Design, Development & Installation of Electrical & Automatic Control Systems

- MSB/ESB Main & Emergency Switchboards
- PMS Power Management Systems
- Engine Room Alarm Monitoring Systems
- Engine Remote Control/Maneuvering Systems
- C.O.Tanks / Ballast Tanks Level Gauging Systems
- C.O.Tank Pressure Monitoring/Alarm Systems
- C.O.Pumps Temperature Monitoring/Alarm Systems
- Manifold Pressure Recorders/Monitoring Systems
- Valves Remote Control Systems
- Boiler Automatic Control Systems
- Atmospheric Oil Mist Detection Systems
- Cargo Holds Water Ingress / Dewatering Systems
- BNWAS Bridge Navigational Watch Alarm Systems
- VDR Voyage Data Recorders

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SELMA (Ship Electric Marine Automation) is an engineering company established in Greece at 1989 implementing design, development, installation of Electrical & Automation Systems in Vessels.

SELMA specialized Electrical/Electronic Engineers implement Conversion/Retrofit Turn Key Projects in Marine Electrical & Automatic Control Systems:

1. MSB & ESB Power Distribution Switchboards
2. PMS Power Management Systems
3. Engine Room Alarm Monitoring Systems
4. Engine Remote Control/Maneuvering Systems
5. Cargo Oil Tanks/Ballast Tank Level Gauging Systems
6. Cargo Oil Tanks Pressure Recorders/Monitoring Systems
7. Cargo Oil Pumps Temperature Monitoring/Alarm Systems
8. Manifold Pressure Recorders/Monitoring Systems
9. Valves Remote Control System (Hydraulic Type)
10. Boiler Automatic Control Systems
11. Atmospheric Oil Mist Detection Systems
12. Cargo Holds Water Ingress Detection Systems
13. BNWAS Bridge Navigational Watch Alarm Systems
14. VDR Voyage Data Recorders
15. Wind Monitoring / Recorders

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SELMA undertakes Fabrication, Retrofit Installation and Services worldwide of Ship Power Plant:
- MSB Main Power Distribution Switchboards
- ESB Emergency Power Distribution Switchboards
- PMS Power Management System
- Group Starters / Soft Starter Panels
- Aux. Power Distribution Boards

SELMA Engineering Teams implement ship specific study/analysis on Power Plant Conversion (i.e. Additional Gensets Installation, Switchboards Modifications)
- Short Circuit Calculation Study - Load Analysis Study
- Power Factor Compensation Analysis

SELMA implement development and retrofit upgrade on existing Generators Power Distribution Boards with the installation of New PMS Power Management Systems based on the as fitted drawings of Power Plant:
- Automatic Synchronizing
- Automatic Start/Stop/Stby Generators according to Load Demands
- PMS Functions & Monitoring with Load Analysis Illustration
- Redundant Power Distribution
- Automatic Loading Sharing
- Large Motors Automatic Blocking
- 3Phase Management, Voltage Matching
- Frequency Control

SELMA Service Engineers Teams implement maintenance/services on existing installations and conversation upgrade installations of Power Switchboards according to vessel requirements.

SELMA undertakes Power Plant Installation of any kind of vessels Tankers, LNG, Bulk Carriers, Container Ships, Yachts, Dredgers etc.
SELMA implements Fabrication, Retrofit Installation and Services worldwide of Ship Engine Room Monitoring & Alarm Systems.

- PLC Programmable Logic Controllers Units
- Marine Type PC Workstations/Touch Screen Monitors & SCADA (Supervising Computing Data Acquisition)
- Signal Converters/Multiplexers Units
- Sensors, Transmitters Installation

SELMA Engineering Teams implement onboard installations of Integrated Monitoring, Alarm & Control Systems based on Modern, Distributed PLC CPU Units (Master/Slave) and associated I/O PLC Interface Units for Centralized Illustration performing Monitoring of Ship Propulsion Plant and UMS (Unattended Machinery Spaces) of machinery plant under all operation conditions.

SELMA implement retrofit projects (turn key solutions) fulfilling all the requirements of AUT Notations of Class for implementation of unmanned engine room.

SELMA Monitoring Systems Retrofit/Upgrade (SCHNEIDER ELECTRIC Equipment) based on existing as ship fitted plans where existing sensors will be used and ECR Cabinets/Console will remain in position. New PLC Units/PC Workstations are installed with Modern SCADA Graphical User Interface. Diagrams & Curves illustrated for each monitoring/supervision function where the parameterizables and remote controlled units are represented graphically in animated mimic diagrams. The Operator without having to search will have instantaneous access of all images and control the set of the parameters on Workstations/Touch Screens and simultaneously display curves on real time or historical recorded data.

www.selma.gr
SELMA based on a 23 years experience of Retrofit/Conversion Projects in Marine Industry implements replacement of Old/Outdated Monitoring Systems with PLC Platform of Modern Heavy Duty Technology securing long lasting operation of Ship Condition Monitoring.

SELMA Engineering Teams implement review of existing installation and prepare new interconnection drawings between sensors plant and new monitoring platform that will be wired on the as fitted installation. The Final Monitoring Platform will be tailor made in order the adaptation and installation onboard will reach vessel schedule / demands.

SELMA Service Engineers onboard implement installation of New Monitoring/Alarm Systems and training of ship personnel after installation completion.

SELMA undertakes according to vessel requirements the replacement of Transmitters/Sensors (Temperature, Pressure, Level, Flow) with Marine Approved Type of Modern Technology in order to guarantee the integrated Monitoring/Supervision Function of Propulsion Plant.

www.selma.gr
SELMA implement Fabrication, Retrofit Installation and Services of Tank Gauging Systems for all kind of vessels (Tankers, Bulk Carriers, Container Ships) worldwide:

- Cargo Oil Tanks  - Ballast Tanks  - Draft  -H.F.O / D.O Tanks

SELMA Integrated Tank Level Gauging System based on PLC Platform (Schneider Electric) and configured according to ship specific tanks gauging specifications requirements (turn key solutions)

SELMA Tank Level Gauging System based on Hydrostatic Level Pressure Transmission Technology designed especially for long lasting operation.

**Hydrostatic Level Pressure Transmitters (Ballast Tanks/Draft)**

The Level Pressure Transmitters are performed tank gauging with hydrostatic pressure that is applied on the transmitter. The direct conversion of the pressure into electrical signal is achieved by a minute deflection of sensor which changes the resistance on diaphragm applied pressure.

**Guided Radar Transmitters (Cargo Oil Tanks)**

Radar High frequency microwave pulse are applied and guided along the probe, where the pulses are reflected on the surface received by the processor module.

SELMA Tank Gauging System perform Gross/Net Tank Volume, Sounding, Ulage and Temperature on Heavy Duty Workstations PC/Touch Screen Monitor

SELMA experienced Service Engineers undertake Retrofit/Upgrade/Service on Existing Installation where reduced piping requires due that most of the present installation (pipes, flanges etc) remains as fitted.

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SELMA undertakes worldwide fabrication/retrofit/new installations of Pressure Monitoring /Alarm Systems for Tankers covering latest Oil Majors Requirements:

a. Cargo Oil Tanks Vapour Pressure Monitoring/Alarm System
   (4 Set Points) location Cargo Control Room
b. Bridge Cargo Oil Tanks Vapour Pressure Monitoring/Alarm System
c. Manifold Pressure Monitoring/Recording System in Cargo Control Room

SELMA Combined System based is expandable and can be implement as retrofit/adaptation on any type of existing Cargo Control Console.

Pressure transmitters are based on dry, robust measurement housing with internal strain gauge converting element between pressure applied and electric signal generated avoiding sensor degradation and securing intrinsically safe installation and long lasting operation.
SELMA implements Fabrication, Retrofit of Valves Remote Control Systems for the most demanding installations and for any type of vessels:

SELMA Integrated Electro-Hydraulic Valves Remote Control Systems comprises the following equipment:
- Central HPU Hydraulic Power Pack Unit
- Double Acting Hydraulic Actuators
- Butterfly Valves
- PLC Control Station
- Mimic Control Panel
- Central PC Workstation / Touch Screen Display
- Main Hydraulic Control Box (Solenoid Valves/Double Pilot Check Valves/Flow Reducers/Hydraulic Blocks)

SELMA on special occasions fabricate Electro hydraulic Power Pack Units controlling a specific number of Valves Remotely/Autonomous.

Mimic Diagrams of GUI Graphical User Interface are implemented according to the pumping arranges plan of the vessels and the valves can be controlled linear with the scale of 0-100%. The Hydraulic Actuators are designed to operate at any extreme environmental locations even permanent submerged immersion in sea water and for this reason are fabricated with special coating. In case of emergency operation hydraulic actuators are fail safe comprises input for connection of portable hand pump.

SELMA Valves Remote Control System special applications are often applies to retrofit installation of Dewatering Systems for Bulk Carriers complying with IACS SC179 where Power Pack Unit/Actuator/PLC Control Panel is installed for Dedicated Remote Control of Fore Peak Tank.
SELMA undertakes fabrication/retrofit/service of Boiler Control Systems with the development:
- Automatic Combustion Control
- Feed Water Level Control
- Steam PID Control
- Purging Compensation
- Automatic Load Preserving
- Automatic Burning Adjustments
- GBP, Gas Boiler Control, Fuel/Water System
- Pressure, Level & Temperature Control
- Purging Sequence

SELMA Engineering Teams undertakes worldwide turnkey repair, maintenance, upgrade and conversion of all auxiliary and exhaust gas boilers.

SELMA in retrofit Boiler Automation Projects maintains the main plant as fitted and replace major control modules by using heavy duty PLC Platform tested to operate under extreme environmental conditions

www.selma.gr
SELMA implements retrofit installation of Atmospheric Oil Mist Detections System in the area of Hydraulic Power Packs complying with following requirements:

- OCIMF SIRE 11.25
- IMO MSC/Circ.1086 “Code of Practice for Atmospheric Oil Mist Detectors”

SELMA Atmospheric Oil Mist Detection system detects an oil mist in atmosphere of Engine Room/Hydraulic Room before it can reach levels where it saturates the atmosphere such an extend an extend that there will be a risk of fire. The most reliable solution is to install SELMA System which will detect an oil mist before it can reach levels where it will saturate the atmosphere to such an extend and there will be a risk of fire.

In order the ship will determine suitable positions for mounting the detectors a smoke test will be required to verify air movements. In general, air will move towards ventilation extractors and turbochargers so the detector will be positioned as close as possible to the machinery. On installation, at least a smoke test should be performed with all engines, ventilation and machinery fully operated to ensure that detectors are correctly installed. The difference from mist & spray is only the size of the droplets, even that more energy is demanded to create a mist and its minimum ignition energy is lower comparing with a spray.

www.selma.gr
BNWAS Bridge Navigational Watch Alarm Systems

SELMA BNWAS is most integrated Bridge Navigational Watch Alarm System in the Marine Industry based on Touch Screen Display.

SELMA BNWAS can be interfaced with any type of Autopilot due that it is designed decoding NMEA 0183 Signal for Auto Mode Operation of the system under sea condition. Comparing with conventional systems in the market SELMA BNWAS illustrated Detailed Alarm Messages on the Touch Screen Display.

VDR Voyage Data Recorders

SELMA VDR is the only Voyage Data Recorder in Marine Industry comprising Central TFT Display Monitoring in real time basis all recorded data from Bridge Navigation Instruments and Propulsion Systems Status.

SELMA Remote VDR Server implement extensive recording of 6 months travel apart from mandatory 12 hours Ship Owner Office can access remotely on ship and download selected data or observer/review on line recorded data in real time with vessel status.

Wind Recorders Cargo Control Room

SELMA Wind Recorder complies with latest ExxonMobil MESQAC Requirements for Tankers and is installed in the Cargo Control Room implement recording of existing Bridge Wind Instrument Signal (NMEA 183 or Sychro/Analogue Signal).

Central Colour Touch Screen Monitor implement GUI Graphical User Interface of Data recorded, and illustrates the values on Trends and or Excel File.

www.selma.gr
BULK PROTECTOR
CARGO HOLDS WATER INGRESS
MONITORING ALARM SYSTEM

All New Building Bulk Carriers should be fitted according to IMO MSC.145(77)

Submersible Level Pressure Transmission Technology

SELMA BULK PROTECTOR is the only Water Ingress System in the market that apart from Alarm perform Water Level Monitoring inside Cargo Holds.

www.selmacontrol.com