S&SYS

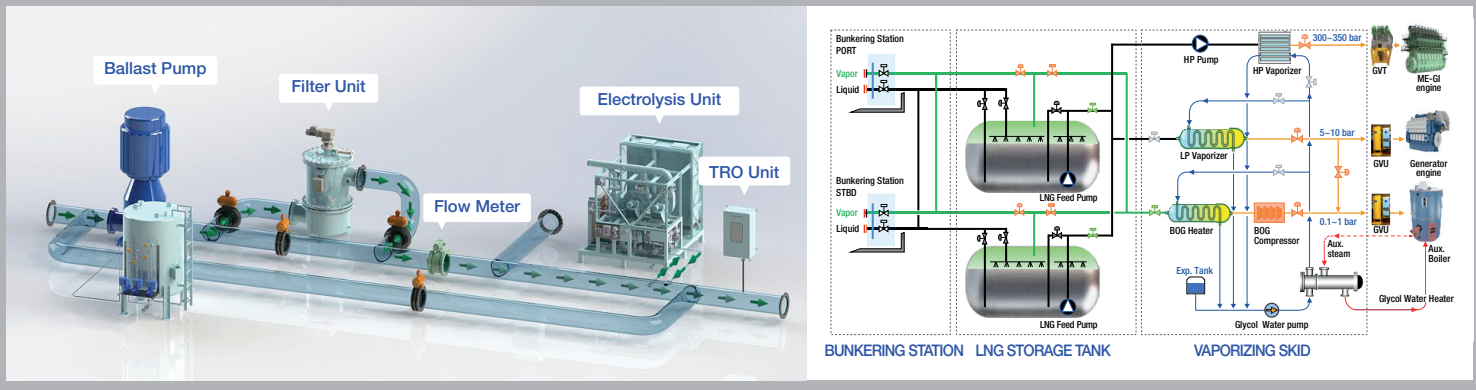
Marine & Offshore Solution | Energy Storage System

Energy Storage System

WHO WE ARE?

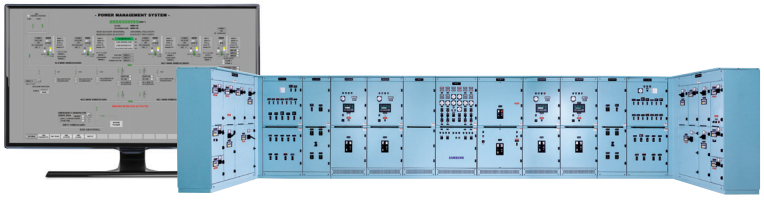
S&SYS

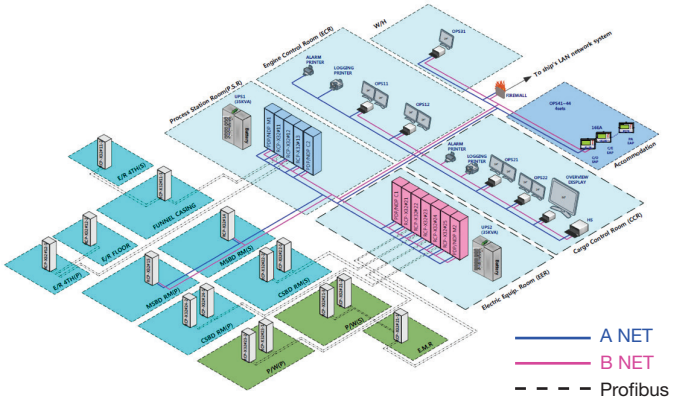
S&SYS has been established as a spin off the Machinery & Electric system team of the Samsung Heavy Industries in 2017 Based on technologies and knowhow accumulated over 25 years in the shipbuilding and marine field, we have developed key equipment such as Ballast water management system(BWMS), ship automation system, switchboard and Fuel gas supply system for LNG/LPG fueled ships to clients all over the world. Drawing on the technological collaboration it has with Samsung Heavy Industries for ESS, S&SYS combines the control system it has accumulated in-house with the technologies and know-how on power solutions to bring you closer to a carbon neutral era through ESS for ships.



System Integrator for All electric & hybrid ships

S&SYS aims to be a leading company for designing and delivering the best suitable electric system to make ship operable in her best condition. With guaranteed quality performance of own ESS, Switchboard and automation system, we find and procure optimized products for ship's safe, efficient and economical operation under the strong collaboration with partner, which we had made for decades. The future lies in environment-friendly vessels brought to you through sole or combination of next-generation energy sources for vessels and cutting-edge technology, including battery systems, hydrogen fuel cells, solar power and wind power. And at the center of that future is S&SYS.





Now we are ready for the ship's future with ESS. If you ready for the journey with us either, please kindly contact sales@snsys.net

What is Energy Storage System?

ESS

Energy storage system is the solution that helps to use energy stored in Lithium-ion battery in the most economical and efficient situation. As it became possible to place vast amounts of energy within a small battery, we are now entering an era where ships, too, are powered by ESS.

When it is used for ships, the ESS is charged by using one or multiple charging sources (Diesel generator sets, shaft generator and shore power) and supply the stored energy when ship needs power by using converter.

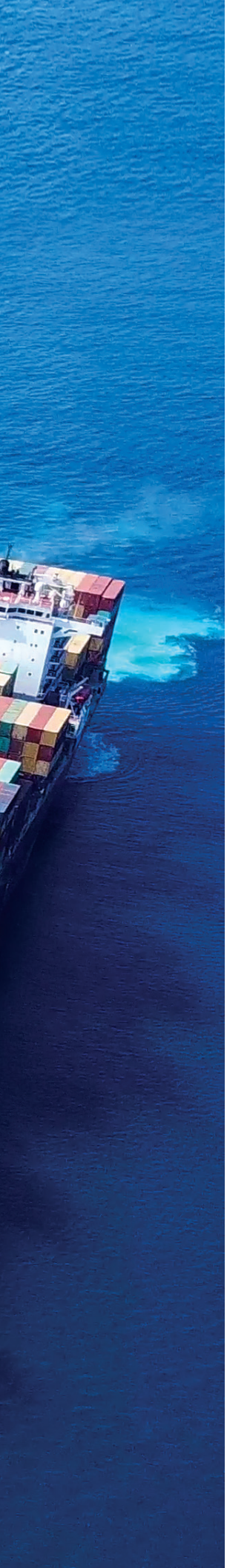
Pure electric ships, 100% purely powered by the energy of ESS, allow the power of the charged ESS to be used as a main force in the motors that rotate the propellers. and it makes us to achieve ZERO emission goals.

Hybrid electric ships using a part of energy from ESS, since it can use charged energy in ESS when ship reaches peak load, the peak load is shaved by the energy of ESS, then the capacity of diesel generator sets can be decreased. By operating the diesel generator sets at the optimal performance condition with less number of engines and less operation time, it leads to the fuel oil consumption savings(Less CO_2 emission) and less maintenance costs.

Due to regulations to rein in CO_2 emissions and other environmental regulations that continue to be tightened, the installation of ESS on all types of ships is no longer an option but a must.

Why apply the ESS to Ship?

- Reduced generators capacity
- Reduced fuel consumption for generator
- Reduced generator running hours & maintenance
- Prevented black-out and improved grid stability
- Reduced black smoke for sudden load



Possible applications

We are ready to propose the Best optimized solution for ESS.

LNG carrier
Power supply to heavy consumer (especially, cargo operation)

Drillship
Drilling load sharing, Back-up for dynamic positioning

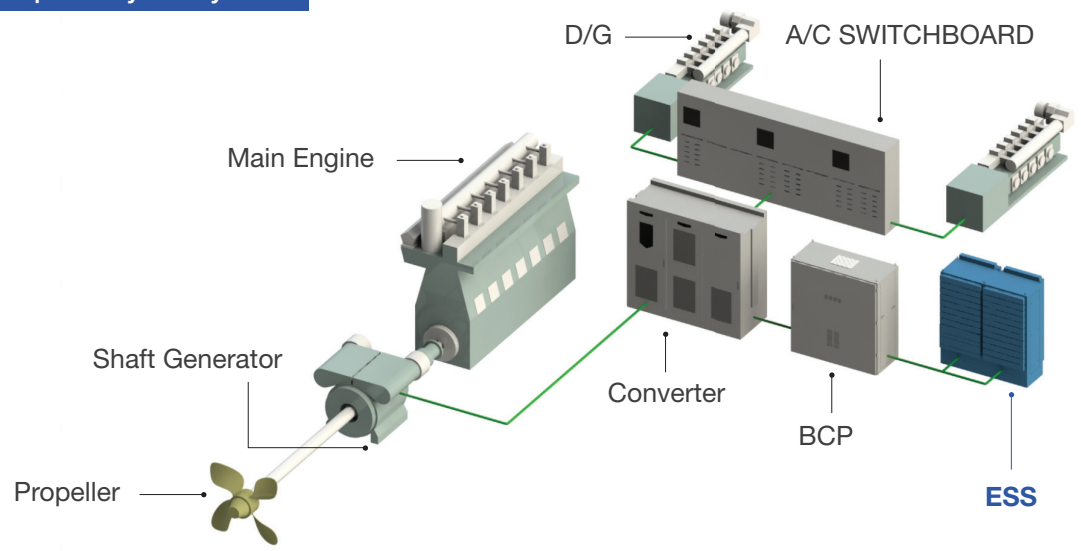
Retrofits for Existing ships
Ships are in shortage of power after SOx Scrubber & BWMS installation

Merchant ship
Power supply to temporary load (ex. thruster, refrigerated container)

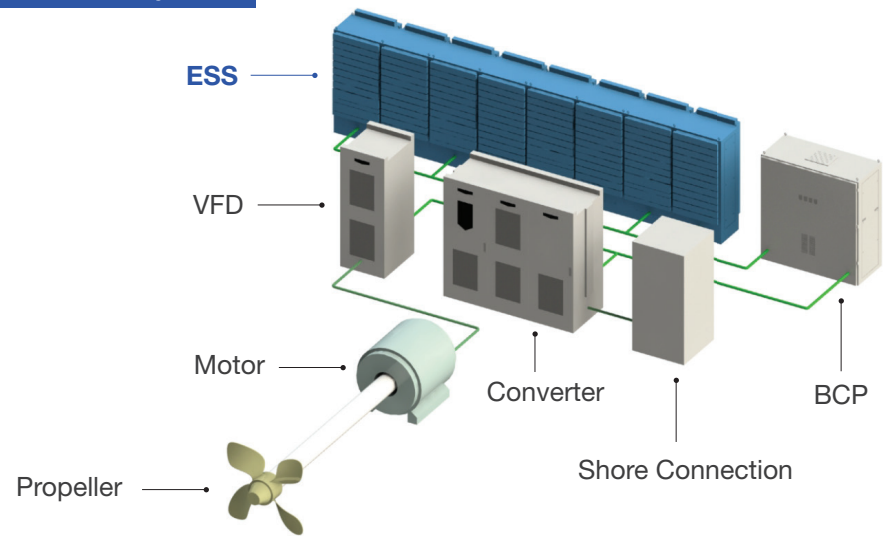
Cruise, Ferry, Tug & Small ships
Main propulsion power supply for pure electric ships Auxiliary power supply for Hybrid ships

System configuration (Example)

Concept for Hybrid system



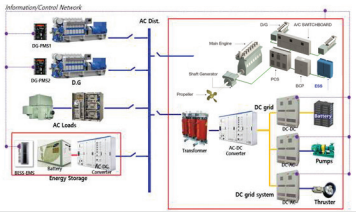
Concept for Pure electric system

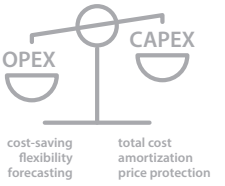


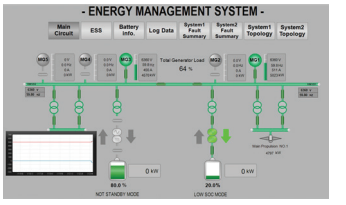
Marine Li-ion battery system and EMS (Energy Management System)

Samsung Heavy Industries developed the energy storage system and EMS, which is consisting of the Li-ion battery system for the maritime industry and S&SYS also participated in the development of ESS based on plenty of knowhow and background for producing marine equipment and acquired DNV type approval. Battery EMS takes control of Battery hybrid system not only for the efficient operation, but also for its safe operation. The EMS has been developed based on actual vessel operating data. It can improve fuel efficiency of vessel by controlling the battery power actively according to generator efficiency and electric load. Moreover, newly-applied special fire suppression function helps to suppress the fire spreading.

Working principle

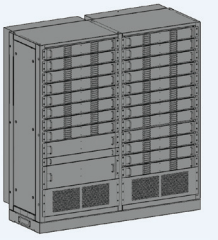






Analyze vessel operating data > Design system configuration > Analyze CAPEX/OPEX > Provide optimum condition

Technical specification

Type		 Power(SSB-1160A)	 Energy(SSB-610)
C-rate(Continuous)		2.5 C	1.0 C
Module Specification	Energy	3.97 kWh	6.6 kWh
	Voltage	58.4 V	44 V
Rack Specification	Energy	39.7 - 63.5 kWh	26 - 132 kWh
	Voltage	584 V - 934 V	175 V - 874 V
	Dimension	H2,251 X W1,550 X D624 (63.5kWh base)	H2,000 X W1,660 X D660 (132kWh base)
	Weight	1,500 kg (63.5kWh base)	1,800 kg (132kWh base)
Cooling		Forced Air cooling	Forced Air cooling
Ingress Protection		IP44	IP44

Above technical specification might be changed without prior notice.

Energy Storage System Global Network

ASIA		
KOREA		S&SYS Co.,Ltd. (HQ)
KOREA		STK Engineering Co.,Ltd.
KOREA		JEWON Engineering Co.,Ltd.
KOREA		STA
KOREA		DEX
CHINA		Seven Seas Electronic Co.,Ltd.(Shanghai)
CHINA		Seven Seas Electronic Co.,Ltd.(Qingdao)
CHINA		Seven Seas Electronic Co.,Ltd.(Dalian)
CHINA		SAMSUN Marine Technology(HK) Co.,Ltd.
CHINA	**	Health Lead Development Co.,Ltd.
CHINA	**	SJE Engineering Co.,Ltd.
CHINA		SSMT
INDIA	**	Indostan Corporation
JAPAN	**	Orient Marine Co.,Ltd.
JAPAN		JRCS Co.,Ltd.
JAPAN	**	Tsuneishi Co.,Ltd.
JAPAN	**	Union.Co.,Ltd.
SINGAPORE		Treys Ple Ltd.
SINGAPORE	**	KTK Group Co.,Ltd.
TAIWAN	**	YL Maritime Co.,Ltd.
CENTRAL AMERICA		
PANAMA		PASRAS S.A
MIDDLE EAST		
U.A.E		MARITRONICS
U.A.E	**	Tensosys
NORTH AMERICA		
USA		MarineBCTec(LA)
USA		MarineBCTec(NJ)
OCEANIA		
Australia		UNION
SOUTH AMERICA		
BRAZIL		METALOCK Brazil Ltd.
BRAZIL		DZETA Marine & Offshore
EUROPE		
GERMANY		Mare systems
ITALY		MASTER CONTROL
GREECE	**	D.C.S.I Ltd.
TURKEY		Oceanist
AFRICA		
Nigeria		Radial Circle

** Sales Agency

S&SYS

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