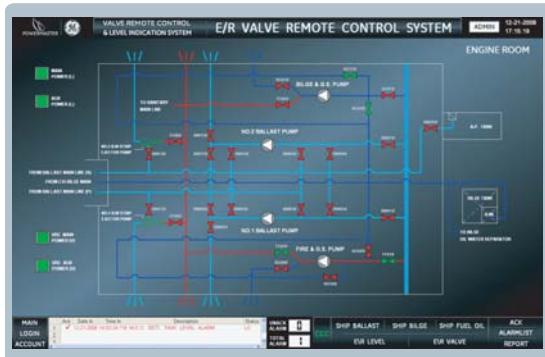
- 防爆等级: 本安型 Ex proof degree: IS

- 防护等级: IP67 Protection Degree: IP67

- 带就地位置指示器, 并输出阀门的0~100%开度的位置指示到阀门遥控系统

With local position indicator, and output 0~100% opening signal to valve remote control system

阀门遥控系统（电液式） Valve remote control system (Electro-hydraulic)



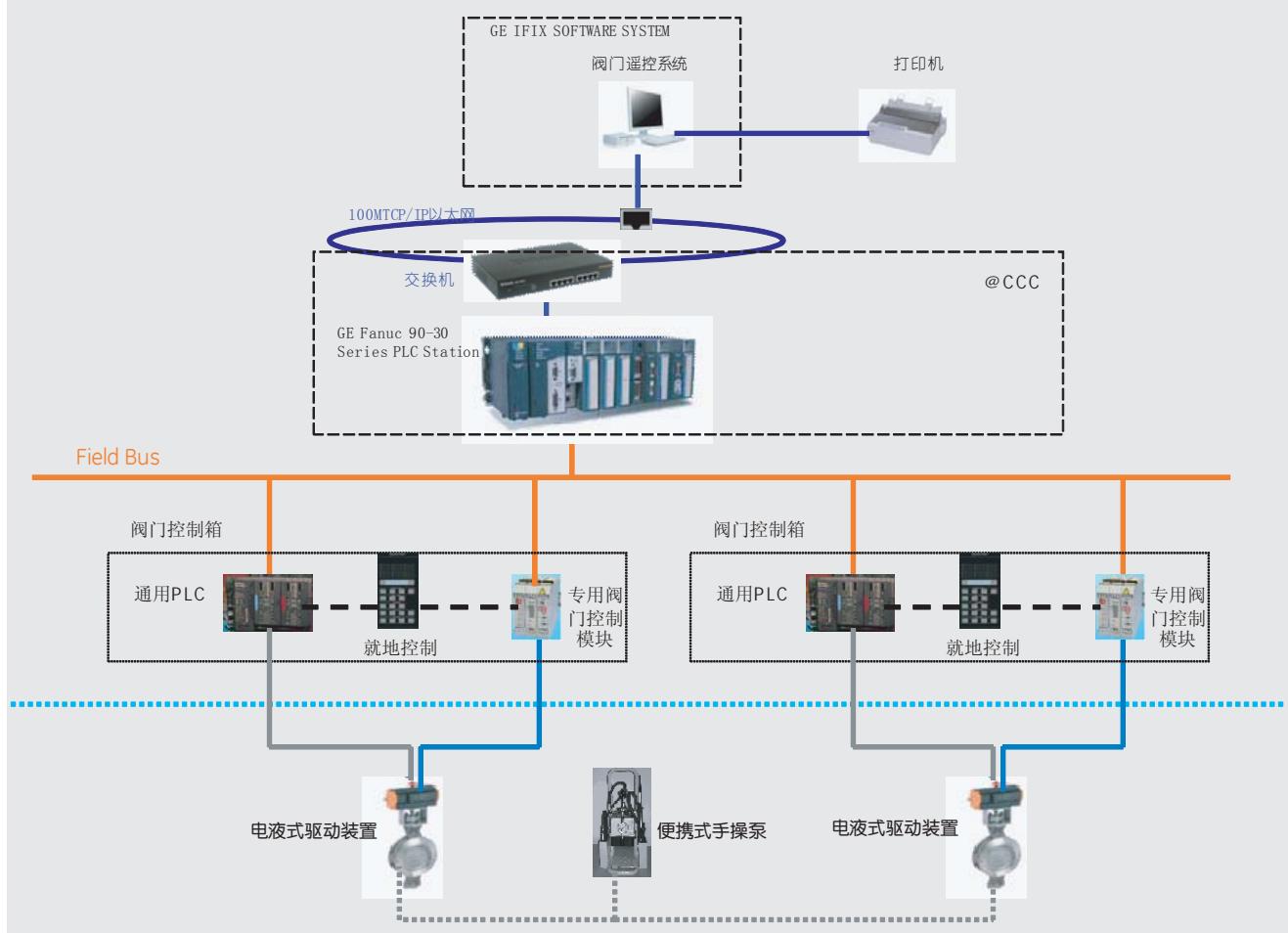
电液式阀门遥控系统采用专用的阀门控制模块或通用的PLC设计，控制阀门的动作并读取阀门位置反馈。电液驱动装置包括电机、液压泵、油箱以及用于驱动头操作的液压元件等。由于液压泵直接装在液压驱动装置上，故避免了管路泄漏等问题，使得阀门与驱动头的安装、调试及维护大大简化。并有很好的价格优势。

所有的阀门状态反馈与控制都可以在人机界面实现，并配有就地控制和便携式手操泵用于紧急情况。

In electro-hydraulic valve remote control system, special valve control module or general PLC module is used for designing. the electro-hydraulic actuator includes motor, hydraulic pump, oil tank and hydraulic elements for operation. For the direct installation on actuator, pipe leaking is avoided. The mount of actuator and valve, commissioning and maintenance are very easy. The system also has competitive edge at price level.

All valve position feedback signal and valve control is available at HMI. local control and hand pump is for emergency condition.

解决方案 Solution



电液式驱动头 Hydraulic power Acutators

微型液压单元 Micro power pack

在这个液压单元中，我们很好的建立了自动化的径向的活塞泵，这些都综合在了泵的载体上，你可以根据容积流量来在三个活塞泵之间进行选择。

In this power pack, our well established automotive radial piston pump is integrated in the pump-carrier. For determination the volume flow, you can choose between three piston pumps.

这个储油池是循环的，运输舱有一个G1/4的注入塞

The oil-reservoir is a round, transparent tank with a G1/4 filler plug.

由于安装的种类，这个舱最初是可以旋转的，作为结果，你可以在最高位安放渗出的填充物（仅在水平位放置）

Due to the type of mounting, the tank can be rotated infinitely. As a result, you are able to fix the filler bleed at the highest position (only with horizontal mounting position).



设计和安装尺寸 Design and port size

- 安装法兰，看尺寸 Flange mounting, see dimensions

特性 Characteristics

总体特性 General characteristics

- 安装 Installation : 任意 Arbitrary
- 装备 Mounting :
Tapped holes M8 at the bell housing 在钟状罩有个M8的中间抽头的孔。
- 周围的温度范围 Ambient temperature range
min -15 °C, max +40 °C
- 重量 Weight (mass) : 4 kg

液压特性 Hydraulic characteristics

- 泵的种类 Pump type : 径向的活塞泵 Radial piston pump
- 移位 Displacement : 看特性曲线 see characteristic curve
- 执行压力 Operating pressure : 看特性曲线 see characteristic curve
- 回动执行 Reversing operation : 可以 Possible
- 舱的体积 Tank volume : 0,3 l total volume
0,23 l effective volume
- 液压介质 Hydraulic medium :
根据DIN 51524的矿物油，其他有要求的介质 Mineral oil according to DIN 51524, other media on request
- 压力介质的污染水平 Contamination level for pressure medium :
max. class 9 in accordance with NAS1638
- 压力温度水平 Pressure media temperature range :
min = -10 °C, max = +70 °C
- 粘性范围 Viscosity range :
min = 10 mm²/s, max = 100 mm²/s

直流12V发电机电气特性 Electrical characteristics

Motor 12 V DC

- 电压范围 Voltage range : 12 V DC
- 功率 Power : P2 = 190 W
- 电流消耗 Current consumption :
看特性曲线 see characteristic curve
- 占空比 Duty cycle : Interval operation: S3-10%
- 电力连接 Electrical connection :
vl contact pin AMP
wh contact pin AMP
bk resilient contact AMP
- 电力保护 Electrical protection :
IP40 according to DIN40050

24V直流发电机发电特性 Electrical characteristics

motor 24 V DC

- 电压范围 Voltage range : 24 V DC
- 功率 Power : P2 = 190 W
- 电流消耗 Current consumption :
see characteristic curve 见特性曲线
- 占空比 Duty cycle : Interval operation: S3-10%
- 电力连接 Electrical connection :
wh plug connection
bk plug connection
- 电力保护 Electrical protection :
IP40 according to DIN40050

电液式驱动头 Hydraulic power Acutators

230V交流发电机电气特性；1相位

Electrical characteristics motor 230 V AC; 1-phase

- 电压范围 Voltage range : 230 V; 50/60 Hz
- 功率 Power : P1 = 300 W
- 传输速度 Drive speed : 3000 min-1 with 50 Hz
- 电流消耗 Current consumption
Starting current: max. 4 A
Nominal current: max. 1,6 A
- 电容 Capacitor : 10 μ F
- 占空比 Duty cycle :
Interval operation: S3-10%
- 过载保护 Overload protection :
temperature switch opens at 140 °C
(self-starting after cooling)
- 电力连接 Electrical connection :
cable with cable end sleeves
- 电力保护 Electrical protection :
IP40 according to DIN40050

3相交流400V发电机电气特性

Electrical characteristics motor 400 V AC , 3-phase

- 电压范围和电流消耗 Voltage range and current consumption :
380 - 420 V ; 50 Hz, 0,55 A
440 - 480 V ; 60 Hz, 0,5 A
- 功率 Power : P1 = 300 W
- 传输速度 Drive speed :
3000 min-1 with 50 Hz
- 占空比 Duty cycle
Interval operation S3-10%
- 过载保护 Overload protection :
temperature switch opens at 160 °C
- 电力连接 Electrical connection :
cable with cable end sleeves
- 电力保护 Electrical protection :
IP44 according to DIN40050

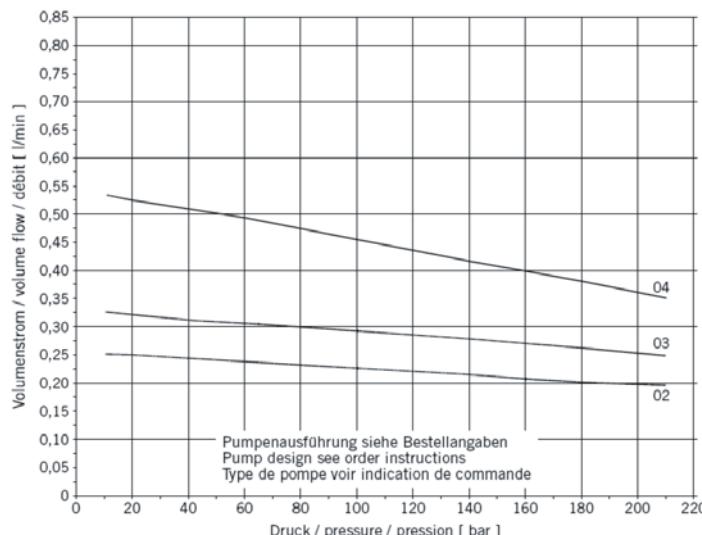
3相交流230V发电机电气特性

Electrical characteristics motor 230 V AC Δ, 3-phase

- 电压范围和电流消耗
Voltage range and current consumption :
220 - 240 V Δ; 50 Hz, 0,85 A
220 - 280 V Δ; 60 Hz, 0,5 A
- 功率 Power : P1 = 300 W
- 传递速度 Drive speed : 3000 min-1 with 50 Hz
- 占空比 Duty cycle :
Interval operation : S3-10%
- 过载保护 Overload protection :
temperature switch opens at 160 °C
- 电力连接 Electrical connection :
cable with cable end sleeves
- 电力保护 Electrical protection :
IP44 according to DIN40050

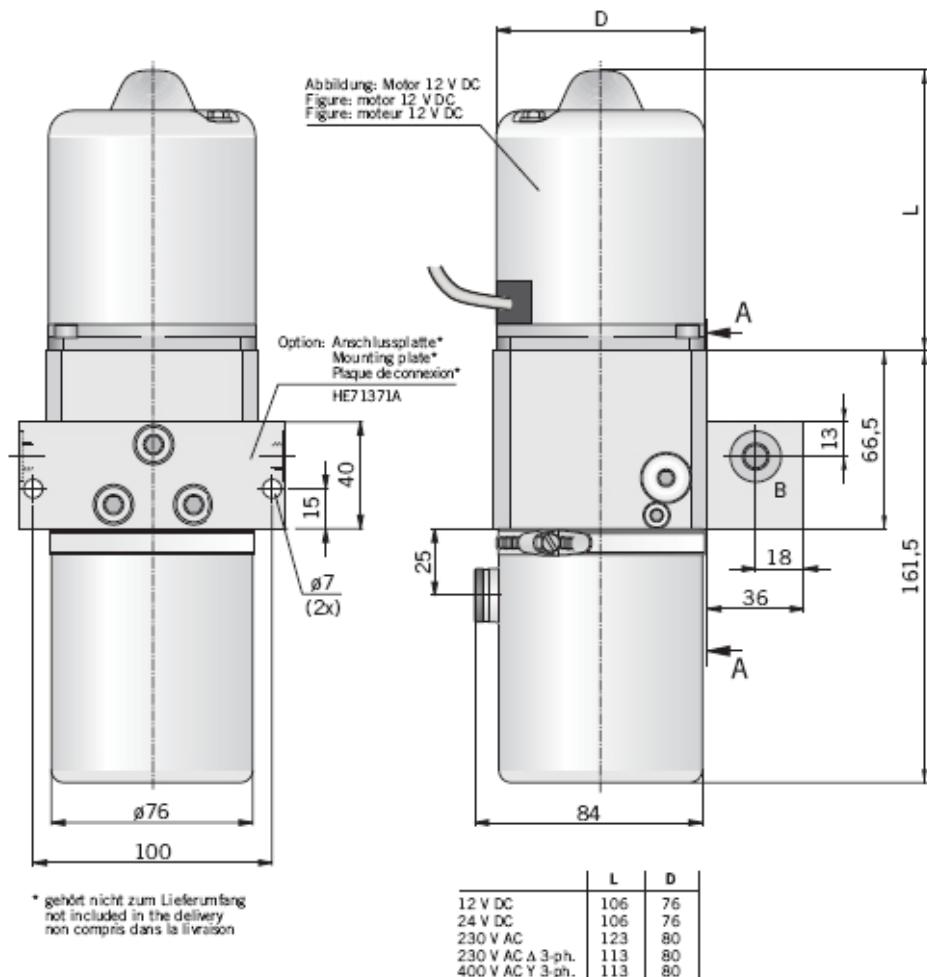
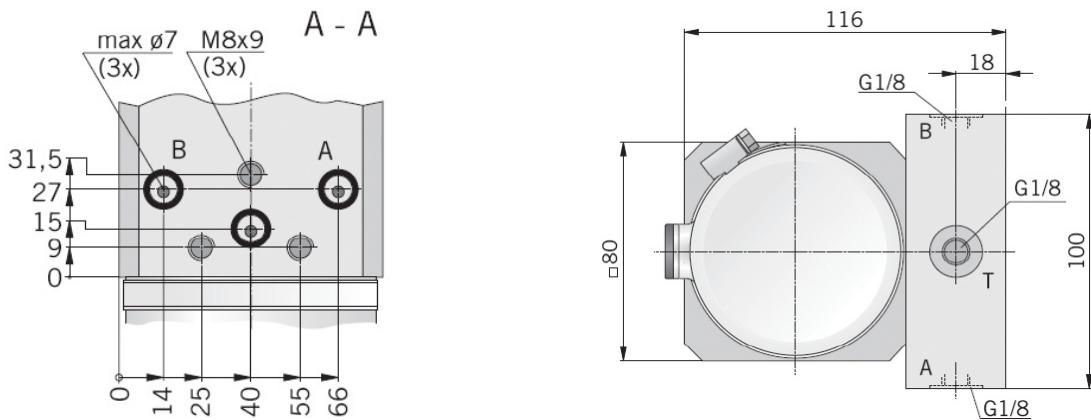
230 VAC Δ and 400 VAC , 3-Phases

Oil temperature +25°C, viscosity 46 mm²/s, deviation ±5%



电液式驱动头 Hydraulic power Acutators

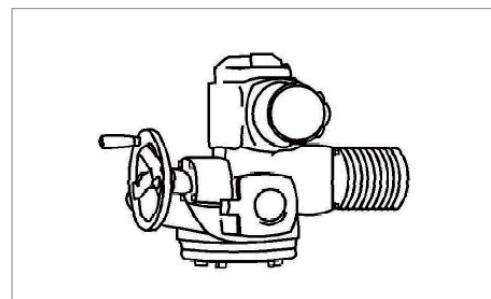
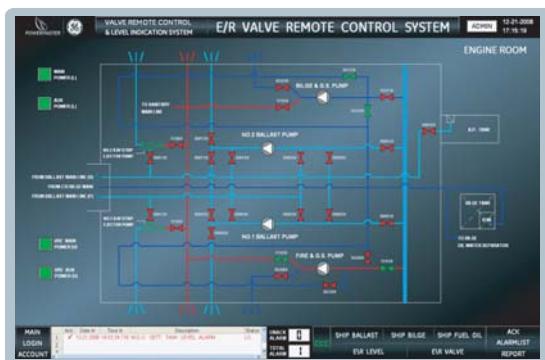
尺寸 Dimensions



阀门遥控系统（电动式） Valve remote control system (Electrical)

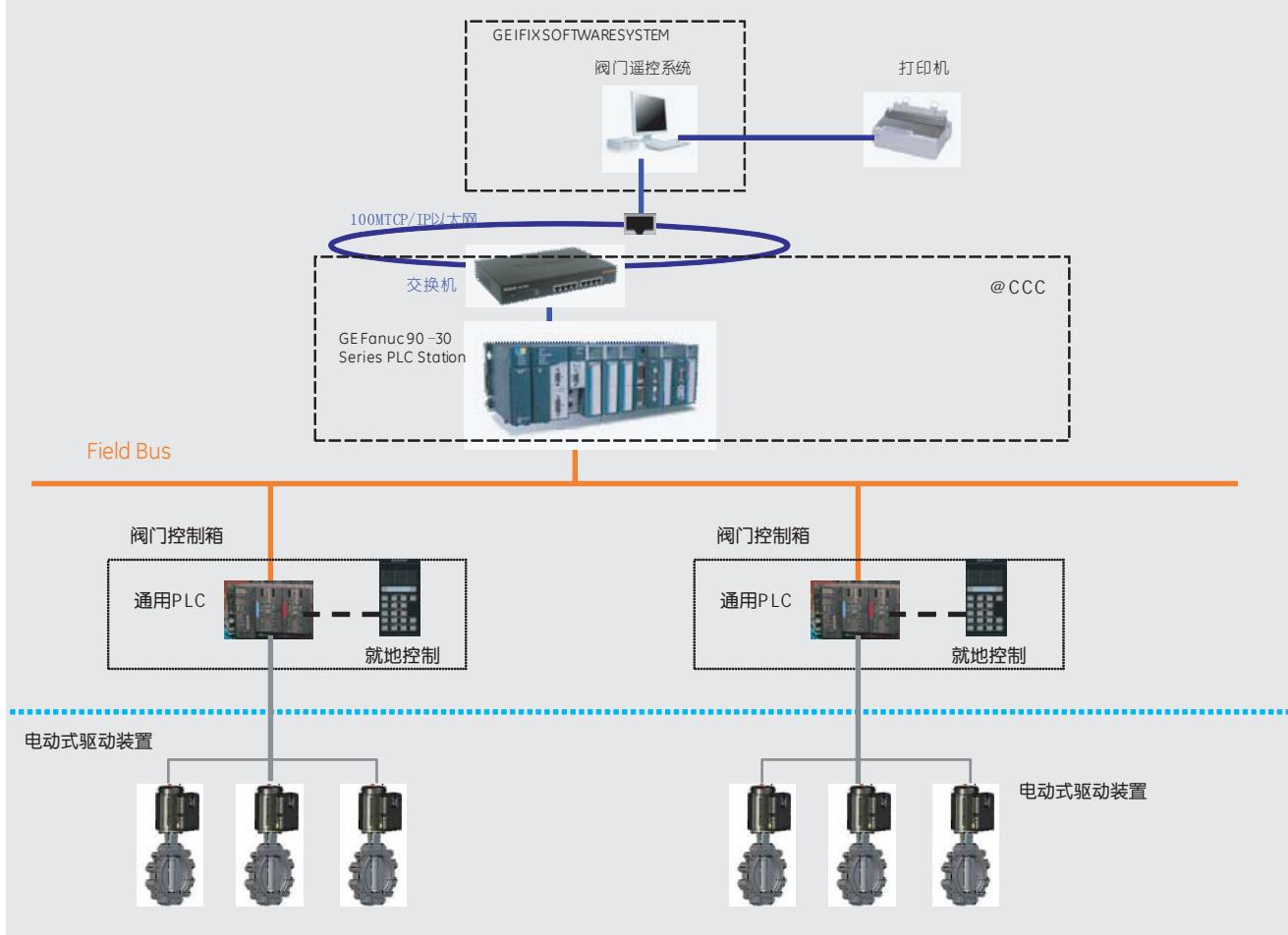
电动式阀门驱动头启闭迅速，可缩短起闭阀门所需的时间;且电源易获得，电线的敷设和维护方便;所有的控制信号和反馈信号都为电信号，控制方便。所有的阀门状态反馈与控制都可以在人机界面实现，并配有就地控制和就地操作手杆用于紧急状况。

The electrical actuator can drive valve quickly to shorten action time. the power is available easily; cable laying and maintenance is easy; all control signal and feedback signal is electrical signal, which is easy for control
All valve position feedback signal and valve control is available at HMI. local control and hand operation handle is for emergency condition.



电动驱动头 Electrical Actuators

解决方案 Solution



高品质的系统软硬件组成 High quality hardware & software

无论是现场的信号采集传感器，实现系统监测，报警与控制功能的中央控制器，还是人机交流界面。我们都与当今世界上数一数二的制造供应商合作，采用最先进的设备和器材，从而保证我们的系统有最先进的功能，最优秀的品质。

Whatever field sensors, PLC and HMI, we selected the highest quality hardware and software for integration to guarantee the whole system quality.



高品质的GE Druck传感器
High Quality- GE Druck Sensor



高性能的PLC 及 HMI
High Performance PLC & HMI



优秀的Danfoss阀门和流体控制
Excellent Danfoss Valves & Water Control

GE DRUCK SENSOR 德鲁克传感器

GE Druck隶属于GE工业集团传感与测量旗下，GE工业集团传感与测量是研制和生产高精密传感元件、设备和系统的行业领导者。致力于超声波气体和液体流量测量、水分及露点测量、热量测量、控制电路保护、液位测量等方面的研究，为倍豪船舶提供定制化解决方案。

倍豪船舶与GE Druck深度合作，采用GE Druck专为我们OEM的传感器——PTX317，该传感器专门为液位遥测系统设计，为高性能的液位压力传感器。



特点:

- 量程从1mH₂O到600mH₂O
- 精度为满量程最佳直线的±0.1%
- 全焊接25mm结构外壳
- 聚亚安酯耐腐蚀电缆
- 全套安装附件

Features:

- Ranges from 1 mH₂O to 600 mH₂O
- Accuracy ±0.1% full scale (FS) best straight line (BSL)
- Fully welded 25 mm titanium construction
- Polyurethane and hydrocarbon resistant cables
- Full range of installation accessories

PTX317传感器（4~20mA输出）是用于液位高度测量的最新一代全浸没式钛合金高性能传感器。

The PTX317 transmitter (4 to 20 mA output) are the latest generation of fully submersible titanium high performance sensors for measurement of hydrostatic liquid levels.

应用

PTX317系列综合了诸多从全球各地各种规模的装配经验中得到的优越特性。应用包括：

饮用水

地下水，地表水的液位测量，包括河流，运河及水库等。

废水处理和回收

二级处理和流出口的液位检测，可用于危险区域。被污染的地下水液位检测，可埋入现场土壤位置。

舱室液位测量

地面的储液罐及船舶的压载舱检测，适用于安全及危险区域。采用经认证的饮用水电缆和炭氢耐腐蚀电缆。

海水

海洋环境的应用，包括潮汐测定，海岸防洪和海浪监测等

Applications

The PTX 317 Series incorporates many enhanced features gained from experience in supplying thousands of sensors for small and large scale installations worldwide. Example applications include:

Potable water

From ground water borehole to surface water level measurements in rivers, canals and reservoirs.

Waste water and remediation

Monitoring of secondary and outflow sewage levels within certified hazardous areas and contaminated ground water levels in land fill sites.

Tank Level indication

From land based liquid storage vessels to on-board ship ballast tank monitoring within safe and certified hazardous areas, using potable water approved (1830) cable and hydrocarbon resistant (1840) cable.

Sea Water

Marine environmental applications including tide gauging, coastal flood protection and wave profiling amongst others.

GE DRUCK SENSOR 德鲁克传感器

可靠性和数据质量

融合了先进的数据补偿及封装技术的高性能传感器，提供了高稳定性，高精度和经济的测量解决方案。Druck的微加工硅元件封装与全钛的压力模块部件中，与压力介质完全隔离。整体封装在熔焊而成的结构紧凑的钛外壳中。后部为整体压模电缆。电缆为Kevlar®材料的抗应力芯体，并且具有IP68的防护等级可沉浸至700m水深。可根据不同的应用需要选择不同的电缆材料。

Reliability and Data Quality

The combination of a high technology sensor, together with advanced signal conditioning and packaging techniques, provides an ideal long term solution for reliable, accurate and economical level measurements.

The Druck micromachined silicon element is sealed within an all-titanium pressure module assembly, fully isolated from the pressure media. This is contained in a slimline, welded titanium body, terminated in an injection moulded cable assembly. The cable features a Kevlar® strain cord and is IP68 rated for indefinite immersion in 700 mH₂O, with a selection of cable material to meet the application.

雷击浪涌保护

雷击浪涌保护装置为可选项，其质量符合最高标准的IEC61000-4-5（等级4）。该装置可以防止雷击造成的地电位升高损坏传感器，雷击现象在地表水液位测量的应用场合中经常会出现。

使用方便

带有基准点标记的电缆使得安装更加方便。每1m都有明显的标记，可以在地面基准以下快速并精准地调准电缆。另外全套的相关附件也可以简化安装，操作及维护。

- 快速脱扣电缆夹装置
- 细、短外形的沉锤
- 防潮接线盒
- 压力测试/校验接头

Lightning Surge Protection

An optional integral lightning surge arrester is available, qualified to the highest standard IEC 61000-4-5 (level 4). This protects the sensor from raised earth potentials caused by lightning strikes, which often occur in surface water applications.

Ease of Use

A simple datum marked cable system is provided for ease of installation. Incremental 1 m datum points are clearly marked for quick and accurate cable alignment below ground level. In addition, a full range of related accessories simplifies installation, operation and maintenance.

- Quick-release cable clamp assembly
- Slimline and short profile sink weights
- Moistureproof Sensor Termination Enclosure
- Pressure test/calibration adaptors

PTX317 Specifications

0~0.75mH₂O至600mH₂O的表压及3.5mH₂O至600mH₂O的绝对压力

复合压力范围可选

零点提高，复合与反向输出范围可选。访问GE Sensing以获取更多信息。其他压力单位可选：如 ftH₂O, inH₂O, bar, mbar, kpa, kg/cm²

Any zero based FS from 0.75 to 600 mH₂O gauge and 3.5 to 600 mH₂O absolute.

compound pressure ranges available on request.

Elevated zero, compound and reversed output ranges available. Refer to GE Sensing for further information. Other units may be specified e.g. ftH₂O, inH₂O, bar, mbar, kpa, kg/cm²

高品质的系统软硬件组成

High quality hardware & software

GE DRUCK SENSOR 德鲁克传感器

过载压力

过载压力在下述范围内时，对校准无影响

4x量程（最大1400mH₂O）

压力负荷

3.5mH₂O以上：6倍（最大1400mH₂O）

绝对压力范围：200bar

压力介质

与钛（外壳），缩醛（头锥）和聚亚安脂（电缆）兼容的液体

输出信号

4~20mA比例对应0~满量程压力

Overpressure

The operating FS pressure range may be exceeded by the following multiples with negligible effect on calibration:

4 x for ranges (1400 mH₂O maximum)

Pressure Containment

6 x for ranges above 3.5 mH₂O gauge (1400 mH₂O maximum)

200 bar for absolute ranges.

Media Compatibility

Fluids compatible with titanium (body), acetyl (nose cone) and polyurethane or Hytrel® 6108 (cable assembly).

PTX 317

9 to 30 V 9 to 28 V for Intrinsically Safe version. The minimum supply voltage (V_{MIN}) which must appear across the pressure transmitter terminals is 9 V and is given by the following equation: $V_{MIN} = V_{SUP} - (0.02 \times R_{LOOP})$ Where V_{SUP} is supply voltage in Volts, R_{LOOP} is total loop resistance in Ohms

Output Signal

4 to 20 mA proportional, for zero to FS pressure.

性能规范

精度

非线性，滞后性和重复性的综合效果

- 标准：最大±0.1% 满量程最佳直线
- 零位漂移及范围设定：最大±2%
- 长期稳定性：±0.1%满量程/年
- 工作温度范围：-10 to 50°C

温度误差带

±0.1% 满量程

绝缘

- 标准：500V DC时, >100M ohm
- 本质安全型：500V AC时, <5mA

本安性

- 防爆等级：与安全隔离栅配用符合EEx ia IIC T4认证 (BAS 01 ATEX 1018X), -40°C <= 外界温度 <= 80°C

Performance Specification

Accuracy

Combined effects of Non-linearity, Hysteresis and Repeatability

- Standard: ±0.1% FS BSL maximum
- Zero Offset and Span Setting: Maximum: ±2%
- Long-Term Stability: ±0.1% FS typically per annum.
- Operating Temperature: Range-10 to 50°C

Temperature Effects Band

±0.1% FS TEB from -10 to 50°C.

Insulation

- Standard: >100 MΩ at 500 Vdc
- Intrinsically Safe version: <5 mA at 500 Vac

Intrinsic Safety

- ATEX: Certified (BAS 01 ATEX 1018X) for use with IS barrier systems to EEx ia IIC T4 (-40°C <= Tamb <= 80°C) for cable lengths up to 300 metres maximum.

结构特性

压力接口 (C类)

图示为M20*1.5。G 1/4 和深圆锥可选

电器接口

通气聚氨脂电缆，带Kevlar抗应力芯，额定负重54kg。进水保护等级为IP68, 700m水深

电缆长度

从1m至500m, 可按需定制

更长的电缆长度请访问GE Sensing

Physical Specification

Pressure Connection (Option C)

M20 * 1.5 Shown. G 1/4 and Depth cone available on request

Electrical Connection:

Vented polyurethane cable with integral Kevlar® strain relief cord rated to 54 kg load. Water ingress protection IP68 to 700 mH₂O.

Cable Lengths

To be specified as required in 1 metre increments up to 500 metres.

For longer lengths refer to GE Sensing.

GE DRUCK SENSOR 德鲁克传感器

CE标志

CE用于标明电磁兼容性，压力设备指令，该标志仅用于ATEX型，使用于有爆炸性气体环境。

文档

提供详细地使用说明，包括精确校准数据。文档提供英语，法语，德语，意大利语，西班牙或葡萄牙语。其余语种需定制。

订购办法

请按如下步骤

- 1.选择类型号 PTX317
- 2.压力范围与标度单位
- 3.可选项（如果需要）
- 4.所需电缆长度
- 5.附件（作为独立项目订购）

CE marking

CE marked for electromagnetic compatibility, pressure equipment directive and, for ATEX version only, use in potentially explosive atmospheres.

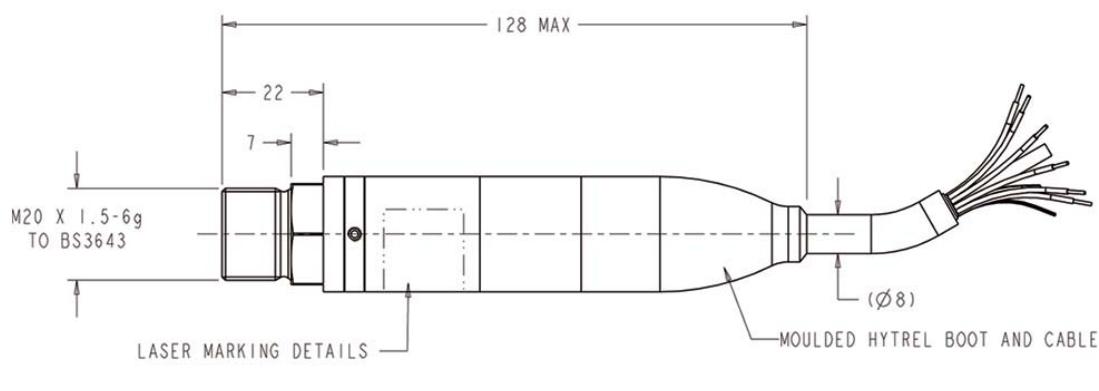
Documentation

Detailed user instructions are provided with specific calibration data. Supplied in English, French, German, Italian, Spanish or Portuguese. Language selected on order.

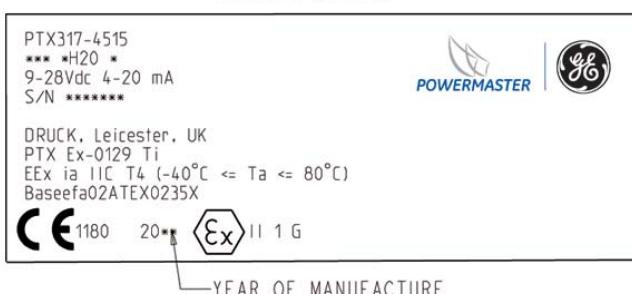
Ordering Information

Please state the following:

- (1) Select model number
PTX 317
- (2) Pressure range and scale units
- (3) Options (if required)
- (4) Cable length required
- (5) Accessories (order as separate items).



MARKING DETAIL



附件 ACCESSORIES

1. 接线盒、防结露，通过接线盒后，可以用普通电缆



2. 沉锤深水适用



3. 电缆夹：固定电缆



高品质的系统软硬件组成 High quality hardware & software

GE DRUCK Pressure Calibrator 压力校验仪



GE德鲁克的DPI 610/615便携式压力校验仪卓越的性能达到了多年来DPI系列校验仪的顶峰。

The technically advanced GE Druck DPI 610 and DPI 615 portable calibrators are the culmination of many years of field experience with the company's DPI 600 series.

产品描述

DPI 610/615为一体式电池供电仪表,自带压力源,具有压力控制微调、电源输出(本安型无)和测量等功能,同时还可提供4~20mA回路测试和数据储存。仪表结构坚固防水。双参数显示屏幕宽,使用户在操作DPI 610/615手泵和连接测试线时,仍能清晰地读出参数。作为用户接口的面板键盘具有弹性强、抗气候、手感好和寿命长等优点。毫安阶跃和斜率输出以及内部的持续测试功能方便了对回路控制的维修和保养。GE德鲁克公司提供校验管理软件Intecal For Industry是被专门设计运行在PC上的校验系统,支持DPI615和其他的校验仪。

Product Description

These self-contained, battery powered packages contain a pressure generator, fine pressure control, device energising (not IS version) and output measurement capabilities, as well as facilities for 4 to 20 mA loop testing and data storage. The rugged weatherproof design is styled such that the pressure pump can be operated and test leads connected without compromising the visibility of the large dual parameter display. The mA step and ramp outputs and a built-in continuity tester extend the capabilities to include the commissioning and maintenance of control loops.

性能与优点

- 52个量程范围, 250 Pa至70 MPa
- 典型精度为±0.025%FS
- 一体式压力/真空泵
- 电信号和压力双显示
- 4~20 mA回路测试功能
- RS 232接口和文件制作功能
- 可接11外部传感器
- 本质安全型可选
- 微压、气压、液压版本可选

Features & Benefits

- 52 Ranges from 2.5 mbar to 700 bar
- Accuracy from 0.025% F.S.
- Integral combined pressure/vacuum pump
- 4 to 20 mA loop test facility
- RS 232 interface and fully documenting version
- Up to 11 sensors per instrument

服务类型

- 标定
 - 离线
 - 现场
 - 修理
 - 离线
 - 现场
 - 评定
- Calibration
 - In-House
 - On-Site
 - Repair
 - In-House
 - On-Site
 - Evaluation

高品质的系统软硬件组成
High quality hardware & software

ABS Certification 证书

		CERTIFICATE NUMBER 08-LD377811A-PDA	DATE 13 October 2008
ABS TECHNICAL OFFICE London Engineering Department			
<h3>CERTIFICATE OF Design Assessment</h3>			
This is to Certify that a representative of this Bureau did, at the request of DRUCK LTD.			
assess design plans and data for the below listed product. This assessment is a representation by the Bureau as to the degree of compliance the design exhibits with applicable sections of the Rules. This assessment does not waive unit certification or classification procedures required by ABS Rules for products to be installed in ABS classed vessels or facilities. This certificate, by itself, does not reflect that the product is Type Approved. The scope and limitations of this assessment are detailed on the pages attached to this certificate. It will remain valid as noted below or until the Rules or specifications used in the assessment are revised (whichever occurs first).			
PRODUCT:	Electronic Pressure and Level Transmitter		
MODEL:	PTX317-xxxx		
ABS RULE:	Steel Vessel Rules 2008 1-1-4/7.7, 4-9-7/7, 4-9-7/13		
OTHER STANDARD:			
<p style="text-align: center;">AMERICAN BUREAU OF SHIPPING  Jean-Claude G. Den nemont Engineering Type Approval Co-ordinator</p>			
<small>NOTE: This certificate evidences compliance with one or more of the Rules, Guides, standards or other criteria of American Bureau of Shipping or a statutory industrial manufacturer's standard it is issued solely for the use of the Bureau, its committees, its clients or other authorized entities. Any significant changes to the aforementioned product without ABS approval will result in this certificate becoming null and void. This certificate is governed by the terms and conditions on the reverse side hereof. TX 0505 50998 A4 1000</small>			

高性能的PLC及HMI High Performance PLC & HMI



90-30 Series PLC



VersaMax Series I/O



S7-300 PLC



S7-400



QuickPanel View



HMI Software iFix

90-30 系列PLC：功能强大、使用灵活，可以用于简单到复杂的应用。拥有开放的通讯结构，支持众多通讯协议。

The Series 90-30 family of controllers, I/O systems, and specialty modules are designed to meet the demands for flexible industrial control. There are over 14 CPU modules from which to choose and over 100 different I/O module types that offer a wide range of intelligent modules, high-level communications options, and a number of bus interfaces.

VersaMax系列远程I/O：为当今开放式系统为开放式系统提供了简便快捷的解决方案。作为通用I/O，适用多种总线连接到多种控制器。具有模块化，热拔插能力和方便的接线方式。

The VersaMax solution is a single control product that may be used as I/O, as a PLC, and/or as distributed control for up to 256 I/O points. With its modular and scaleable architecture, intuitive features and ease of use, it saves initial costs for machine builders and life-cycle costs for end users. VersaMax provides reliability and increased uptime because of its Six Sigma design, intuitive diagnostics, and hot I/O module insertion. Its broad family offers 34 different I/O modules, powerful PLC CPU, open networking, and multiple wiring options. Its combination of feature-rich I/O and powerful CPU provides the performance to meet any industry need.

模块化微型PLC系统，满足中、小规模的性能要求。各种性能的模块可以非常好地满足和适应自动化控制任务；简单实用的分布式结构和多界面网络能力，应用十分灵活方便用户和简易的无风扇设计；当控制任务增加时，可自由扩展大量的集成功能使它功能非常强劲。

拥有中端到高度性能的功能强大的PLC可满足最苛刻要求的解决方案，通过大量模块和性能分级的CPU来最佳满足自动化任务的要求；通过简便实现分布式结构和广泛的通讯功能而获得应用灵活性；操作具有用户友好性；设计简单，不带风扇；当控制任务增加时，可自由扩展。

QuickPanel View是一个强大的软硬件一体化的解决方案，支持多种通讯方式。可以通过以太网直接安装到各个官员办公室，随时监控报警系统的状态和主要设备的参数。

Manufacturers who want to maximize their productivity and reduce their total amount of equipment look to cost effective, integrated solutions. QuickPanel Control combines visualization and control into one platform, delivering flexible, scalable performance with powerful networking, data collection, trending and alarming functionality. A complete, secure and rugged system with intuitive, built-in software based on Microsoft Windows® CE operating system.

iFix HMI软件：优秀的工业自动化软件，功能强大、使用方便。能帮助使用者减少开发时间，最大化系统性能。

iFIX has been delivering solutions to customers in nearly every industry and every corner of the globe for decades. GE Fanuc has continued to invest heavily in the updates and improvements that keep iFIX delivering on what our customers need the most – even as their businesses have changed over that time.

优秀的Danfoss阀门和流体控制 Excellent Danfoss Valve & Water Control

丹佛斯可以提供Enodia, Sylax Txis及Emaris 多种类型的
用于船舶和海洋工程蝶阀

Danfoss could provide Enodia, Sylax Txis & Emaris butterfly valves for marine & offshore application.



EMARIS
高性能蝶阀
HIGH PERFORMANCE
BUTTERFLY VALVE

利用先进技术并精选优良材料，Danfoss Socla
为您呈现了一种牢固耐用的高性能蝶阀：
EMARIS系列！
EMARIS系列高性能蝶阀品质优异、稳定可靠，
满足各高端工业场所的使用需求。

Danfoss Socla who masters advanced technologies by using high quality materials has developed a simple and robust butterfly valve with a low cost of maintenance :
The EMARIS valve fulfils the highest performance and reliability requirements of industrial applications.



Danfoss Socla
阀门与流体控制

DN50~DN300

不锈钢阀体阀板或
碳钢阀体 + 不锈钢阀板

DN 65 to 200 mm

Stainless steel body & stainless steel disc

Cast steel body & stainless steel disc

High performance butterfly valve

高性能蝶阀 EMARIS

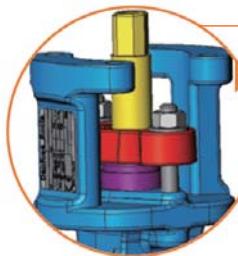
CE PED 97/23/CE
ATEX 94/9/CE

适用温度: -50°C ~+220°C

公称压力: 高达50 bar

Temperature rating : -50°C to +220°C

Pressure rating : up to 50 bar

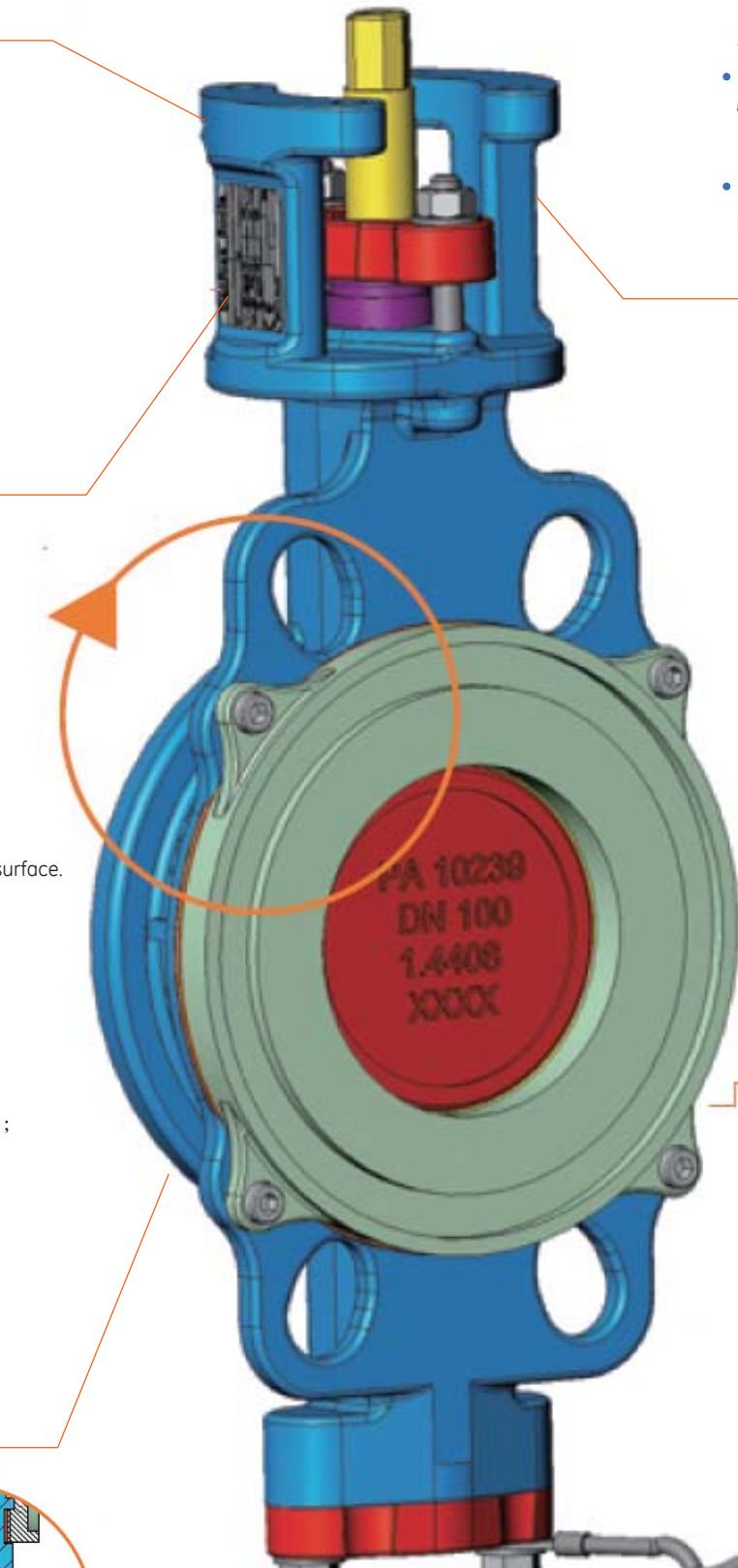


加长阀颈及整体铸造的顶部法兰盘

- 加长阀颈允许绝缘材料的使用，增强阀门的绝缘性能；
- 阀杆填料的调整和维护更容易，不需拆卸驱动装置；
- 顶部法兰盘为整体铸造式，可与各种执行机构直接连接。

LONG NECK BODY and CAST ON ISO TOP PLATE

- Designed to allow insulation
- Easy access to the packing gland without removing the actuator
- Cast on ISO plate for direct assembling of actuators

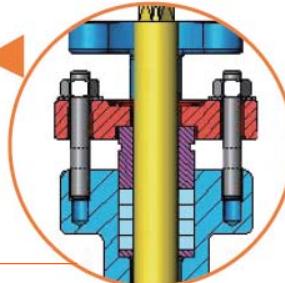


动态可调的填料仓

- 可通过调节六角螺母来调整阀杆填料仓，确保阀门的动态密封性能。

PACKING GLAND

- Excellent dynamic tightness due to easy adjustment of the packing gland

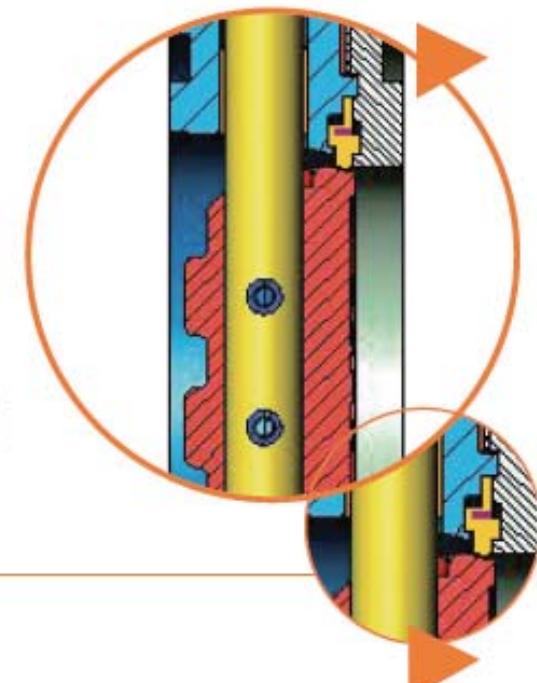


阀轴与阀板的配合

- 阀轴与阀板采用不锈钢销钉联接；
- PTFE加不锈钢的抗磨轴承确保阀轴优异的导向性和对中性。

SHAFT / DISC ASSEMBLING

- Shaft / disc connection by Stainless Steel pins
- Excellent guiding and centring of the shaft due to anti-friction bearings – stainless steel + PTFE



双向密封性能

- 强化PTFE加不锈钢的密封座确保了阀门在各高端工业场所及强腐蚀性介质中的通用性；
- Emaris可实现双向密封功能；
- 密封结构中放弃使用弹簧，确保密封可靠；
- 金属嵌入环加软质密封圈的设计确保阀门在各种温度工况下均有出色的密封性能；
- 密封圈的不对称设计确保了便利的维修及拆卸。

BI-DIRECTIONAL SEALING

- Wide range of industrial applications and high corrosive media suitability thanks to the use of reinforced PTFE by stainless steel and PTFE materials
- Bi-directional tightness
- No use of springs for a reliable sealing
- Metallic insert /soft seal design for high performance sealing at variable temperature conditions
- Asymmetric design of the seal for trouble free re-assembling and maintenance

多种连接形式及适用法兰

- 适用于PN10-16-25-40及ASA 150/300法兰标准的对夹式或突耳式连接；
- 密封压板通过4个突缘上的螺栓被固定在阀体上，扩大了连接法兰的接触面，增强了密封性；
- 阀体及密封压板上的沟槽设计

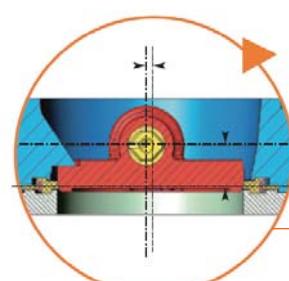
LARGE RANGE OF FLANGE CONNECTIONS

- Wafer and tapped lugs bodies PN 10-16-25-40 - ASA 150/300
- 4 lugs, to screw the seat retaining plate on to the valve body, located to offer a larger flange contact surface.

- Improved connections tightness
- Groove end connection

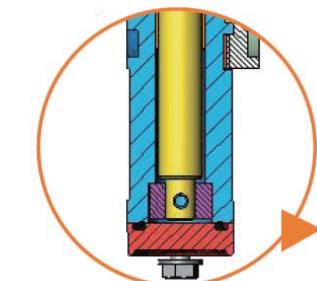
双偏心阀板

- 双偏心结构设计，减少阀座与阀板间的磨损，延长阀门使用寿命；
- 低开启扭矩；
- 密封环结构确保高效的密封性能。



DOUBLE ECCENTRIC DISC

- Long life durability due to double offset operating
- principle minimizing seat wear
- Reduced operating torques
- High efficiency tightness by full sealing ring



辅助密封

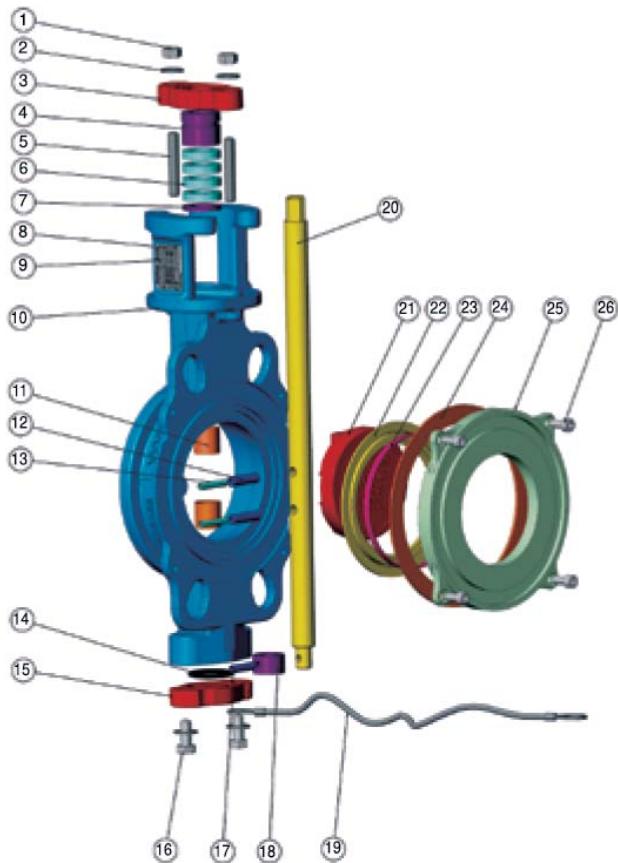
阀体底部的O型圈进一步确保了阀门的密封性。

SECONDARY SEALING

Bottom of the valve secured by O' rings

技术参数 Technical Data

EMARIS



法兰连接标准：

EN 1092-1及 EN1092-2 : PN10-16-25-40

ASME/ANSI B16.5 : ASA 150 and 300

Flange connections

According to : NFE 29-203 : PN10-16-25-40

BS 4504 : ASA 150 and 300

面与面尺寸：

EN 558-1 系列 20

ISO 5752 系列 20

API 609 表 2

Face to face dimensions

According to : NF EN 558-1 serie 20

ISO 5752 serie 20

API 609 Table 2

压力测试标准：

遵循EN12266-1标准

阀体密封测试：1.5倍最大操作压力

阀座密封测试：1.1倍最大操作压力

Hydraulic tests

In accordance with EN12266-1 standard

Body pressure test : 1,5 x PMA (Maximum Allowable Pressure)

Tightness : 1,1 x PMA (Maximum Allowable Pressure)

No	部件名称	数量	材料规范列表	
			材料名称	ASTM
1	螺母	2	不锈钢	304
2	固定垫圈	4	不锈钢	304
3	填料压盖	1	不锈钢 碳钢	316 WCC
4	卡环	1	不锈钢	316
5	销钉	2	不锈钢	316
6	填料	4	填充石墨的PTFE	
7	防脱导套	1	不锈钢	316
8	铆钉	2	铝/不锈钢	
9	铭牌	1	铝	
10	阀体	1	不锈钢 碳钢	316 WCC
11	防滑轴承	2	不锈钢+PTFE	
12	销钉	2	不锈钢	304
13	销钉	2	不锈钢	304
14	O型圈	1	FKM	
15	底部挡板	1	不锈钢 碳钢	316 WCC
16	螺栓	2	不锈钢	304
17	销钉	2	不锈钢	304
18	固定插销	1	不锈钢	316
19	防静电导线	1	镀锡铜	
20	阀轴	1	不锈钢	630
21	阀板	1	不锈钢	630
22	密封圈	1	PTFE+不锈钢	
23	垫圈	1	不锈钢	316
24	密封垫圈	1	石墨	
25	密封压板	1	不锈钢 碳钢	316 WCC
26	螺栓	4	不锈钢	304

Rep	Nb	Description	Materials
1	2	Nut	Stainless steel class A2
2	4	Stop washer	Stainless steel class A2
3	1	Plate	GX5CrNiMo 19-11-2 (316 moulded) Steel WCC according to ASTM A-216
4	1	Bush	X3CrNiMo 17-13-3 (316)
5	2	Stud bolt	X2CrNiMo17-12-3 (316L)
6	4	Packing	UNIVAL6323
7	1	Anti-extrusion bush	X3CrNiMo 17-13-3 (316)
8	2	Rivet	Aluminium / Stainless steel
9	1	Identification plate	Aluminium 1024 H 50
10	1	Body	GX5CrNiMo 19-11-2 (316 moulded) Steel WCC according to ASTM A-216
11	2	Anti-friction bearing	Stainless steel + PTFE
12	2	Pin	Stainless steel class A2
13	2	Pin	Stainless steel class A2
14	1	O-ring	FKM 70 ShA
15	1	Bottom plate	GX5CrNiMo 19-11-2 (316 moulded) Steel WCC according to ASTM A-216
16	2	Screw	Stainless steel class A2
17	1	Pin	Stainless steel class A2
18	1	Thrust	X3CrNiMo 17-13-3 (316)
19	1	Anti static braid	Tinned copper
20	1	Shaft	X5CrNiCuNb 16-14 (F16PH)
21	1	Disc	GX5CrNiMo 19-11-2 (316 moulded)
22	1	Seal	PTFE reinforced 50% stainless steel
23	1	Insert	X3CrNiMo 17-13-3 (316)
24	1	Seal	Graphite
25	1	Seat retaining plate	GX5CrNiMo 19-11-2 (316 moulded) Steel WCC according to ASTM A-216
26	4	Screw	Stainless steel class A2

技术参数 Technical Data

EMARIS

承压设备指令 97/23/CE

Emaris蝶阀的设计及制造遵循欧盟97/23/CE承压设备指令关于压力、管径及流体的规定
(PFA: 介质为水时的最大允许操作压力, PS: 其他介质时的最大允许操作压力)。

密封		DN(mm)	类型	安装方式	PFA (bar)	PS(bar)			
						L1	L2	G1	G2
50 Bar	强化 PTFE	50~100	II	法兰间	50	50	50	50	50
				管道末端	36	36	36	36	36
		125	II	法兰间	50	50	50	28	40
				管道末端	36	36	36		36
		150	II	法兰间	50	50	50	23	33
				管道末端	36	36	36		33
		200	II	法兰间	25	25	25	17.5	25
				管道末端	18	18	18		18
25 Bar		250	II	法兰间	25	25	25	14	20
				管道末端	18	18	18		18
		300	II	法兰间	25	25	25	11.5	16.5
				管道末端	18	18	18		16.5

Pressure Equipment Directive 97/23/CE .

The design fulfils the requirements of the PED in terms of pressure, DN and fluids
(PFA for water applications and PS for other media).

Liners	DN (mm)	Assembling	PFA (bar)	PS (bar)				Cat.
				L1	L2	G1	G2	
PTFE loaded	65 to 100	Wafer	50	50	50	50	50	II
		End of line	36	36	36	36	36	II
	125	Wafer	50	50	50	28	40	II
		End of line	36	36	36	-	36	II
	150	Wafer	50	50	50	23	33	II
		End of line	36	36	36	-	33	II
	200	Wafer	50	50	50	17,5	25	II
		End of line	36	36	36	-	25	II

操作扭矩(Nm)——水及润滑介质

DN	扭矩值(Nm)	PS10	PS16	PS20	PS25	PS40	PS50
65	F07/11	37	44	46	50	65	77
80	F07/14	46	50	60	61	77	86
100	F07/14	86	96	101	114	146	165
125	F10/17	145	173	187	209	269	297
150	F10/17	161	176	219	237	359	424
200	F10/17	360	510	525	550		
250	F12/22	550	700	770	800		

Torques in Nm

For water and lubricated media.

DN	ISO top	PS10	PS16	PS20	PS25	PS30	PS40	PS50
65	F07/11	37	44	46	49	55	64	71
80	F07/14	46	50	60	61	70	77	86
100	F07/14	86	96	101	114	130	146	165
125	F10/17	124	149	173	185	216	255	291
150	F10/17	161	176	219	237	276	359	424

技术参数 Technical Data

EMARIS

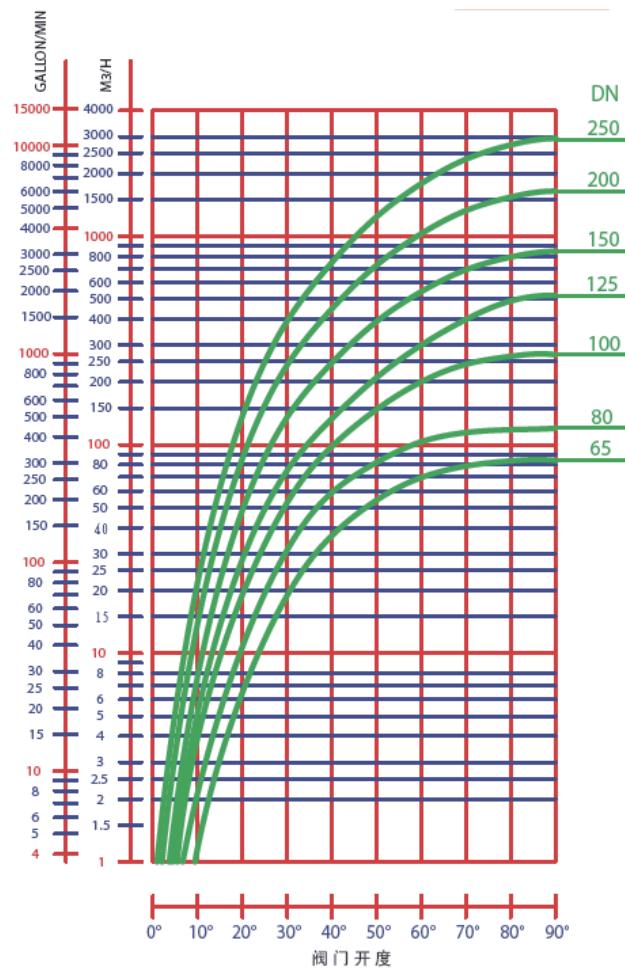
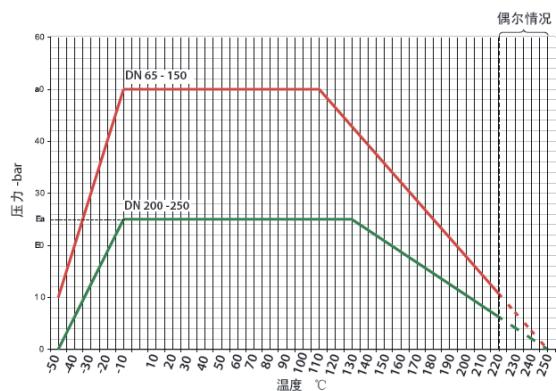
应用领域



以上应用均需使用双偏心蝶阀。

All applications requiring the use of a double eccentric butterfly valve.

压力/温度曲线



业绩表 Reference List

55,000吨散货船

55,000 DWT Bulk vessel

船东或船厂 Owner or Shipyard:

--浙江键跳船厂

--马来西亚船东

供货范围 Scope of work:

--驾控台系统 Wheelhouse console system

--集控台系统 Engine room console system

--液位遥测系统 Liquid level remote measurement system

--阀门遥控系统 Valve remote control system

--主配电板(包括电站管理系统)

Main SwitchBoard (including Power Management system)

--船舶装载仪 Loading machine

时间表 Schedule:

--2007-2012 批量船 Multi boats



12,800吨化学品船

12,800 DWT chemical vessel

船东或船厂 Owner or Shipyard:

--舟山晨业船厂

--舟山成路船厂

--蓝天造船有限公司

供货范围 Scope of work:

--驾控台系统 Wheelhouse console system

--集控台系统 Engine room console system

--液位遥测系统 Liquid level remote measurement system

--阀门遥控系统 Valve remote control system

--主配电板(包括电站管理系统)

Main SwitchBoard (including Power Management system)

--船舶装载仪 Loading machine

时间表 Schedule:

--2007-2012 批量船 Multi boats



5,500吨化学品船

5,500 DWT chemical vessel

船东或船厂 Owner or Shipyard:

--重庆长航造船厂

--Greece ENEA Management Inc

供货范围 Scope of work:

--主配电板(包括电站管理系统)

Main SwitchBoard (including Power Management system)

--液位遥测系统 Liquid level remote measurement system

--阀门遥控系统 Valve remote control system

--货控台 Cargo Console

--集控台 Engine Room Console

--船舶装载仪 Loading machine

--火灾及气体报警系统 Fire and gas detection system

--驾控台及两翼控制台 Wheelhouse & Wing consoles

时间表 Schedule:

--2007-2012 批量船 Multi boats



业绩表 Reference List

300箱集装箱船 2# 3# 4#
300TEU Container 2# 3# 4#

船东或船厂 Owner or Shipyard:

--南通惠港船厂

供货范围 Scope of work:

- 驾控台系统 Wheelhouse console system
- 集控台系统 Engine room console system
- 机舱监测报警系统 Engine room monitoring & alarm system
- 液位遥测系统 Liquid level remote measurement system
- 主配电板(包括电站管理系统)
Main SwitchBoard (including Power Management system)

时间表 Schedule:

--2008~ 批量船 Multi boats



6000HP 平台供应船 6000HP Platform Supply Vessel

船东或船厂 Owner or Shipyard:

--浙江天一海上工程有限公司

供货范围 Scope of work:

- 主机遥控系统 M/E Remote control
- 主配电板, 应急配电板以及充放电板 Main switchboard & emergency switchboard & DC charge/discharge board ETC
- 机舱监测报警系统 ER monitoring and alarm system
- 压载液位测量 Ballast level measurement
- 阀门遥控系统 Valve remote control system
- 船艏, 船艉及桥艸控制台 Bow & stern console
- 动态定位 DP system
- 火灾报警系统 Fire detection system



Image only for reference!

时间表 Schedule:

--2008~

5,500吨化学品船 3# 4# 5# 6# 5,500 DWT chemical vessel 3# 4# 5# 6#

船东或船厂 Owner or Shipyard:

--重庆长航造船厂

--Greece ENEA Management Inc

供货范围 Scope of work:

- 主配电板(包括电站管理系统)
Main SwitchBoard (including Power Management system)
- 液位遥测系统 Liquid level remote measurement system
- 阀门遥控系统 Valve remote control system
- 货控台 Cargo Console
- 集控台 Engine Room Console
- 船舶装载仪 Loading machine
- 火灾及气体报警系统 Fire and gas detection system
- 驾控台及两翼控制台 Wheelhouse & Wing consoles



时间表 Schedule:

--2007-2012 批量船 Multi boats

业绩表 Reference List

3,700吨化学品船 3,700DWT chemical vessel

船东或船厂 Owner or Shipyard:

--庄吉船厂

供货范围 Scope of work:

--机舱监测报警系统 Engine room monitoring & alarm system

--液位遥测系统 Liquid level remote measurement system

--阀门遥控系统 Valve remote control system

时间表 Schedule:

--2008

7200HP 平台供应船 7200HP Platform Supply Vessel

船东或船厂 Owner or Shipyard:

--舟山国宏船务有限公司

供货范围 Scope of work:

--主机遥控系统 M/E Remote control

--主配电板, 应急配电板以及充放电板 Main switchboard & emergency switchboard & DC charge/discharge board ETC

--机舱监测报警系统 ER monitoring and alarm system

--压载液位测量 Ballast level measurement

--阀门遥控系统 Valve remote control system

--船艏, 船艉及桥艙控制台 Bow & stern console

--动态定位 DP system

--火灾报警系统 Fire detection system

时间表 Schedule:

--2008~



Image only for reference!

“胜利三号”石油钻井平台 VICTORY NO.3 OIL PLATFORM

供货范围 Scope of work:

--液位遥测系统 Liquid level remote measurement system

--阀门遥控系统 Valve remote control system

时间表 Schedule:

--2009





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