

海洋工程船解决方案及电气成套

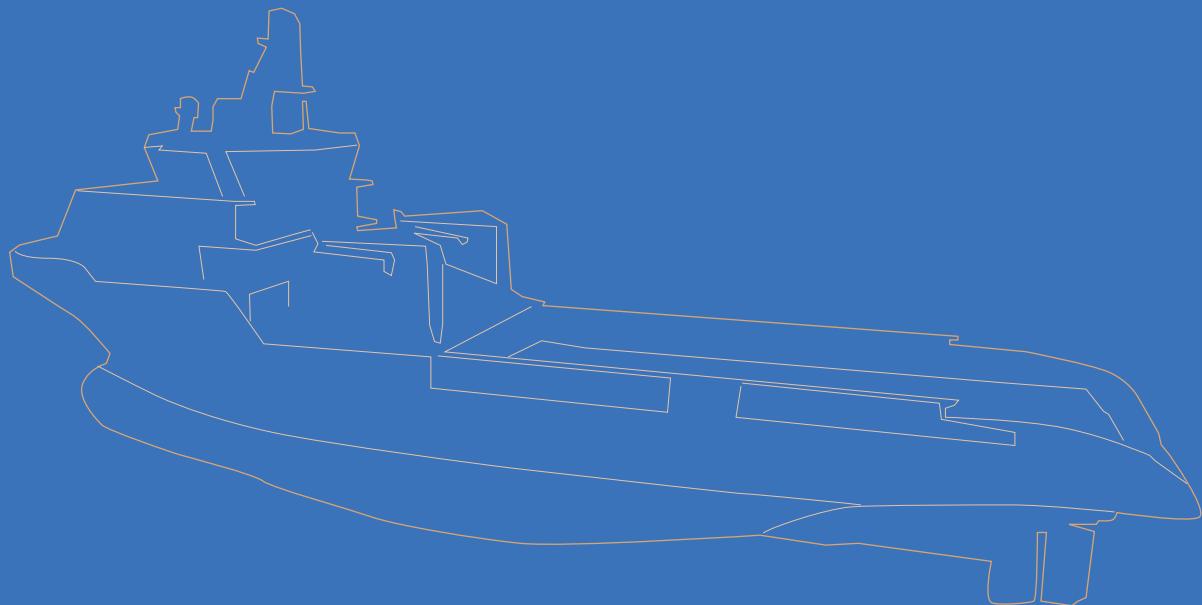
Ocean Engineering Vessel Solution & Electrical Integration



POWERMASTER

我们为海洋工程船（平台供应船PSV、现场供应船FSV、三用工作船、大马力拖轮）提供：

*Total electrical & automation integration
+Consultancy and technical support services*



随着海洋经济不断发展，海洋勘探开发不断向深水进军，海洋结构物的需求将不断增加，而为这些结构物提供服务的海洋特种船舶的需求量也将猛增。据克拉克松公司统计，与2000年相比，到2010年平台供应船的需求增长将达到22.5%……

公司概述 Company Profile

倍豪电气及自动化集成主要致力于船舶和平台配电系统以及自动化控制系统集成，覆盖在中国建造的商用船舶、平台项目、超级游艇和海军军舰的建造。

Powermaster Electrical & Automation Integration mainly focus on marine & offshore power distribution & automation control system integration, which covered commercial vessels, offshore projects, super yachts and navy vessels built in China.

倍豪豪华游艇服务，在豪华游艇工程中，倍豪船舶将很多专门的技术同中国船厂，供应商、内装分包商等资源结合到一起。这个团队提供整个项目管理，从投资决定到试航交船。

Powermaster superyacht service Powermaster Marine brings together many technical skills and resources of China shipyards, suppliers and interior decoration subcontractors in superyacht engineering. Its teams offer detail total project management, from investment decisions to commissioning.



倍豪船舶关注船舶客户需求 Focus On Customer Needs

致力于为中国船舶事业的快速发展提供全球最先进的船舶自控系统，倍豪船舶致力于为每一位船舶客户度身打造最优化的、最强大的船舶电气自动化系统，从全船配电到全船监测报警控制到马达驱动系统，为中国船舶客户提供强大的工程及技术服务。

Powermaster Marine is providing a complete range of product solution, as well as engineering and technical service for China marine & offshore market. Powermaster Marine is focusing to provide system-wide solution from ship alarm monitoring system to electrical power distribution and motor & drive system.

倍豪船舶致力于提供一整套系统解决方案，同时为中国船厂提供技术和上船服务。我们同ABB, SIEMENS, GE, Lynor Somer建立了合作伙伴关系，使我们能够提供广泛的系统解决方案，同时由于来自ABB和SIEMENS的设计和质量，立即把我们推到了行业的顶端。

Powermaster Marine is focus on providing a complete package of system solution, as well as technical and onboard service for China shipyards. We established the partnership with GE, ABB, Lynor Somer, which enables us to provide system-wide solution, and also due to the design and quality are from ABB & SIEMENS which puts us immediately on the top.

倍豪船舶能够提供一系列完整的船舶及平台、电气及自动化系统，也能够提供所需的各种技术咨询和技术服务。

Powermaster marine can provide complete range of marine & offshore electrical & automation systems, as well as all kinds necessary services.

各电气系统间无缝式一站式服务

One-Stop Service without interface between electrical systems



我们的标准服务范围

Our standard scope

- 电站设计 Electrical Plant design
- 系统集成 System Integration
- 系统分析及研究 System Analysis & Studies (FMEA, DVTP, PSTP, QAA, CB Coordination, Fault Current Analysis, Voltage Drop Analysis, Harmonic wave Analysis)
- 控制台三维设计 Consoles 3D design
- 元器件采购 Components Purchasing
- 车间内安装, 接线及调试 Manufacturing in workshop
- 安装的技术指南 Technical direction of installation
- 启动和试运行服务 Start up and Commissioning Services
- 试航支持 Sea Trial Support
- 培训 Training
- 寿命周期维护 (远程诊断) Life Cycle Support (Remote Diagnostics)

我们的价值 Our value

- 诚信 Integrity
- 所有的最后集成都在自己的车间内完成 Total integration in one workshop
- 对船厂来说单线联系 Single face and single contact to shipyard
- 船厂采购及人工成本的节约 Purchasing & Coordination cost saving
- 提供一套完整的自动化系统, 具有冗余控制器集成的监测报警系统, 液位遥测及阀门遥控系统 Providing one automation system by redundant controller to integrate ER M&A, Level Indication and Valve remote control system
- 船厂电缆及电线的节省 Cabling and Wiring saving
- 采用最优品牌元器件进行系统集成 Integrate system by best brands components
- 便捷的维护及全球服务 Easy for maintenance & global service
- 增加附加值 Local price and added service for owner's change order
- 项目经理负责制 Project Manager Responsibility
- 不断革新 Keeping innovate
- 公司官方语言为英文和中文 Official language: English and Chinese

产品 - 系统 - 解决方案

Product - System - Solution



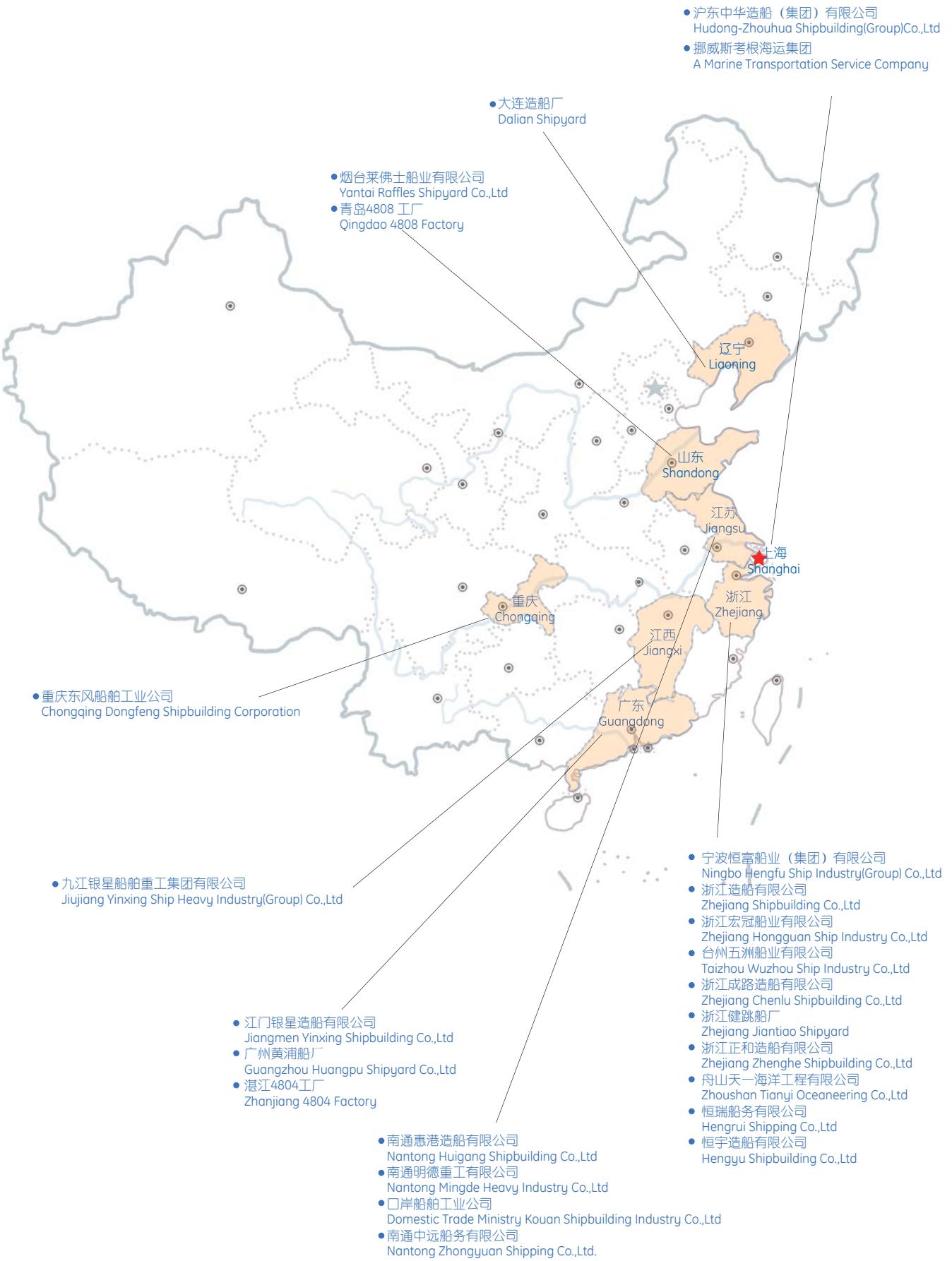
设计 - 采购 - 制造 - 上船服务 工作流程

Design - Purchasing - Manufacture - Onboard service Working Process



使得预算和进度得到控制

我们的项目分布图 Map of our projects



我们能为平台供应船做什么？

What we can do for Platform Supply Vessel ?

基于我们的平台供应船整体电气打包经验，倍豪船舶可以提供从项目顾问到技术支持，包括总体和特殊项目的培训，这些都成功的运用于上海翰顺船舶设计，新加坡健全海事，浙江天一海工，浙江的恒瑞海工，广州航通船厂，广东机械进出口总公司，广州海事通船舶，广东金辉船厂，南通惠生重工等。

Based on our Platform Supply Vessels total electrical & automation integration, Powermaster marine can provide consultancy and technical support services including general and specialized training and is uniquely positioned to offer support to the previous customers such as Shanghai Alsen Design and Singapore KCM Marine & Offshore Design, Zhejiang Tianyi Offshore company, Zhejiang Hengrui Offshore company, Guangzhou Hang Tong Shipyard, Guangdong Machinery IMP. & EXP. CO.,LTD., Guangdong Jinhui Shipyard, Wison (Nanton) Heavy Industry Co., Ltd. etc.

对于新的项目和客户，倍豪船舶可以提供以下系统集成及服务：

For new projects and customers, Powermaster marine can provide:

- | | |
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| ■ 发电机，马达及驱动装置
GENERATOR, MOTOR & DRIVE | ■ 主推进控制系统/电气/动态定位系统总顾问
General consultancy in Propulsion Control/Electrical/DP systems |
| ■ 主配电板及应急配电板
MAIN SWITCHBOARD & EMERGENCY SWITCHBOARD | ■ 电气工程总顾问
General consultancy in Electrical Engineering |
| ■ 全船监测报警及控制系统
INTEGRATED AUTOMATION SYSTEM | ■ 系统规格书及系统分析
Requirements analysis and system specification |
| ■ 主机遥控系统
PROPULSION REMOTE CONTROL SYSTEM | ■ 现有系统问题接口协调
Trouble-shooting & Coordination of existing systems |
| ■ 液位遥测系统
TANK SOUNDING SYSTEM | ■ 采用Matlab/Simulink/MicrCAP/SKM/ETAP软件对电力和交流马达变频器系统评估
Power & control system simulation using Matlab/Simulink/MicrCAP/SKM/ETAP to evaluate with electric motor AC variable speed drives |
| ■ 阀门遥控系统
VALVE REMOTE CONTROL SYSTEM | ■ 全船监测报警控制系统分析及对人机接口界面设计评审
Control system analysis and mimic design review |
| ■ 不间断电源及充放电板
UPS & BDCP | ■ 控制系统软件设计管理
Control system software design management |
| ■ 集控台，船艏，船艉及两翼操纵台
ECR & BRIDGE FWD, AFT & WING CONSOLES | ■ 配合调试服务
Onboard & Sea Trial Commission |
| ■ 火灾报警系统
FIRE & GAS DETECTION SYSTEM | ■ 船厂培训
Shipyard and in-house training |
| ■ 闭路电视监控系统
CCTV SYSTEM | |
| ■ 液压泵站
HPU | |



团队组成 Team members

本地团队 Local Team:

☆ Mr. Kevin Fengjie

Over 15 years working experience, in SNERDI, BECHTEL & GE, expertise in Power Distribution and System Integration.

曾在SNERDI、BECHTEL & GE工作，拥有15年的配电及系统集成工作经验。

☆ Mr. Sun Hongwei

Over 20 years working experience in Yantai Raffles shipyard, expertise in marine & offshore machinery field.

曾在烟台莱福士工作，拥有20年的海洋、平台工程的轮机工作经验。

☆ Mr. Bright Zhouhao

Over 10 years working experience in SSSRI, expertise in monitoring & control system, and system integration.

曾在SSSRI工作，拥有10年的机舱监测报警及控制系统及系统集成工作经验。

☆ Mr. Lu Yingshan

Over 20 years working experience in SPI, VOITH-SIMENSE, expertise in Power Distribution system.

曾在石化安检、VOITH-SIEMNSE工作，拥有20年的配电方面工作经验。

☆ Mr. James Wang Jiangang

Ove 15 years working experience in 701 Navy design institute, expertise in marine projects coordination.

曾在701船舶设计院工作，拥有15年的船舶项目协调工作经验。

☆ Mr. Gu Hao

Over 40 years working experience in Waigaoqiao /hudongzhonghua shipyard, expertise in all of electrical system design.

曾在外高桥、沪东中华船厂工作，拥有40年的电力系统设计经验。

☆ Mr. Xu Menglin

Ove 40 years working experience in Hudong shipyard, expertise in propulsion system control.

曾在沪东船厂工作，拥有40年的推进控制系统的工作经验。

☆ Mr. Lv Min

Ove 35 years working experience in Hudong shipyard, expertise in propulsion system control and Power Distribution system.

曾在沪东船厂工作，拥有35年的推进控制系统、配电系统的工作经验。

团队组成 Team members

国外专家 Foreign Expert:

☆ Nick Dutton

曾在Siemens High Wycombe公司负责售后服务及技术支持工作，NICK在1974年加入Hill Graham Controls公司20年来长期负责各类电子变速驱动器的设计与发展,以及它们在原油和燃气商业领域内的应用：包括钻井领域,管道领域,抽水机领域,电子潜水泵领域(ESPs / down-hole pumps),空气压缩机领域和针对海洋技术应用的领域诸如：柴油发电推进器,超重货物起重机以及针对海面/陆上钻取及海洋应用技术的管道敷设机。拥有包括海用配电盘以及发电机控制的完美成功案例的工作经验。

Previously responsible at Siemens High Wycombe for After Sales and Technical Support. Nick joined the original company Hill Graham Controls in 1974, and for 20 years was responsible for the design and development of electric variable speed drives and their application for the Oil & Gas business, including drilling, pipeline pumps, electrical submersible pumps (ESPs / down-hole pumps), gas compressors, and marine applications such as diesel-electric propulsion, heavy-lift cranes and pipe layers. For offshore/onshore drilling and marine applications, Nick also managed to supply complete packages including marine switchboards and generator controls.

授权及合作公司 Authorization & Cooperated Company

★ ABB



★ SIEMENS



★ Lynor Somer



★ GE



★ DANFOSS





我们的服务内容 What's our service scope?

- 审查所有已签定的各供营商的技术协议，对其中任何一个不符合的部分，出具备忘录，将有各方代表签字，以此确认实行。
Review all of vendor's Technical Agreement which signed before, any not compliance with the current design, there will be a "memo" to be signed by each party.
- 审查并提建议所有供营商提供的认可图纸，直到获得批准。
Review and comments of all of vendors' Drawing for Approval.
- 根据设备自动化明细表，并核对相关供营商提供的信息，确定所有输入/输出点没有遗漏。
Go though the Machinery Automation I/O list and check with all of related vendor information / owner's requirement, to make sure all of Input / Output points are not missing.
- 为供营商提供样板图纸和mimic图设计参考资料；根据自动化明细表，核对mimic人机界面的设计。
Provide sample drawing and sample mimic design to instruct the vendor, review every page of mimic HMI design, compare with I/O list.
- 组成的接口协调小组，每周举行一次协调会议，会议讨论的内容将被存档保留。
Coordination meeting will be held weekly between Konserberg, Saiernico, Berg, AVK to coordinate all of interfaces.
- 对由Matlab/Simulink/MicrCAP/SKM/ETAP组成的模拟电气系统进行负荷、柴发和轴发容量、谐波、短路电流的分析
Simulate the Electrical system by Matlab/Simulink/MicrCAP/SKM/ETAP, to check load flow, main & shaft generator capacity, short current analysis and harmonic analysis.
- 审查总体技术规格书里的提及所有的有关上述系统的法规、条例、章程，以确保和现有的系统的一致性。
Check all of code/rules/regulations which mentioned in General Specification.

我们的服务内容

What's our service scope?

- 在配电板、面板、控制台接线，安装等完成后，和船厂的团队一起在交货前进行出厂检验（FAT）及船东验收检验（CAT）。
Quality control and attend FAT(Factory Acceptance Test) and CAT(Customer acceptance Test) with shipyard team before Switchboard / Panel / Console manufacture finish
- 整合各供应商的调试计划，准备最终调试计划书。
Prepare the integrated Final Commissioning Plan based on all of vendor's commissioning
- 及时检查控制台布局的更改情况；根据船东需求，协调供应项目供应商，船厂的供应项目；由我方确认最终版本控制台布局图。
Check the layout of consoles, and coordinate with shipowners, vendor supply and shipyard supply items, if necessary, Powermaster marine will design a final version console layout.
- 参与上船和试航调试，并包括对动态定位DP和主配电盘MSB及推进力控制系统的联调进行协调已及液位遥测和阀门遥控的联调进行协调。
Be involved in onboard & sea trial commission including coordination between DP, MSB, Propulsion control system, coordination between level indication and valve remote control system.
- 和船厂及船东一起协作进行报验。
Work with shipyard and owner to accept all of commission approval.
- 提供上船培训并检查所有系统的最终移交文本的准确性，并检查备用零件清单和备用工具清单。
Onboard Training and check the completeness of turn over documents, spare parts list and spare tools list.
- 为船厂提供培训
Shipyard in house training



我们的服务内容

What's our service scope?

详细设计图样及文件目录（电气部分）

LIST AND SCHEDULE OF DETAIL DESIGN DRAWINGS AND DOCUMENTS (ELECTRIC PART PART)

No. 序号	DRAWING No. 图号	DRAWING NAME 图名	MAKER'S INFO 设备资料	TO BUILDER 送建造方 (天)	NOTES 备注
1	HS7018-026-000	专用图样及文件目录(电气目录) LIST OF SPECIAL DRAWINGS AND DOCUMENTS (ELECTRIC PART)			
2	HS7018-026-001	电力负荷估算书 ELECTRICAL POWER BALANCE	✓	15	
3	HS7018-026-002	交流短路电流计算书 THE CALCULATING SHEET OF A.C. SHORT CIRCUIT CURRENT	✓	20	
4	HS7018-026-003	电气设备明细表 LIST OF ELECTRICAL EQUIPMENT		45	
5	HS7018-026-004	电力设备布置图 POWER EQUIPMENT ARRANGEMENT DIAGRAM	✓	30	
6	HS7018-026-005	电力一次系统图 MAIN POWER SYSTEM DIAGRAM	✓	30	
7	HS7018-026-006	电力二次系统图 SECONDARY POWER SYSTEM DIAGRAM	✓	30	
8	HS7018-026-007	低压系统图 DC24V SYSTEM	✓	30	
9	HS7018-026-008	主机遥控及监测报警系统图 M/E REMOTE CONTROL AND MONITORING ALARM SYSTEM DIAGRAM	✓	40	
10	HS7018-026-009	动力定位系统图 DP SYSTEM DIAGRAM	✓	40	
11	HS7018-026-010	可调桨系统图 CPP SYSTEM DIAGRAM	✓	40	
12	HS7018-026-011	侧推系统图 THRUSTER SYSTEM DIAGRAM	✓	40	
13	HS7018-026-012	舵机及自动舵控制系统图 STEERING GEAR AND AUTO PILOT CONTROL SYSTEM DIAGRAM	✓	20	
14	HS7018-026-013	水雾灭火系统图 WATER MIST FIRE FIGHTING SYSTEM	✓	20	
15	HS7018-026-014	水雾灭火系统布置图 WATER MIST FIRE FIGHTING ARRANGMENT	✓	20	
16	HS7018-026-015	CO2报警系统图 CO2 ALARM SYSTEM DIAGRAM	✓	20	
17	HS7018-026-016	照明设备布置图 LIGHTING EQUIPMENT ARRANGEMENT DIAGRAM		30	
18	HS7018-026-017	主照明系统图 MAIN LIGHTING SYSTEM DIAGRAM		30	
19	HS7018-026-018	应急照明系统图 EMERGENCY LIGHTING SYSTEM DIAGRAM		30	
20	HS7018-026-019	航行灯信号灯系统图 NAVIGATION & SIGNAL LIGHT SYSTEM DIAGRAM		10	
21	HS7018-026-020	航行灯信号灯布置图 NAVIGATION & SIGNAL LIGHT EQUIPMENT ARRANGEMENT		10	
22	HS7018-026-021	主配电板单线图 SINGLE WIRE DIAGRAM OF MAIN SWITCHBOARD	✓	30	
23	HS7018-026-022	应急配电板单线图 SINGLE WIRE DIAGRAM OF EMERGENCY SWITCHBOARD	✓	30	

我们的服务内容

What's our service scope?

No. 序号	DRAWING No. 图号	DRAWING NAME 图名	MAKER'S INFO 设备资料	TO BUILDER 送建造方 (天)	NOTES 备注
24	HS7018-026-023	驾控台电气系统图	✓	45	
		CONSOLE			
25	HS7018-026-024	机舱控制台电气系统图	✓	30	
		THE ELECTRIC SYSTEM DIAGRAM FOR E/R CONTROL CONSOLE			
26	HS7018-026-025	航行无线电设备布置图		30	
		NAVIGATION & RADIO EQUIPMENT ARRANGEMENT			
27	HS7018-026-026	通讯及报警设备布置图		30	
		COMMUNICATION & ALARM EQUIPMENT ARRANGEMENT DIAGRAM			
28	HS7018-026-027	刮水器系统图	✓	10	
		CLEAR VIEW SCREEN, WINDOW WIPER SYSTEM			
29	HS7018-026-028	舵角指示器系统图	✓	10	
		RUDDER ANGLE INDICATOR SYSTEM DIAGRAM			
30	HS7018-026-029	风向风速仪系统图	✓	15	
		WIND INDICATING SYSTEM DIAGRAM			
31	HS7018-026-030	艉轴转速表系统图	✓	15	
		STERN SHAFT RPM INDICATOR SYSTEM DIAGRAM			
32	HS7018-026-031	雾笛系统图	✓	15	
		SHIP'S WHISTLE SYSTEM DIAGRAM			
33	HS7018-026-032	电罗经, 磁罗经系统图	✓	15	
		GYRO COMPASS, MAGNETIC COMPASS SYSTEM DIAGRAM			
34	HS7018-026-033	雷达系统图	✓	15	
		RADAR SYSTEM DIAGRAM			
35	HS7018-026-034	GPS系统图	✓	15	
		GPS SYSTEM DIAGRAM			
36	HS7018-026-035	测深仪系统图	✓	15	
		ECHO SOUNDER SYSTEM DIAGRAM			
37	HS7018-026-036	计程仪系统图	✓	15	
		SPEED LOG SYSTEM DIAGRAM			
38	HS7018-026-037	航海数据记录仪系统图	✓	15	
		VDR SYSTEM DIAGRAM			
39	HS7018-026-038	自动识别仪系统图	✓	15	
		AIS SYSTEM DIAGRAM			
40	HS7018-026-039	气象传真机系统图	✓	15	
		WEATHER FACSIMILE RECEIVER SYSTEM DIAGRAM			
41	HS7018-026-040	航行告警接受机系统图	✓	15	
		NAVTEX RECEIVER SYSTEM DIAGRAM			
42	HS7018-026-041	船舶保安系统图	✓	15	
		SSAS SYSTEM			
43	HS7018-026-042	无线电台系统图	✓	15	
		GMDSS SYSTEM DIAGRAM			
44	HS7018-026-043	甚高频无线电话系统图	✓	15	
		VHF RADIO TELEPHONE SYSTEM DIAGRAM			
45	HS7018-026-044	卫通F站系统图	✓	15	
		INMARSAT-F SYSTEM DIAGRAM			
46	HS7018-026-045	卫通C站系统图	✓	15	
		INMARSAT-C SYSTEM DIAGRAM			
47	HS7018-026-046	声力电话系统图	✓	15	
		SOUND POWER TELEPHONE SYSTEM DIAGRAM			

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48	HS7018-026-047	自动电话系统图 AUTOMATIC TELEPHONE SYSTEM DIAGRAM	✓	15	
49	HS7018-026-048	广播及对讲系统图 DIAGRAM	✓	15	
50	HS7018-026-049	轮机员呼叫系统图 ENGINEER CALLING SYSTEM DIAGRAM	✓	15	
51	HS7018-026-050	共用天线系统图 COMMUNAL AERIAL SYSTEM DIAGRAM	✓	15	
52	HS7018-026-051	母子钟系统图 MAST AND SLAVE CLOCK SYSTEM DIAGRAM	✓	15	
53	HS7018-026-052	冷库误关报警系统图 REF. CHAMBER ALARM SYSTEM DIAGRAM	✓	15	
54	HS7018-026-053	病室呼叫系统图 HOSPITAL CALLING SYSTEM DIAGRAM	✓	15	
55	HS7018-026-054	应急车钟系统图 EMERGENCY TELEGRAPH SYSTEM DIAGRAM	✓	15	
56	HS7018-026-055	通用报警系统图 GENERAL ALARM SYSTEM DIAGRAM	✓	15	
57	HS7018-026-056	探火及报警设备系统图 FIRE DETECTING & ALARM EQUIPMENT SYSTEM DIAGRAM	✓	25	
58	HS7018-026-057	探火及报警设备布置图 FIRE DETECTING & ALARM EQUIPMENT ARRANGEMENT DIAGRAM	✓	25	
59	HS7018-026-058	天线布置图 ANTENNA ARRANGEMENT DIAGRAM	✓	30	
60	HS7018-026-059	驾驶室电气设备布置图 ELECTRIC EQUIPMENT ARRANGEMENT DIAGRAM IN W/H	✓	45	
61	HS7018-026-060	蓄电池室电气设备布置图 ELECTRIC EQUIPMENT ARRANGEMENT DIAGRAM IN BATTERY ROOM	✓	30	
62	HS7018-026-061	主干电缆走向图 MAIN CABLE WAY DIAGRAM		20	
63	HS7018-026-062	系泊试验和航行试验大纲(电气部分) OUTLINE OF DOCKING TEST & SEA TRIAL (ELECTRICAL PART)		80	
64	HS7018-026-063	计程仪、测深仪传感器布置图 ARRANGEMENT OF TRANSDUCER FOR SPEED LOG AND ECHO SOUNDER	✓	30	
65	HS7018-026-064	液位遥测及阀门遥控系统图 REMOTE LEVEL MEASURING AND VALVE REMOTE CONTROL SYSTEM	✓	30	
66	HS7018-026-065	电缆清册 LIST OF CABLE	✓	60	

- NOTE:**
- POWERMASTERMARINE SHALL PROVIDE THE DRAWINGS AND DOCUMENTS TO BUILDER IN THE CALENDAR DAYS WHICH IS SPECIFIED IN COLUMN OF "TO BUILDER" AFTER THE EFFECTIVENESS OF DESIGN CONTRACT.
 - THE SCHEDULE OF DRAWINGS WITH "✓" IN THE COLUMN OF "MAKER'S INF" IS SUBJECT TO THE RECEIVING OF NECESSARY EQUIPMENT MAKER'S DRAWING AND DOCUMENT. BUILDER IS RESPONSIBLE TO PROVIDE THE REQUIRED INFORMATION TO POWERMASTERMARINE ACCORDING TO THE RELEVANT CLAUSE SPECIFIED IN THE DESIGN CONTRACT.
 - "送建造方"列中所列天数为倍豪公司应在合同生效后相应天数内将该图纸提供给建造方。
 - 在设备资料一栏中标有"✓"的图纸的供图时间取决于设备资料的提供时间，建造方应负责在合同生效后十天内向倍豪公司提供主要设备的资料。

平台供应船解决方案

Platform Supply Vessel Solution

通常，平台供应船为海上平台扮演着重要的角色，它可以拖带、消防、运输水泥等建筑材料。平台供应船需配备电力推进系统、由DP2系统控制用于动态定位的艏/艉侧推。这样的船舶需要大功率的电站，包括有4个大容量的发电机、驱动器和马达，但总谐波失真应小于5%，任意单边失真小于3%。

因此，功率管理系统需要完全掌控船舶的配电板，并具有如下功能：

控制主发电机和停泊发电机

操作模式包括：

- 航行模式（主发电机工作，汇流排联接）
- DP-2模式（主发电机工作，汇流排断开）
- 消防模式（消防柴油机从配电系统断开）
- 停泊发电机模式
- 岸电模式
- 无缝传输模式
- 推进功率限制（例如当发电机故障时）
- 自动相关负载起停

由于平台供应船需要在船尾操作，因为，后驾驶室控制台需要安装发动机应急停机按钮和手动控制装置，声纳复示器，DP控制和独立的摇杆控制等等。

Normally, PSV will play the important role for the offshore platform, they could drag, fire fighting and transport the cement or other construction material. PSV need to be equipped with electrical propulsion system, bow & stern thruster to be dynamic positioned by DP-2, or more and less. There will require a big power plant, which composed by four big size generators, drive and motors, but the Total Harmonic Distortion(THD) will be less than 5% in the voltage wave from and for any single order harmonics will be less than 3%.

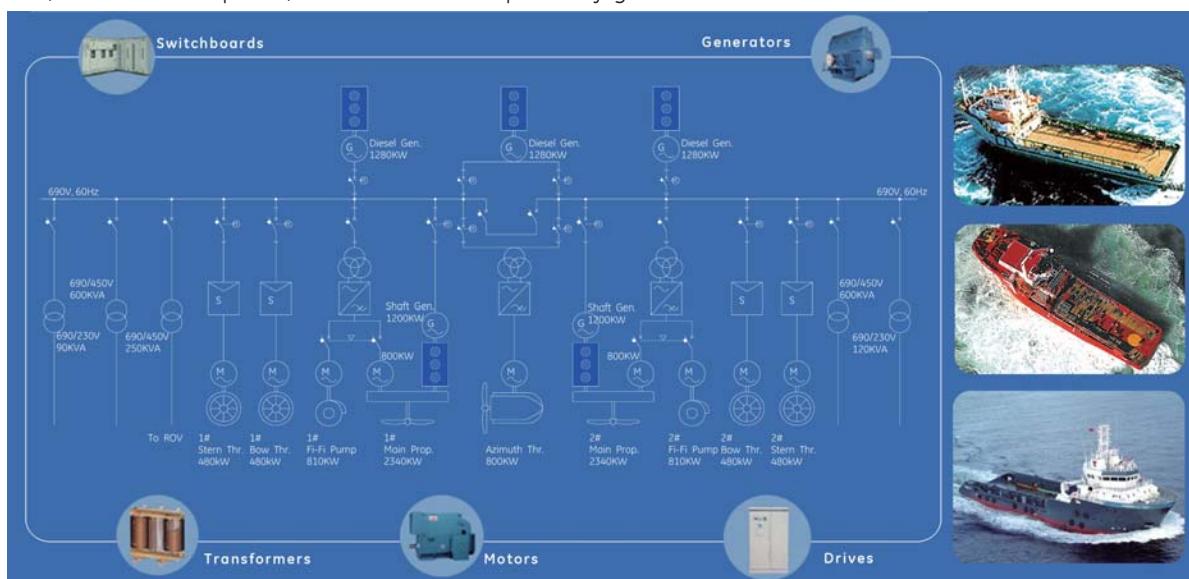
Meanwhile, Power Management system shall handle the entire control of the ship's switchboards and include the following functions:

Control of main and harbor generators;

Operating modes including:

- Sailing (main generators and coupled busbars)
- DP-2(main generators and open busbars)
- Fire fighting (firefighting diesels are disconnected from distribution system)
- Harbor generator mode
- Shore supply mode
- Seamless transfer between modes
- Power limitation to propulsion(e.g. when D-G set fails)
- Automatic load-dependent start-stop

As the PSV need to be operated at AFT, so the AFT Wheelhouse console will be fitted for em'cy stops & manual controls for all thrusters, echo sounder repeater, DP controls and independent joystick controls etc.



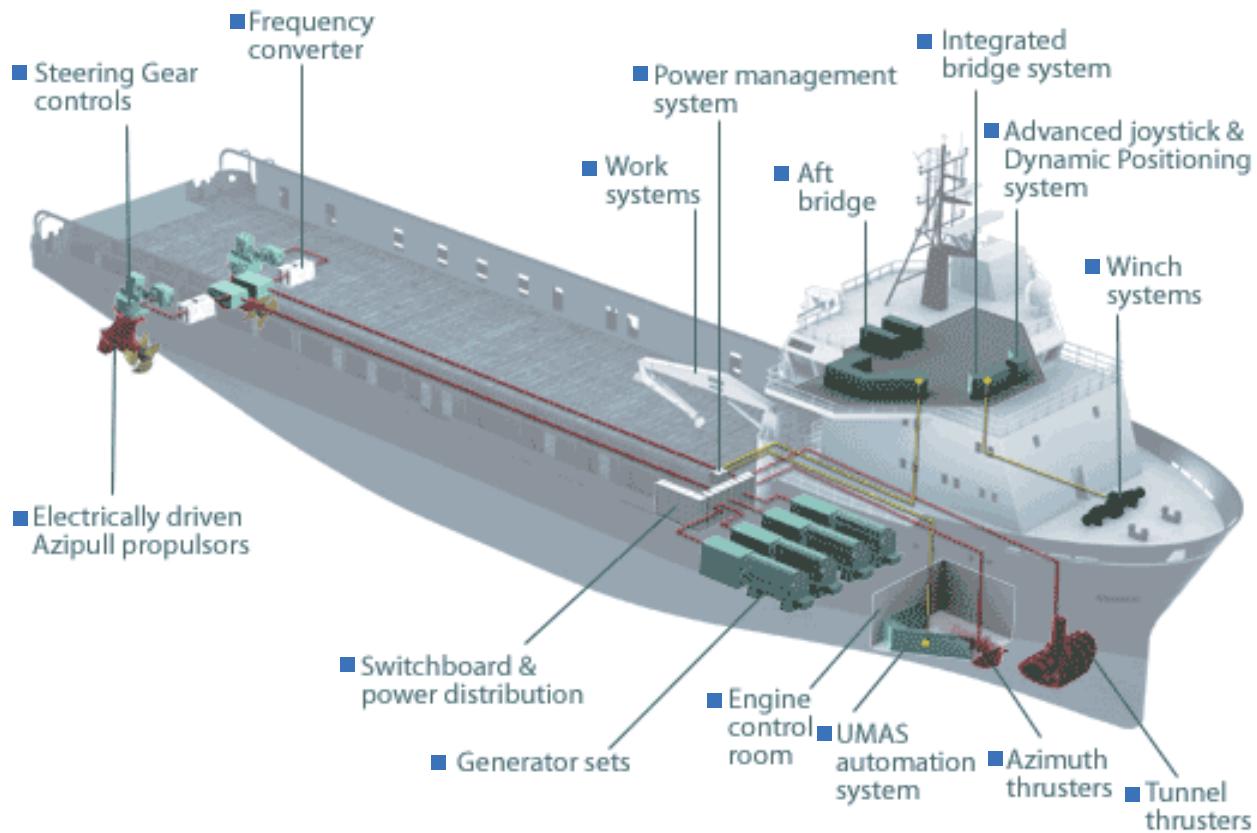
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平台供应船解决方案

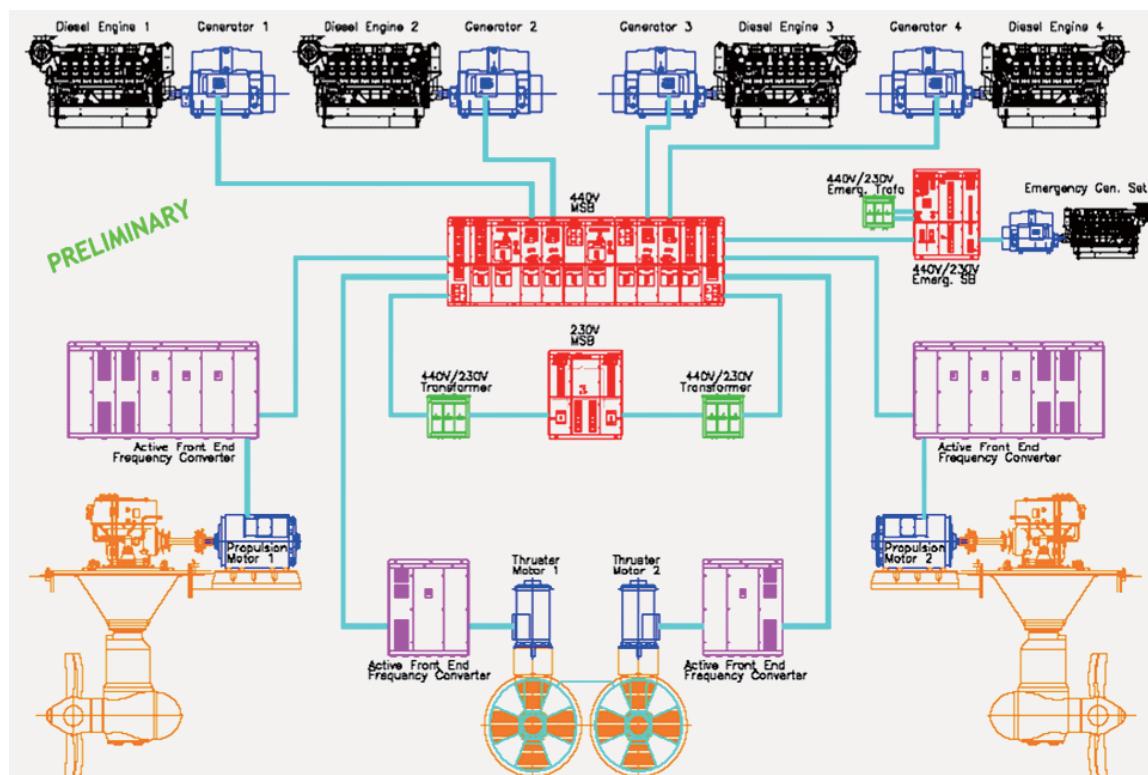
Platform Supply Vessel Solution

- 发电机, 马达及驱动装置
GENERATOR, MOTOR & DRIVE
- 主配电板及应急配电板
MAIN SWITCHBOARD & EMERGENCY SWITCHBOARD (B90/440/400/230V) +PMS
- 全船监测报警及控制系统
INTEGRATED AUTOMATION SYSTEM (IAS)
- 主推进遥控系统
PROPULSION REMOTE CONTROL SYSTEM
- JOYSTICK 联合操纵系统
- 液位遥测系统
TANK SOUNDING SYSTEM
- 阀门遥控系统
VALVE REMOTE CONTROL SYSTEM
- 不间断电源及充放电板
UPS & BDCP
- 集控台, 船艏, 船艉及两翼操纵台
ECR & BRIDGE FWD, AFT & WING CONSOLES
- 火灾报警系统
FIRE & GAS DETECTION SYSTEM
- UPS系统
- 闭路电视监控系统
CCTV SYSTEM
- 液压泵站
HPU
- 局域网+预测性维护系统
LAN+Predict Maintenance System (PMS)

电力推进工作船主要设备与控制中心典型布置图



电推型的平台供应船主要设单线图



马达与变频 (LYNOR SOMER)

- 发电机
- 轴带发电机
- 中低压船用电机
- 6/12/24 脉冲变频器
- 无源滤波器
- 移相变压器
- ETAP 谐波分析控制高次谐波电流和电压值
- 全船变频控制



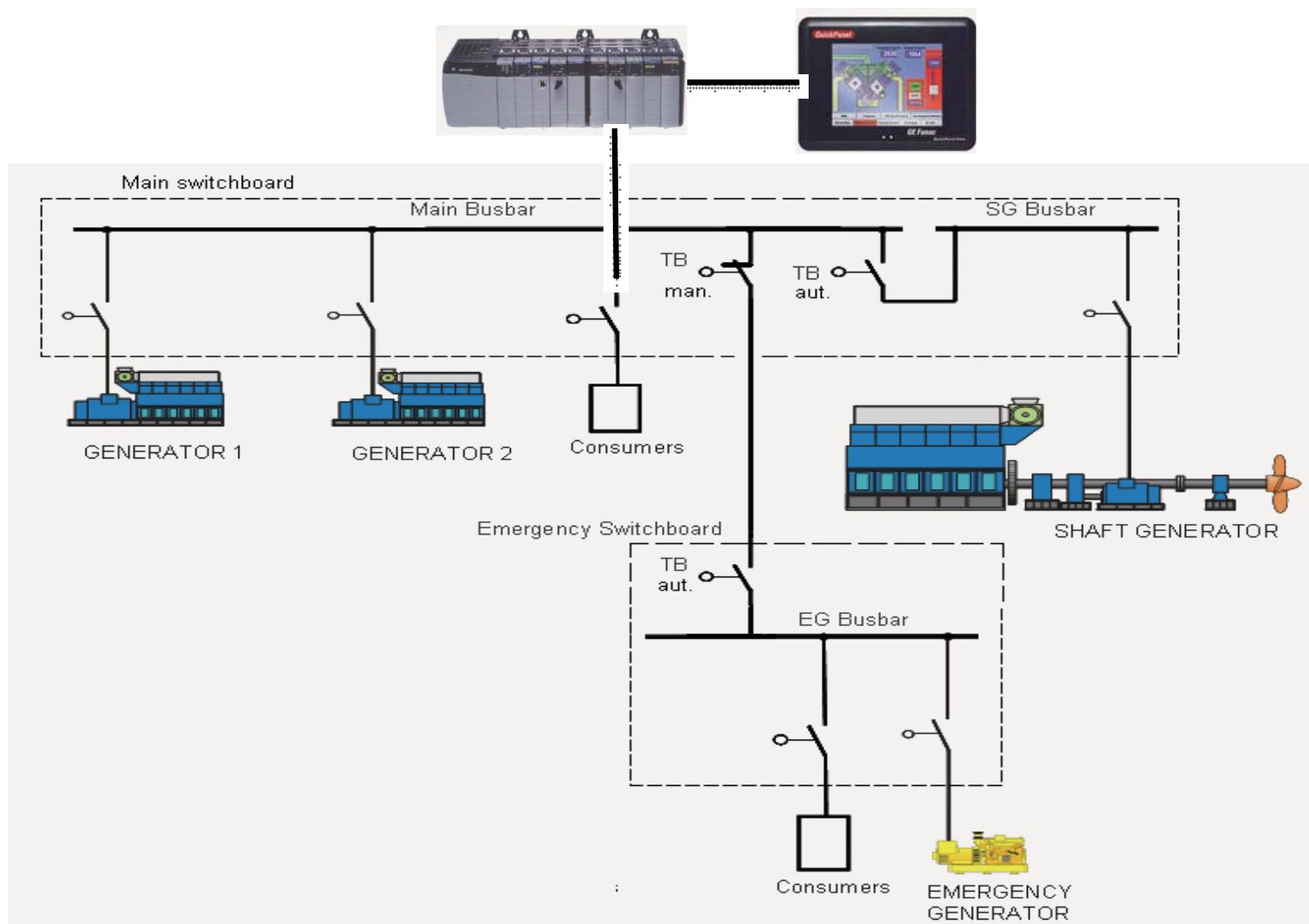
中低压配电系统

- 12.6/6.6/3.3kV 中压配电柜及变压器
- 690/480/440/400V 低压主配电盘及应急配电盘
- 二次分配电系统
- GE/ABB/SIEMENS/MULLER授权生产
- BV/ABS/NK/CCS船级社证书
- 主发/轴发/应发/停泊发电机控制屏
- 固定式/抽屉式负荷启动屏
- DEIF 功率管理器
- PLC联锁
- 触摸屏型电站管理系统
- DP2母排系统



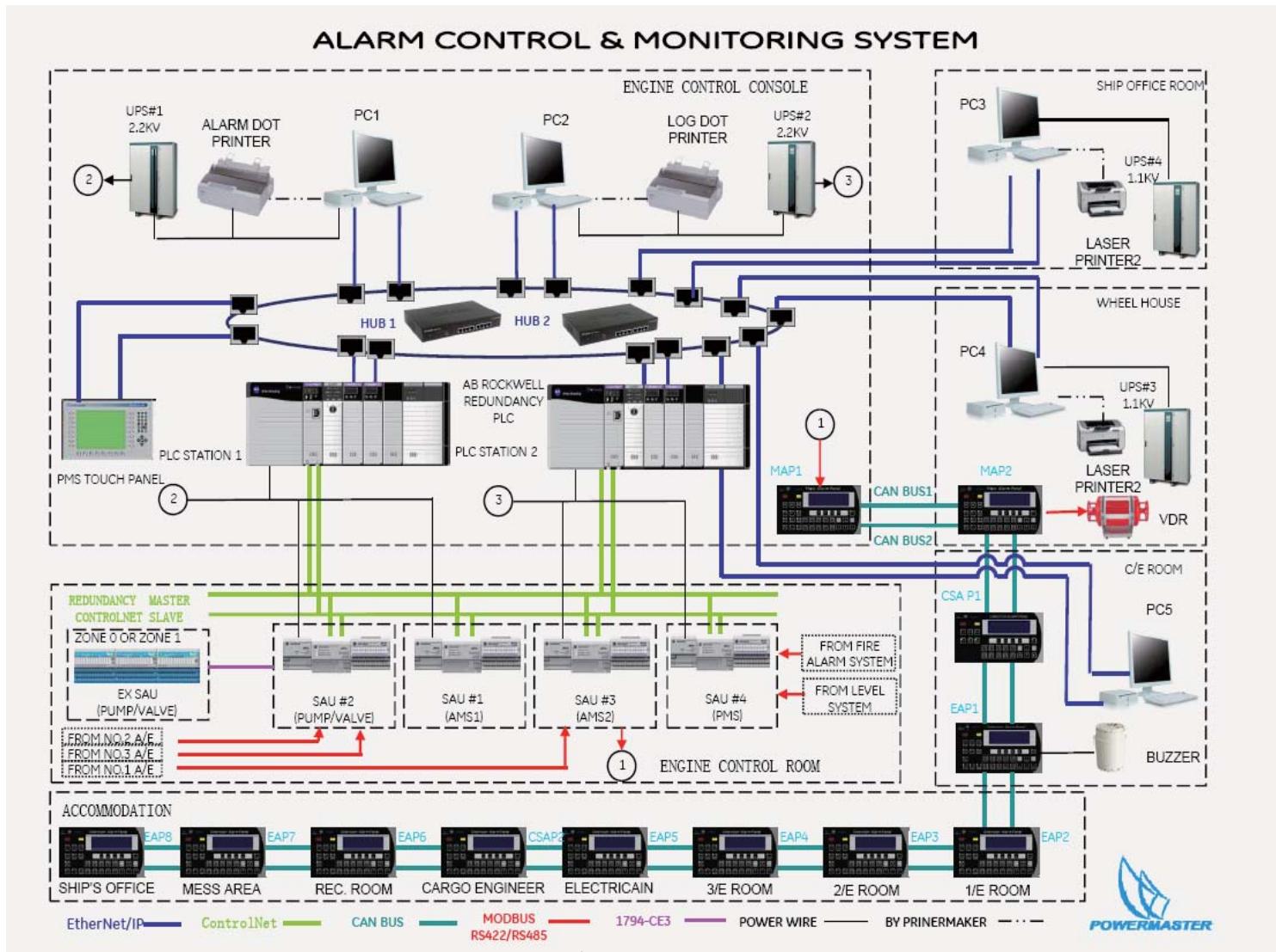
电站管理系统

- 发电机/船舶电网保护
- 欠压/相位故障
- 短路
- 过载
- 过压
- 超频和欠频
- 相位电流不平衡
- 逆功率
- 发电机内部短路（须选择）
- 差动保护（须选择）
- 接地故障保护（须选择）
- 发电机组自动起动
- 发电机自动频率调整
- 发电机自动准同步并联
- 并联运行有功负荷比例分配
- 发电机经济运行自动解列
- 发电机过载分级卸载

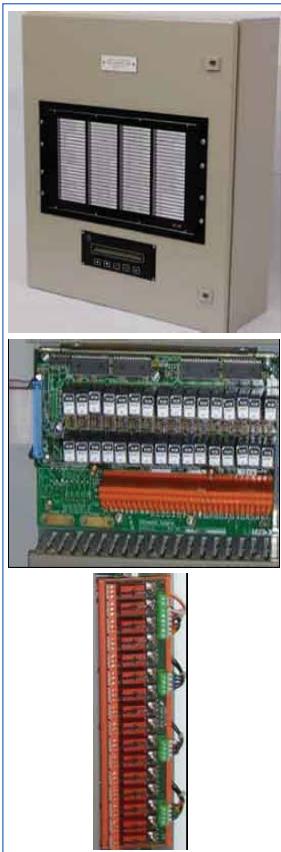


机舱监测报警系统

- 无人机舱自动化
- 采用 PLC作为主CPU
- 友好的GE IFIX人机界面
- 操作员可以自行修改及配置
- 各信号采集箱独立监测报警，带报警组显示
- 双CPU/双电源冗余结构
- 模块化的系统具有高度灵活性
- 采用环网的方式保障高可靠性
- 易扩展性和易维护性
- 高品质的主报警单元和延伸报警单元，并可集成轮机员呼叫系统及死人报警系统
- 具有各大船级社证书



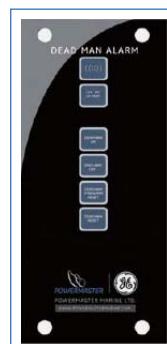
信号数据采集箱 (DAU)



- 高集成智能化结构
- 32,64,96,128 通道 & 按客户需要
- 智能监测断点
- 箱门上可配有综合报警灯板或液晶显示灯板
- 采用数据总线互相通讯
- 挂壁式安装，无论普通舱壁或水密舱壁
- 最高达IP43防护等级
- 可以采用本安型I/O及安全栅
- 也可以采用经济型方案
- 抗震，防盐雾及水汽

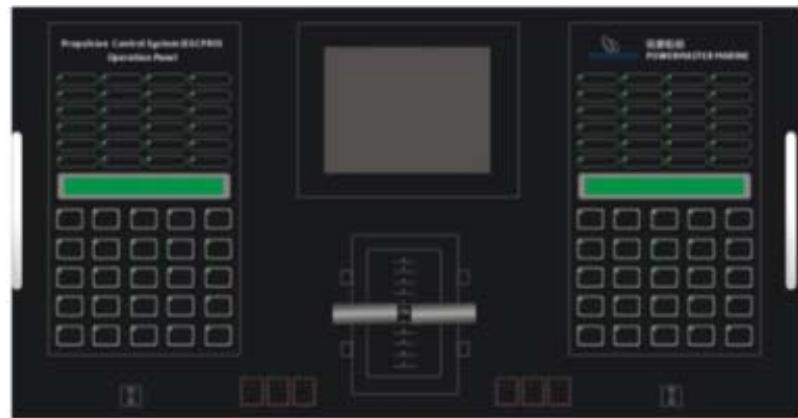
辅助设备

- 可配带触摸屏的工控显示单元
- 水密型的一体化的键盘及轨迹球
- 通讯协议转换器
- 主报警/延伸报警灯/综合报警组灯板
- 轮机员呼叫系统
- 死人报警系统
- 病员呼叫系统
- 冷库/水密门呼叫系统
- 航行灯控制板/信号灯控制板



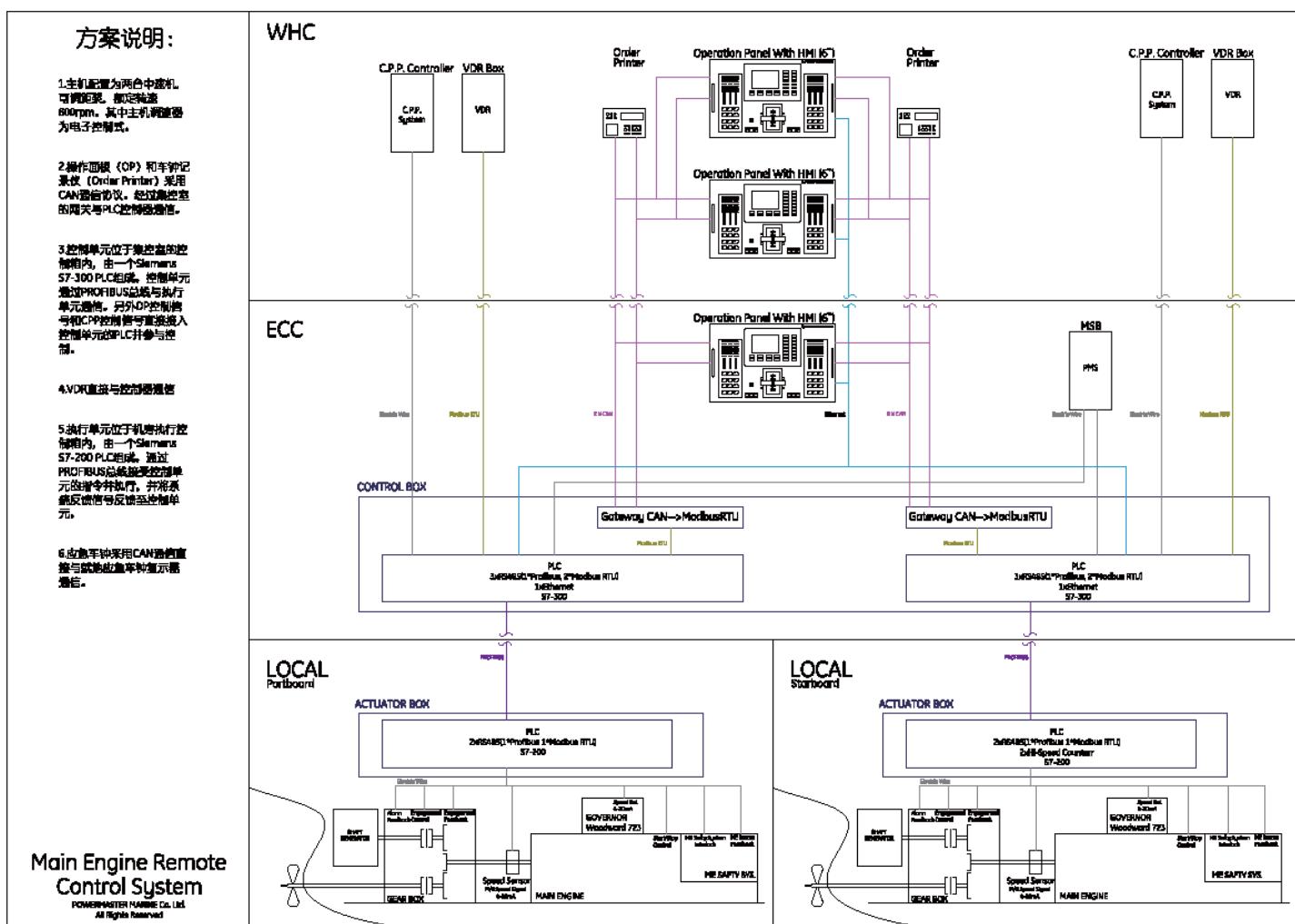
主机遥控系统

- 最多达5处的远程遥控
- 遥控柴油机或齿轮箱换向
- 遥控柴油机启停
- 遥控柴油机加减速
- 自动避开临界转速
- 调距桨的螺距控制
- 柴油机负荷限制
- 离合遥控
- 应急停车和越控
- 错向，换向超时等多种丰富的故障报警

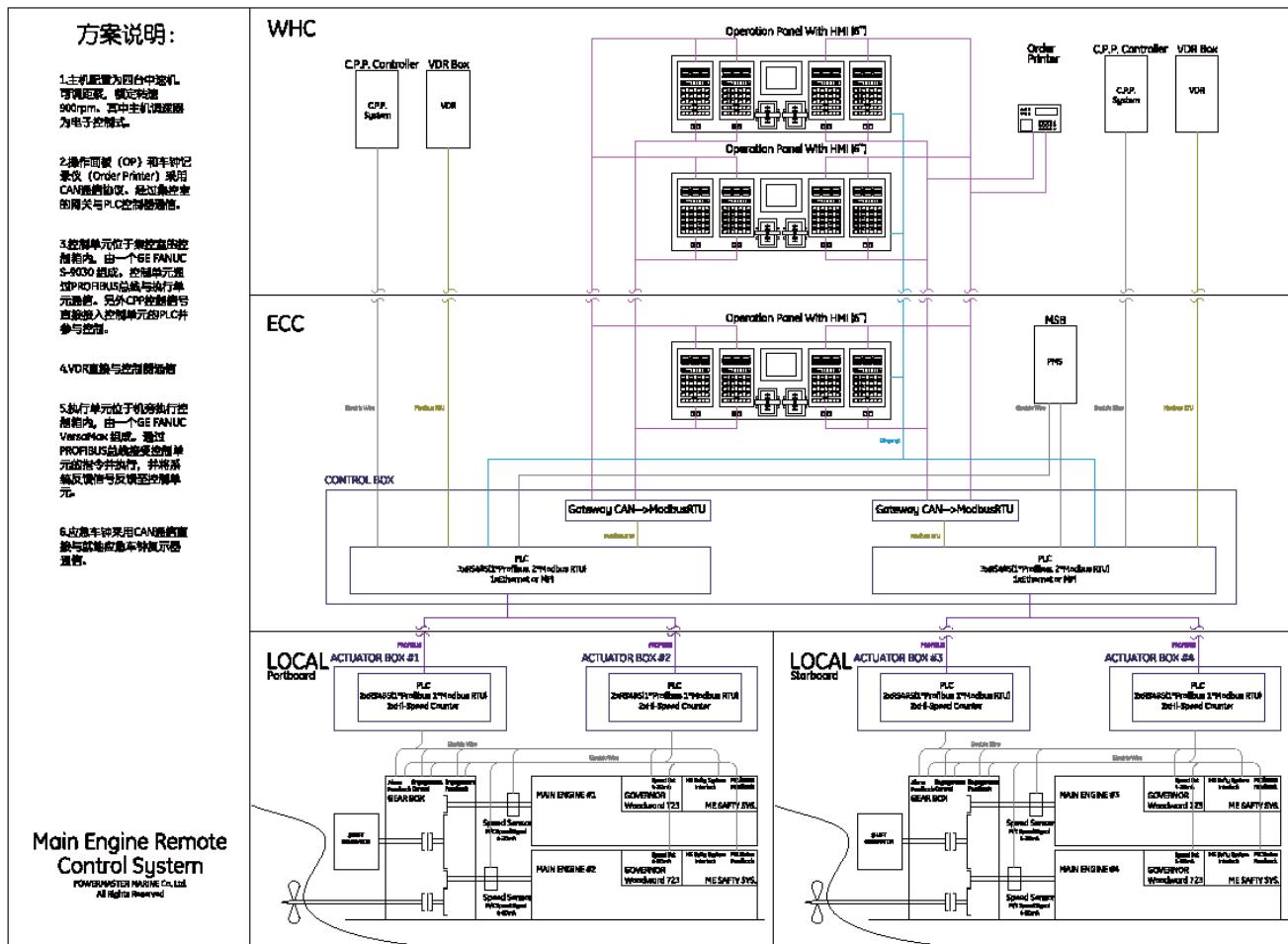


操作面板示意图

双机并车主机遥控解决方案

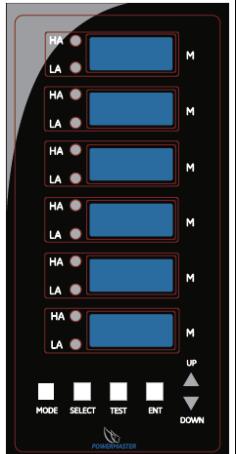
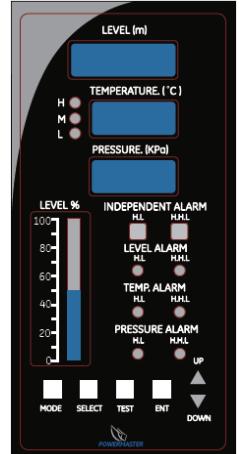
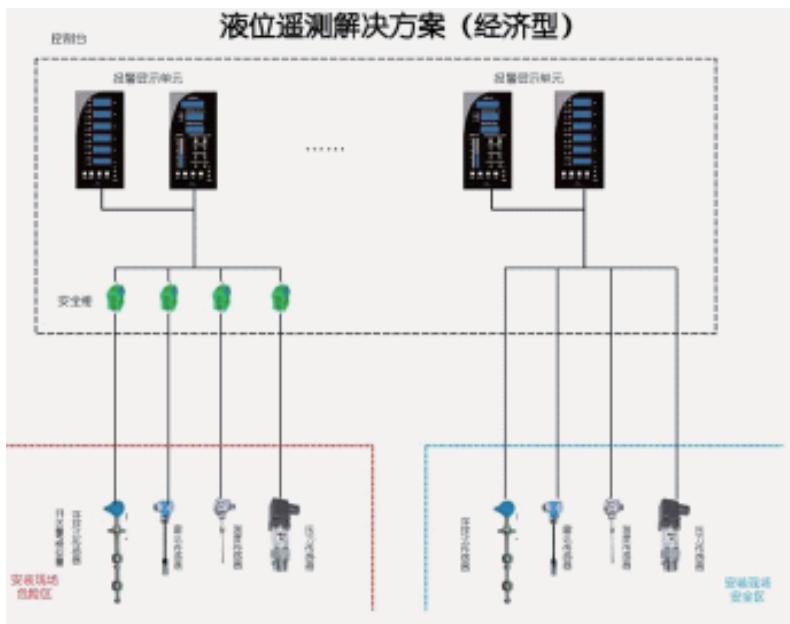


四机并车主机遥控解决方案



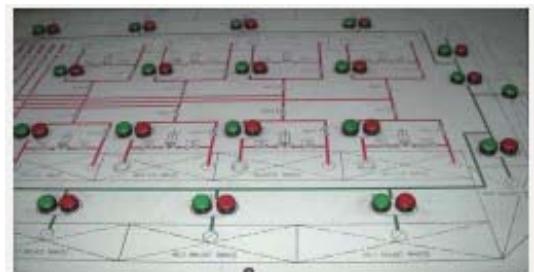
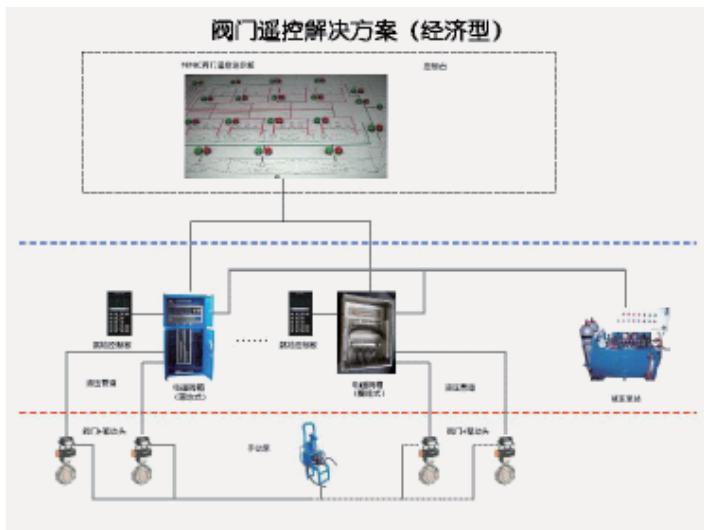
Main Engine Remote
Control System
POWERMASTER MARINE CO., LTD.
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液位遥测解决方案



液位测量仪面板

阀门遥控解决方案



MIMIC 控制板

简易操作型配置方案

Fire & Gas Detection System, NOx-SO2 Analyzing Systems

Salwico Fire Detection Systems

The CS4000 is our compact Fire Detection system, which is suitable for vessels in the merchant fleet. The system is major enhancement of the well proven fire detection concepts incorporated in the CS4000 and the NSAC-1 systems. CS4000 can be supplied either as an analogue addressable version or as a conventional (I6-48 sections) version. It can be located remotely from the rest of the cabined/system/central, which solves the lack of space on modern briges.

Features:

- 4 conventional sections with a capacity of up to 32 detectors in each section
- 2 monitored alarm outlets for sounders (24v)
- Possibility to handle gas alarm, bilge and other I/O:s



Salwico Gas Detection Systems

Further strengthening Consilium's position as the world's largest supplier of gas detection system solutions, we see an increased demand for our products where our expertise and long-term support are a significant reason for choosing our equipment.

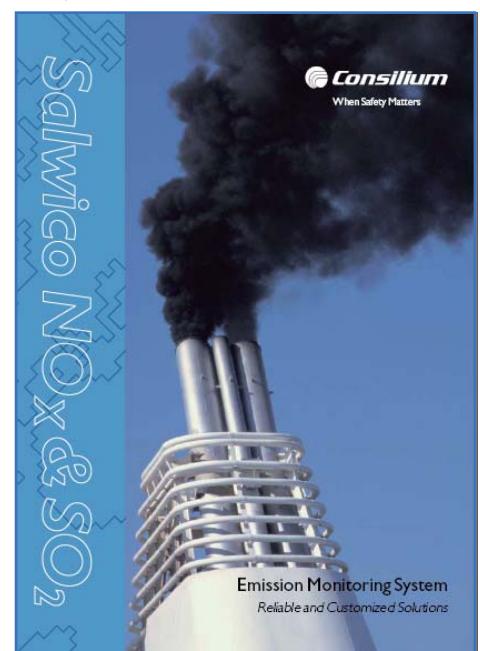
Our current product range comprises of the sampling type system sw2020 and the unique loop-configured analogue addressable system GS3000. These systems have reached an unrivalled level due to their simplified design which features a minimal amount of hardware compared to other systems available on the market.

The Salwico gas detection systems are designed and developed to meet the requirements of all major classification societies. The systems are designed with user-friendliness in mind with self instruction control panels.

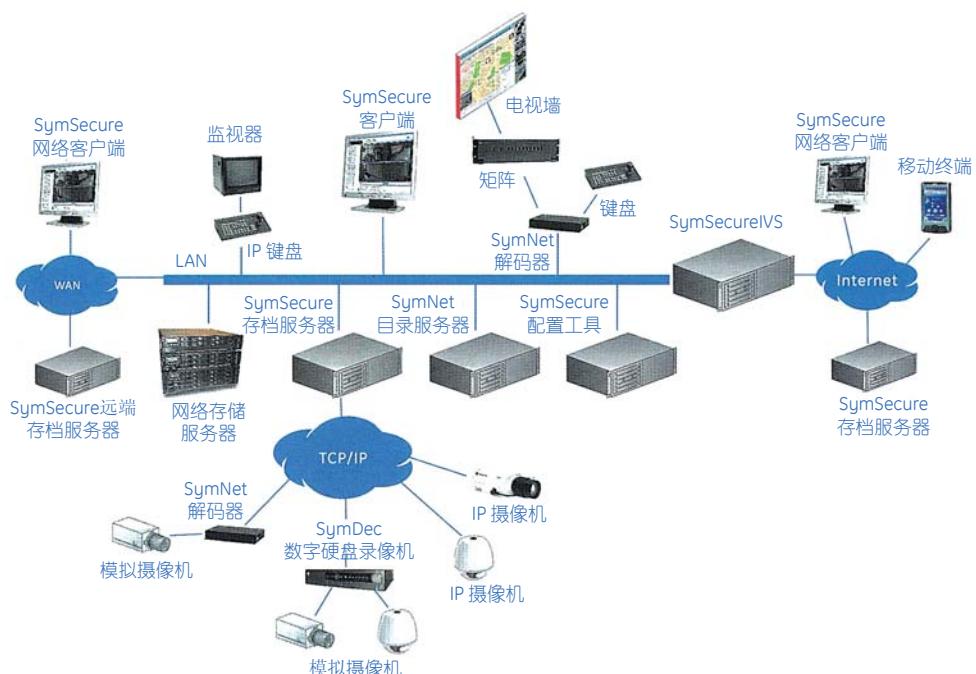
Due to our experience gained delivering thousands of gas detection systems (since the late 1990's), we can propose various standard designs and systems including the more specific requirements.

Salwico NOx-SO2 Analyzing Systems

Proudly presenting the latest addition to the Salwico product range we now introduce the world's only true continuous measuring NOx and SO2 analysing equipment for marine applications. Unlike other competitors non-compliant solution based on the regulatory chemiluminescent technology as stated in the "Marpol Annex VI NOx Technical Code."



CCTV



SymSecure 网络连接示意图

典型业绩

Typical Reference



only for reference

6000HP 平台供应船 6000HP Platform Supply Vessel

船东或船厂

- 浙江宏大造船厂

供货范围

- 主机遥控系统
- 主配电盘、应急配电盘以及充放电板
- PMS系统
- 机舱监测报警系统
- 压载液位测量及阀门遥控系统
- 船艏、船艉及桥艙控制台
- 动态定位
- 火灾报警系统
- 时间表
- 2008~
- 数量
- 批量船

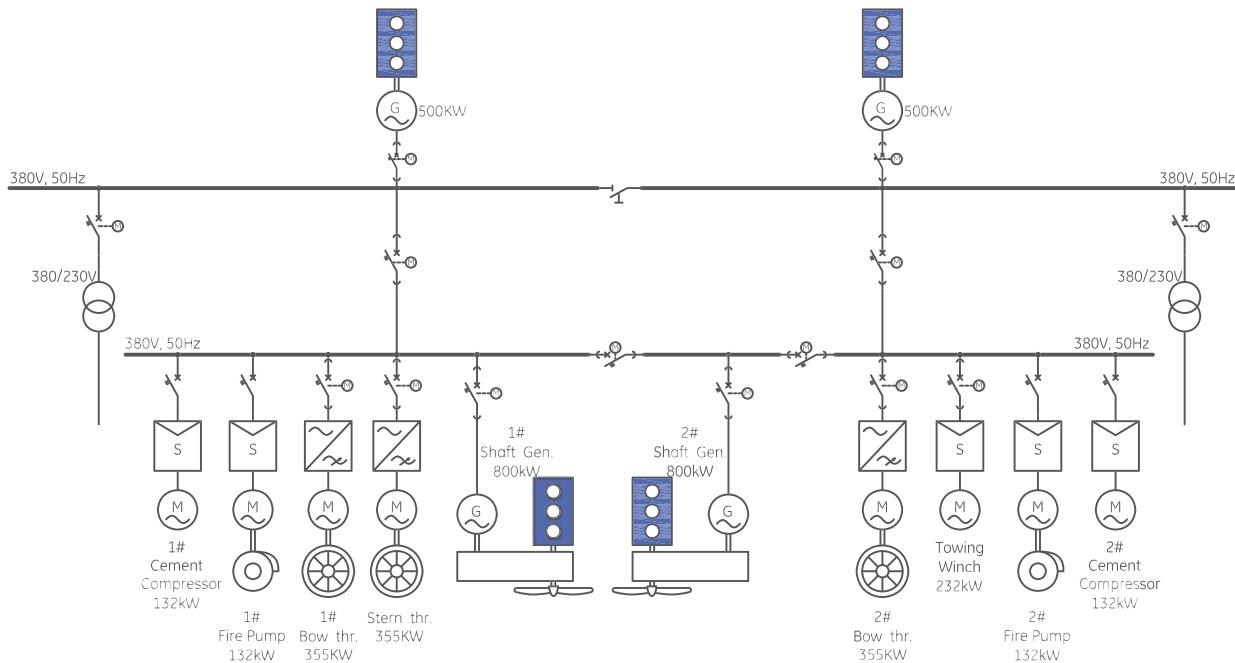
Owner or yard

- Zhejiang Hongda Shipyard

Scope of work

- Main & Stern Propulsion Control System
- Main switchboard & emergency switchboard & DC charge/discharge board ETC
- PMS System
- ER monitoring and alarm system
- Ballast Level Measurement & Valve Remote Control System
- Bow, stern & bridge console
- DP system
- Fire detection system
- Schedule
- 2008~
- Quantity
- Multi boats

6000HP 平台供应船动力方案



典型业绩

Typical Reference



only for reference

8000HP 平台供应船 8000HP Platform Supply Vessel

船东或船厂

- 浙江华恒船运

供货范围

- 主机遥控系统
- 主配电盘、应急配电盘以及充放电板
- PMS系统
- 机舱监测报警系统
- 压载液位测量及阀门遥控系统
- 船艏、船艉及桥艂控制台
- 动态定位
- 火灾报警系统

时间表

- 2008~

数量

- 批量船

Owner or yard

- Zhejiang Huaheng Shipping

Scope of work

- Main & Stern Propulsion Control System
- Main switchboard & emergency switchboard & DC charge/discharge board ETC
- PMS System
- ER monitoring and alarm system
- Ballast Level Measurement & Valve Remote Control System
- Bow, stern & bridge console
- DP system
- Fire detection system

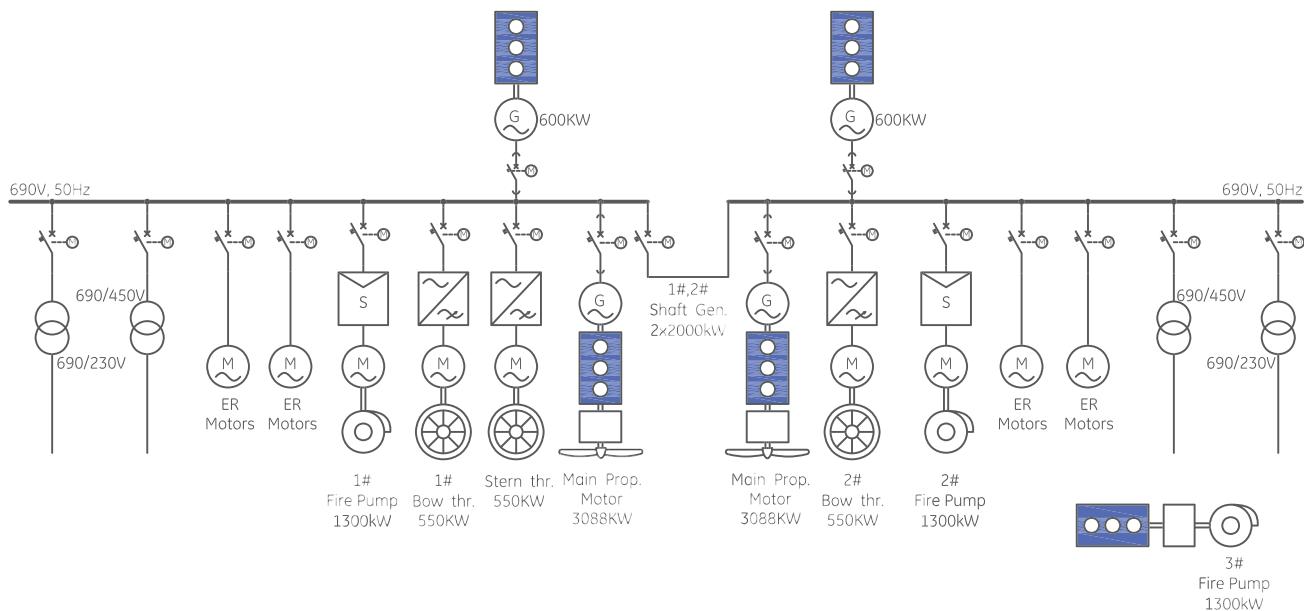
Schedule

- 2008~

Quantity

- Multi boats

8000HP 平台供应船动力方案



典型业绩

Typical Reference

58.7M 起锚供应船

58.7M ANCHOR HANDLING SUPPLY VESSEL

船东或船厂

- 英国, GMG

供货范围

- 主机遥控系统
 - 主配电盘、应急配电盘以及充放电板
 - PMS系统
 - 机舱监测报警系统
 - 压载液位测量及阀门遥控系统
 - 船艏、船艉及桥艙控制台
 - 火灾报警系统
- 船级社**
- ABS
- 时间表**
- 2008 ~
- 数量**
- 批量船

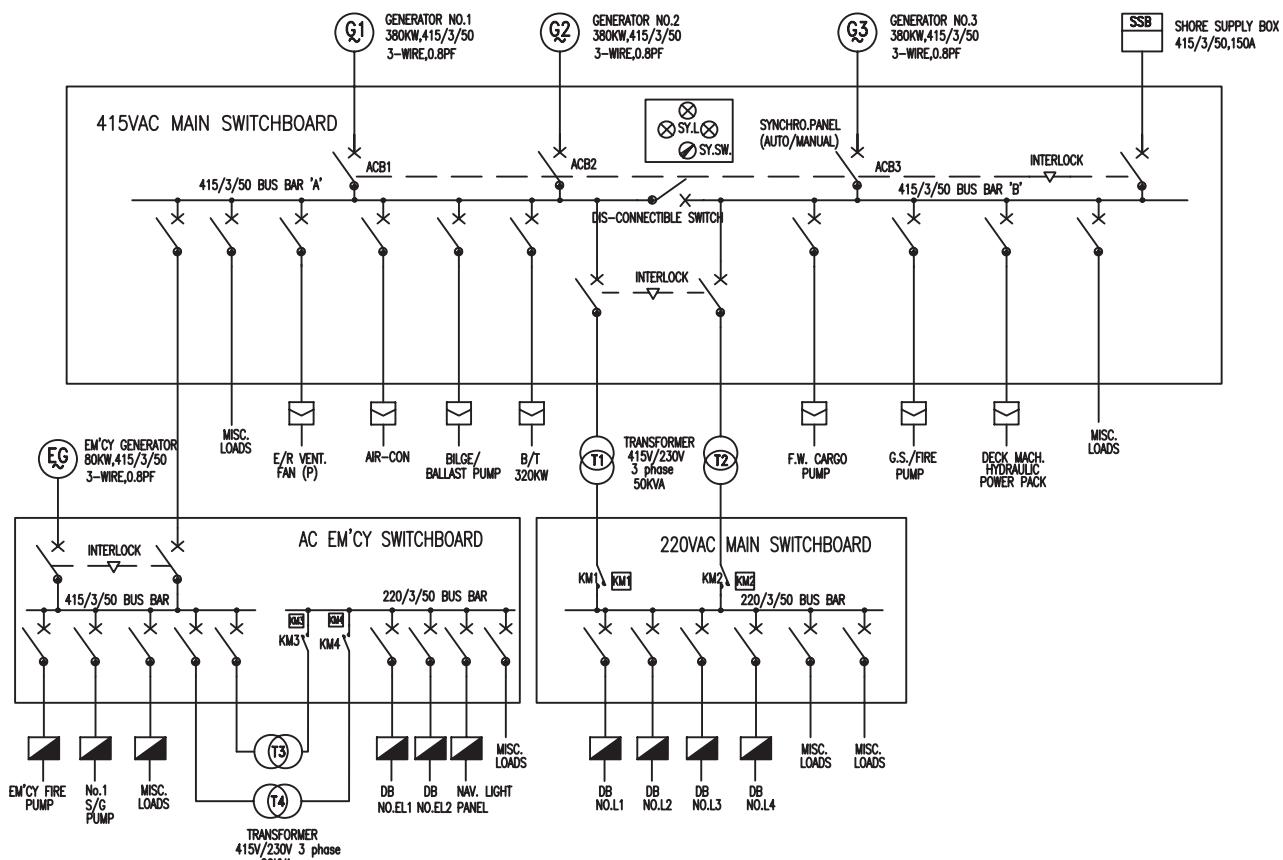
Owner or yard

- England, GMG

Scope of work

- Main & Stern Propulsion Control System
 - Main switchboard & emergency switchboard & DC charge/discharge board ETC
 - PMS System
 - ER monitoring and alarm system
 - Ballast Level Measurement & Valve Remote Control System
 - Bow, stern & bridge console
 - Fire detection system
- Class**
- ABS
- Schedule**
- 2008~
- Quantity**
- Multi boats

58.7M 起锚供应船 动力方案



业绩表

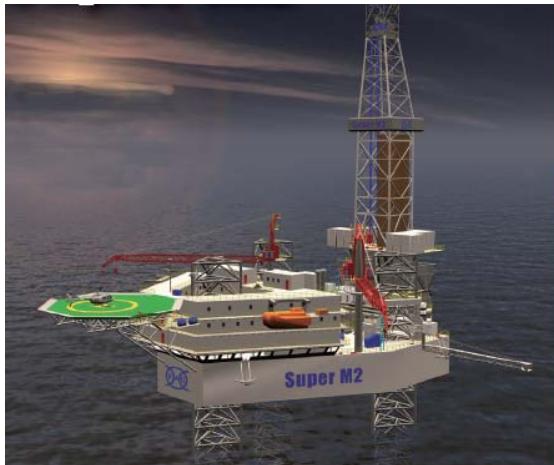
Reference List

烟台莱佛士

Yantai Raffls

Super M2-194

Self-elevating mobile offshore well intervention vessel



■ 液位遥测系统传感器及附件

TANK GAUGING SYSTEM SENSOR & ACCESSORIES

■ 直升机综合保障系统

Helicopter Supply System

"Lan Jiang" 3800T Heavy Lift Pipelaying Barge



ASIRobicon Ltd(UK) completed a very large project for the China National Offshore Oil Corporation (CNOOC) in 2001. This was for the electrical power and control system for a Heavy Derrick/ Lay Barge "Lan Jiang" built in the Yantai-Raffles Shipyard at Yantai, Shandong province. This vessel lays gas and oil pipelines from offshore platforms and lifts very large modules on to the platforms during construction. The crane can lift about 4000 metric tons and at the time was the largest Chinese-owned crane in China. The Lan jiang has been successfully operating in Bohai Bay and South China Sea. Extensive training courses were given to the crew on board the vessel.

The system provided by ASIRobicon (Hill Graham) included:

6.6kV Main Switchboards

6.6kV Crane switchboard

Generator Power Management System

Main 6.6kV transformers for propulsion, crane, mooring system and distribution

2x3MW Main propulsion motors

2xMain propulsion variable speed drives

12xvariable speed drives for 12-point mooring system

8xvariable speed drives for crane control system



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