# HYUNDAI GLOBAL SERVICE

# AUTOMATION







HiCONIS (Hyundai intelligent Control & integrated System) is a brand new and the most innovative and cost-effective automation system platform that Hyundai Global Service developed with twenty years of experience in marine automation system industry.

HiCONiS targets a large scale integrated system which supports multi-functional alarm monitoring, data acquisition and controls various equipment on vessels with different control authorities.

It is applicable for all types of ships, especially require complex control e.g. LNG, LNG-FSRU, drillship, drilling rig, other special purpose vessels and also conventional type such as container ships, bulk carriers, tankers, etc.

HiCONiS supports multi-server OWS, redundancy requirements, 10.4" up-to-date EAP, a new remote monitoring system and web monitoring system with fully customizable functions and HMI.

The system can fully deal with any demending functions in the industry due to supporting IEC61131-3 and provides proven solution for VHS, GMS, CHS, PMS, BALLAST, MACHINERY, ESD, etc.

#### **EXPERIENCE**

Having combined R&D team with Hyundai Heavy Industries Group,

HiCONiS is compatible for complex and sophisticated requirements regarding environmental regulations, energy-saving, smartship solutions and ready for further challenges.

Throughout the years of experience, we'll continuously evolve and serve our customers by finding the best solution to meet their demands.



#### **KEY VALUES**

Seamlessly integrates complete control systems in one platform and provides completely managed authority to control the system such as FGSS, LFSS, ALS, BWTS, SCR, EGCS, and VFD for ESS, fans, pumps, etc.



7-MAJOR CLASS APPROVED RELIABLE HARDWARE

SOFTWARE INTEGRITY VERIFICATION WITH HILS

RELIABILITY VERIFIED BY HHI GROUP

ULTIMATE SYSTEM SCALABILITY COMPETITIVE MAINTENANCE AND PARTS COST

# **FEATURES**

#### **ZOOM-IN/OUT**



- SVG(Scalable Vector Graphic) vector based HMI
- Provides high resolution, scalable mimics

#### **MULTI-WINDOW**



- Multiple pages in one screen for easy operation
- Up to 4 pages

# SUPPORTS FULL IEC61131-3



- Support 5 programming languages
- On-line download into the processor
- Flexible for complicated controls and auto-sequence

# CYBER SECURITY COMPATIBLE



Cyber security concept applied

# **COMPLETE GAS APPLICATIONS**



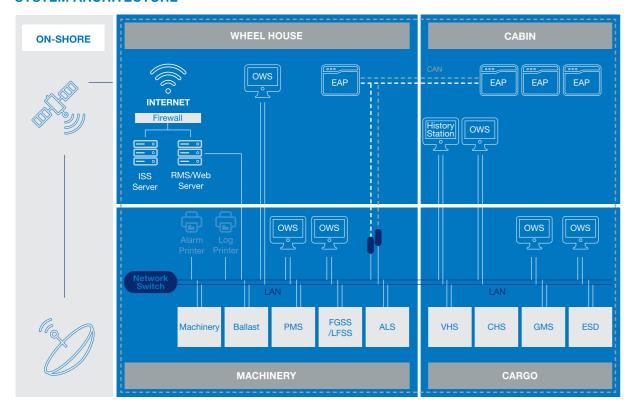
- Complete integration of package functions available
- FGSS, LFSS including ESDs
- VHS, GMS, CHS, PMS

# 10.4" TOUCH EAP



 Up-to-date 10.4" TFT LCD touch screen applied for extension alarm panel

#### **SYSTEM ARCHITECTURE**



# HMI



Intuitive user friendly graphic presentation with color theme and day/ night mode based on our R&D design research.

Fully customized symbols, layouts, colors and dynamics perfectly suit any working experience and there's no limitation to express the detail of complicated process.



Straight forward sequence chart presentation provides instant insight of current process situation.

Standardized sequence symbols along with related prerequisites, conditions, process tags and field equipment support a comprehensive understanding of each and every step.

# **HISTORY**





#### **CERTIFICATION**

HiCONiS achieved type approval certificates from major classification society such as DNV, KR, LR, ABS, BV, NK and RINA, thoroughly tested and certified for vibration, damp, heat, and EMC in accordance with the latest standards.

Software assurance program applied during the development phase ensures quality assurance and conformity covering all aspects of software which affects the final product integrity and reliability.

HiCONiS are being applied to various projects and delivered to our customers with great satisfaction.















# WHAT IS HIEPS?

HiEPS (Hyundai intelligent Electric Propulsion System) is the best solution to fulfill clients' requirements. EPS System Integrator is not just a product supplier, but we are system experts to provide whole services from basic engineering to vessel delivery. With our knowledge & experience of ship operation and automation system in HHI Group, we make sure to provide the best solution as a qualified System Integrator with collaboration of KSOE (HHI Group's R&D specialized company) and Hyundai Electric (Electrical equipment manufacturers).

#### SYSTEM COMPONENT

Throughout the years of experience, we'll continuously evolve the product and serve our clients by finding the best solution to meet their demands.



#### **MAIN DEVICE**

- ✓ Generator (690~15kV, ~50MVA)
- ✓ Transformer (~36kV, ~50MVA)
- ✓ Motor (~14kV, Max 34MW)
- ✓ Switchboard (38kV Max, 40/80kA/1sec)
- ✓ Converter (~6.6kV, Max 40MVA)
- ✓ Battery (571~1142V, Max 100MWh)

#### **SYSTEM**

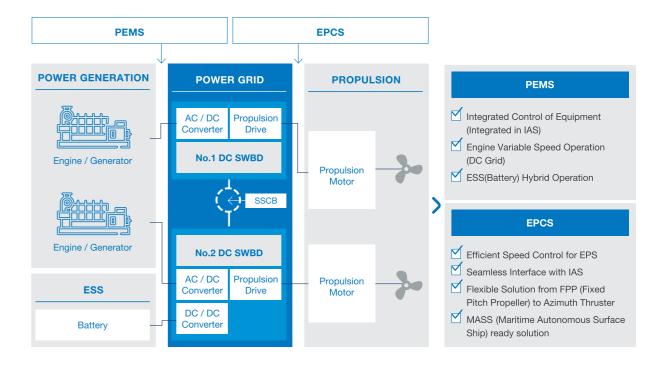
- ✓ EPCS (Electric Propulsion Control System)
- ✓ PEMS (Power & Energy Management System)

### **ENGINEERING PROCESS**

SYSTEM & **SEA TRIAL &** CONSTRUCTION **OPERATION** DETAIL DESIGN COMMISSIONING **PRODUCT ENGINEERING TECHNICAL SUPPORT** □ Full Line-up System Integration On-Site Support Product Design Design Evaluation Field Analysis Main Component Protection Solution Trouble Shooting Design & Document Motor Starting Solution Suggestion

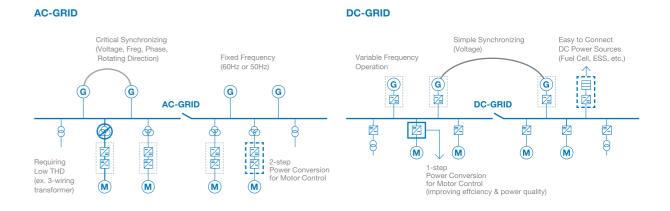
#### **AUTOMATION**

Automation/Control System is the key for reliable Electric Propulsion System, and HGS is professional in HHI Group, which is the No.1 domestic marine control system supplier. Our Integrated Automation System includes Power & Energy Management System (PEMS) for hybrid operation. Electric Propulsion Control System (EPCS) is also a significant solution for user convenience and our experts will always fully support end-users.



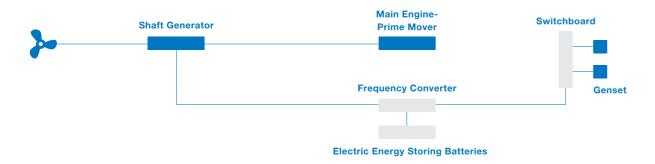
#### **AC GRID & DC GRID**

AC and DC grid are both common technologies. Depending on the power source composition or vessel type, the grid can be selected. Generally DC grid has advanced features such as simple power control (no frequency nor harmonics), availability of variable speed engine operation, and elimination of transformers. Fuel cells or ESS are DC-based sources, so DC grid makes them easier to be integrated into the grid.



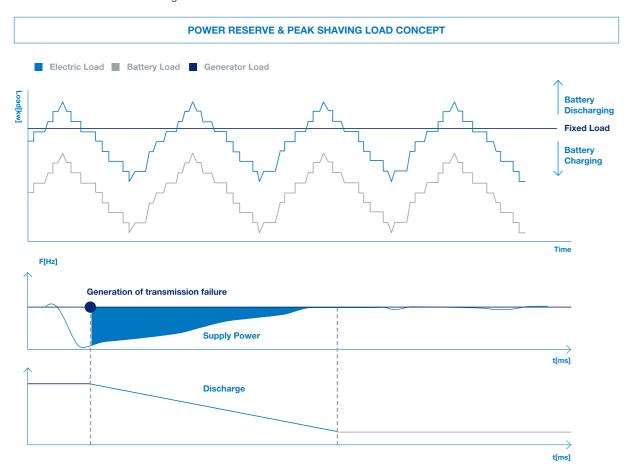
#### **HYBRID SOLUTIONS - SHAFT GENERATOR**

Shaft Generator is a good option for OPEX saving. HGS can provide the whole system with optimization solution. PTI (Power Take In, Motor Mode) and PTO (Power Take Out, Generator Mode) are the basic operation features, and PTH (Power Take Home) is optional. There is inline, type of S/G(Induction & PM), so the Package can be optimized according to customer requirements, operating concept and installation space.

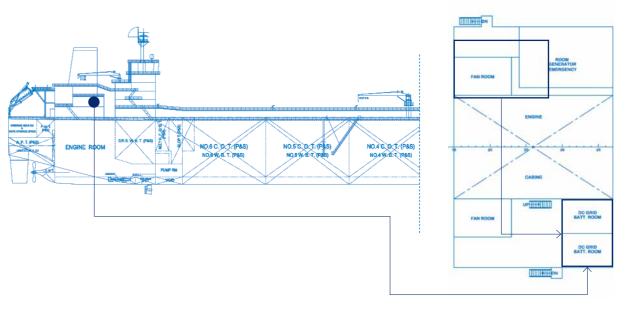


#### **HYBRID SOLUTIONS - ESS**

Marine ESS (Energy Storage System) is another good option to save the fuel and extend engine lifetime. HGS ESS solution provides power reserve, peak shaving functions as well as blackout prevention. AC grid can be extended by applying ESS, and when DC grid Electric Propulsion solution is applied, clients can take various advantages from ESS.



#### **ESS RETROFIT CONSTRUCTION**



#### WHY HIEPS?

HGS is a pioneer as qualified EPS system integrator, and we will take the lead in strengthening cost competitiveness by localizing products and internalizing technologies. We will always be there with state-of-the-art technology with continuous R&D such as Fuel Cell, ESS, Ammonia, etc.

#### PACKAGE SYSTEM INTEGRATOR

- Marine Automation System (PEMS, EPCS) based on HiCONiS<sup>™</sup> will integrate whole electric equipment's operation
- Optimal solution will be supplied based on full knowledge of electric propulsion vessel as well as equipment's technical backgrounds

# **HHI GROUP COLLABORATION**

- ☐ Group collaboration enables us to provide lowest risks and highest performance of the solution
- Competitve price via package integration
- ✓ Prompt technical support near shipyard
- ✓ Single & focal contact from engineering to O&M



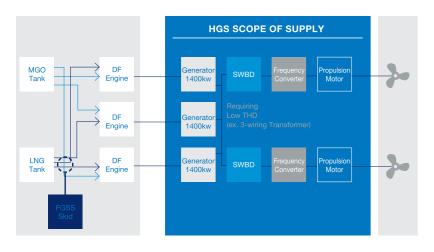


ONE-STOP SERVICE FROM A TO Z



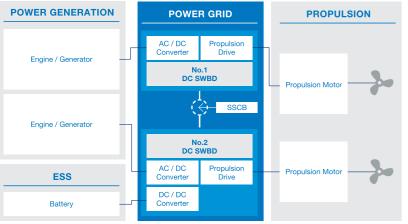
EASY O&M
WITH SMART SOLUTION PACKAGE

#### **REFERENCE**



# AC GRID REFERENCE – 7.5K LNGBV

- AC Grid with DF Engine
- Azimuth thruster motor is integrated in EPS
- Scope of Supply: EPS, IAS, ISS



### DC GRID REFERENCE -SMALL CRUISE SHIP

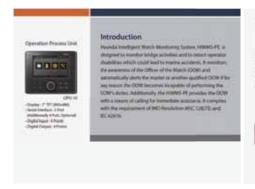
- First Domestic DC Grid Vessel
- ESS Hybrid, Variable Speed Engine Operation
- Whole Smart Autonomous Navigation System
- Scope of Supply:EPS, IAS, ISS, ISCS

# **WHAT IS HIWMS?**

HiWMS (Hyundai intelligent Watch Monitoring System) is designed to monitor bridge activities and to detect operator disabilities which could lead to marine accidents. It complies with the requirement of IMO Resolution MSC. 128(75) and IEC 62616.

# **FUNCTIONS**

- Bridge Watch Monitoring
- Bridge Navigation Alarm
- Alarm Transfer
- □ Emergency Call





# **WHAT IS H-MAST?**

H-MAST(Hyundai Monitoring Adjustment Safety Technology) is the best solution for high level of bridge console design with ergonomic concept. The design and workmanship is fully satisfied with the classification society requirements for the stated pitch and roll conditions.

#### **KEY VALUES**



In harmony with other equipment such as the radar, auto pilot etc. installed together in the wheel house.



In accordance with the various requirements of ship owners and shipyards

#### **FEATURES**

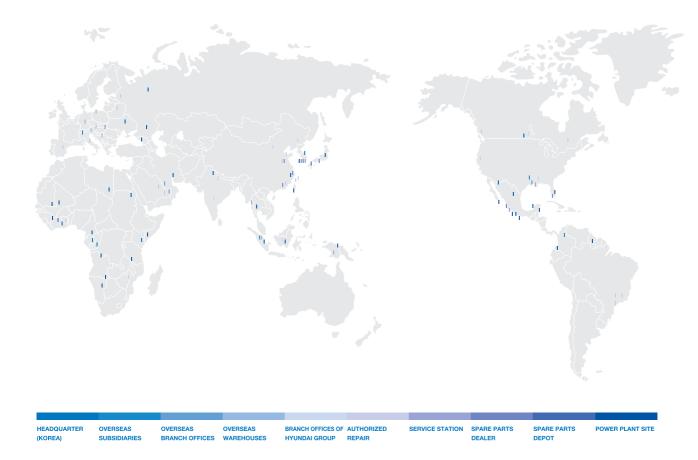
- Compact and future-oriented high-tech image
- Simple straight line and curved design



H-MAST-B2020



# **GLOBAL NETWORK**



#### **SUBSIDIARIES**

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