

IMPLEMENTED PROJECTS





NORINVER, MONTAJES E INGENIERÍA, S.L.

Is a young company, but it draws on the expertise of its managers in the field of advanced electric power assembly and design.

We offer added value to our customers by providing high-standard and comprehensive services in design, installation, assembly, maintenance and repair of electrical and electronic systems.

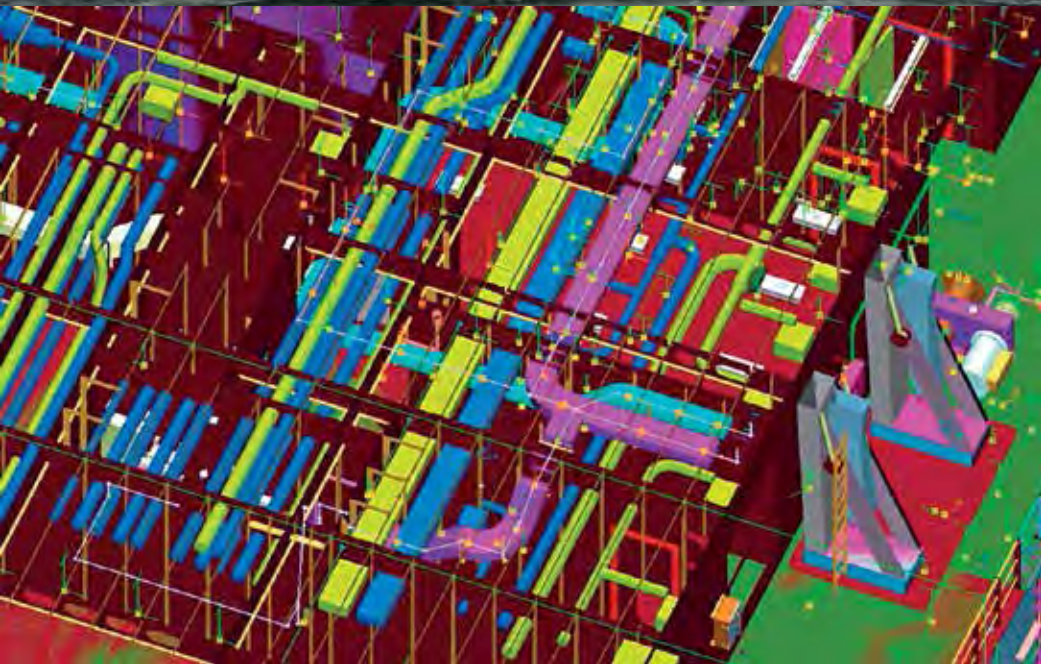
Our area of expertise focuses on projects for industries that demand high reliability and quality in the operation of their systems:

- Complete assembly of photovoltaic parks.
- Electrical installations in solar thermal plants.
- Electrical projects, installations and engineering design for military and civil vessels.
- Design, construction and equipment of consoles, automation systems, distribution panels and starters.
- Complete maintenance of naval and industrial installations

The know-how of the company's manager and its technical staff has been gathered over the past fifteen years through their experience in an extensive number of projects.

The most relevant ones related to naval industries are shortly below:





ISO 9001
ISO 14001
BUREAU VERITAS
Certification



OHSAS 18001
BUREAU VERITAS
Certification



GENERAL OF
ARMAMENT
AND EQUIPMENT
DIRECTORATE
CERTIFICATE

PECAL
(STANDARDS)

NATO AQAP

ISO 9100
(IN PROCESS)

DESIGN, ENGINEERING AND PROJECTS

THE FOLLOWING
REFERENCES OF WORKS
CARRIED OUT IN THE
FIELD OF

SHIPBUILDING



CHEMICAL TANKERS

ARMADORA MARITTIMA ETNEA · HUELVA

(ERICSSON ESPAÑA)

Electrical installation for chemical tankers “Date A.” and “Odoardo Amoretti” for the company Marittima Etnea, built in a **shipyard in Huelva**. The installation included the commissioning of all the systems related to the platform and the process plant: Fire detection, communications, control and monitoring systems, power plant, lighting and navigations systems, etc.

FERRY MARTÍN i SOLER

BALEARIA · VIGO

(ERICSSON ESPAÑA)

Electrical installation for Ferry “Martín i Soler” for Balearia, built by **Barreras**

in its shipyard in Vigo (Spain). The installation included the commissioning of all the systems related to the platform and the process plant: Fire detection, communications, control and monitoring systems, power plant, lighting and navigations systems, etc.

RO-RO J. M. ENTRECANALES Y SUPERFAST BALEARES

ACCIONA TRASMEDITERRANEA · CÁDIZ

(ERICSSON ESPAÑA)

Electrical installation and final tests for ro-ro vessels “Jose Maria Entrecanales” and “Superfast Baleares” for Acciona Trasmediterránea built by **Navantia in its Puerto Real Shipyard**.



PATROL VESSEL C-506

VENEZUELAN NAVY · CÁDIZ (NAVANTIA)

Electrical installation and final tests of the ocean patrol vessel “Warao” for the **Venezuelan Navy** for Navantia – in its Puerto Real shipyard. The project included the integration and commissioning of combat and communication systems.



LHD JUAN CARLOS I

SPANISH NAVY · FERROL / CÁDIZ / MURCIA

(NAVANTIA)

Laying of 85,000 meters of control cable in the LHD vessel “Juan Carlos I” for the **Spanish Navy** for Navantia – in its shipyard in Ferrol.

Warranty assistance for LHD vessel “Juan Carlos I” for the **Spanish Navy**, built in Navantia’s shipyard in Ferrol. Inspection and replacement of different defective equipment, instruments, etc. and installation of new set-up for some systems. The most relevant works were conducted in the naval base of Cartagena (Murcia) and Rota (Cádiz) and in Navantia’s own premises in Ferrol.

FRIGATES NFN F-310

NORWEGIAN NAVY · FERROL / BERGEN

(NAVANTIA)

Warranty assistance for the frigates F-310 (5 vessels) of the **Norwegian Navy**. Inspection and replacement of different defective equipment, instruments, etc. and installation of new set-up for some systems. The most relevant works were conducted in the naval base of Bergen (Norway).



LHD CAMBERRA

AUSTRALIAN NAVY · FERROL

(NAVANTIA)

Load test for the power plant of the LHD “Camberra” for the **Australian Navy** in Navantia’s shipyard in Ferrol. Containerized loadbanks were installed for the full load rating 50MVA at 6.6kV which could test all the generators (3 sets) in parallel mode.

Commissioning of electric plant for the LHD “Camberra” for the **Australian Navy** in Navantia’s shipyard in Ferrol. Our technicians were involved in the start up of individual equipment (pumps, motors, fans etc.) and in the testing of whole systems (diesel, refrigeration, lub oil, etc.).

FRIGATE F-105 C.COLÓN

SPANISH NAVY · FERROL

(NAVANTIA)

Commissioning of the Integrated Platform Monitoring System (IPMS) for frigate F-105 “Cristóbal Colón” for the **Spanish Navy**. All signals and alarms were checked as well as the interconnection with the different systems of the ship.

LHD ADELAIDA

AUSTRALIAN NAVY · FERROL

(NAVANTIA)

Electrical installation in forward zones of LHD “Adelaida” for the **Australian Navy** in Navantia’s shipyard in Ferrol. All systems concerning to the equipment in the bow area were fully cabled, connected and commissioned.



OFFSHORE PATROL VESSEL BAM 6 SPANISH NAVY · FERROL

(NAVANTIA)

Electrical installations in offshore patrol vessel (BAM-6) for the **Spanish Navy**, built by Navantia in its shipyard in Ferrol. The installation includes the commissioning of all systems related to the platform and the combat system:

Fire detection, communications, control and monitoring systems, power plant, lighting and navigations systems, etc.

PUERTO CABELLO NAVAL BASE VENEZUELAN NAVY · VENEZUELA

(ALDIVA)

Analysis of power supply conditions in **Puerto Cabello Naval Base** (Venezuela), checking shore and internal generator supplies in the vessels of the Venezuelan Navy. Voltage and intensity waves were sampling in order to define the level of harmonics, voltage voids, frequency oscillations, etc.

CARGO VESSEL YELLOW RIVER PUERTO DE BARCELONA

(BMT REPAIRS)

Overhaul and repairs in cargo vessel **"Yellow River"** in Barcelona harbour. Rebuilding of the electrical system and equipment in the engine room and electrical generators room affected by a fire in the boiler. New drawings were made for the new installations (one line diagrams, layouts, etc.) as well as the engineering required to build new control panels for the rebuilt equipment (boiler, lub-oil, ventilation, ...)

SUPPLY VESSEL BAP 215 PEMEX · FERROL

(REGENASA)

Turn-key installation of all electrical systems in accommodation areas in the **Supply Vessel** BAP-215 for Pemex, built in Navantia's Shipyard in Ferrol. Works included the supply of distribution boards, lighting appliances and cabling, as well as the whole installation of all the systems and the final test and delivery procedures.

TRAINING VESSEL UNIÓN PERUVIAN NAVY

(SIMA PERÚ)

Electrical installation in **training vessel for the Peruvian Navy** "Unión" built by SIMA's shipyard (Callao – Perú). The works included the supply of main and emergency switchboards, distribution boards, transformers, batteries, lighting appliances and cabling, as well as the whole installation of all the systems and the final test and delivery procedures.

OUR TECHNICAL DEPARTMENT HAS ASSISTED IN THE ABOVE PROJECTS AND UNDERTAKEN THE FOLLOWING ACTIVITIES

LHD VESSELS

AUSTRALIAN NAVY · FERROL

(GHENOVA)

Development of detailed engineering for LHD vessels for the **Australian Navy**. The ships were built in Navantia's shipyard in Ferrol. One line diagrams and connections schemes were set for power, lighting and control systems

FRIGATES F-310

NORWEGIAN NAVY · FERROL

(NAVANTIA)

Update of functional engineering for the frigates F-310 (5 vessels) for the **Norwegian Navy**. Short circuit calculations, selectivity, load flow and one line diagrams were updated according to the latest technical specifications on equipment and systems.



SUPPLY VESSEL BAP-215

PEMEX · FERROL

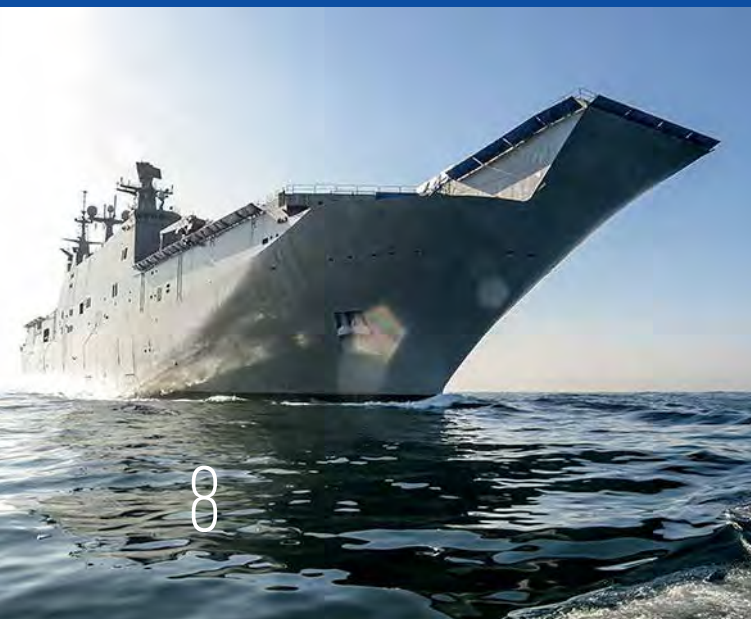
(REGENASA)

Detailed engineering for the system integration in accommodation areas for the **supply vessel BAP-215** built in Navantia's shipyard in Ferrol. Integration was made with Foran V70 (3D model) and includes cable trays, piping and HVAC. Construction plans were made for onboard installation of all the systems, as well as electrical cabling, lighting calculations, connection diagrams and routes of cables.

SUPPLY VESSEL HJB-1700

(H.J. BARRERAS)

Detailed engineering for structural blocks of **supply vessel HJB-1600** built in H. J. Barreras' shipyard. 3-D model for structural layout was made using Foran V70 as well as detailed drawings for cutting structural steel, inventory of pieces, etc.





OTHERS

INDUSTRIAL PROJECTS

ARE SUCCINCTLY
DESCRIBED BELOW:

WIND TURBINES

BRASIL • (ALSTOM-WIND)

Supply of **test switchboards** for **wind turbines** installed in Brazil. The equipment was fully designed according to international standards in order to test the generators, turbines and auxiliary systems.

MAINTENANCE OF THE ELECTRIC POWER

NOSTIÁN, A CORUÑA • (URBASER)

Maintenance of the electric power network for the urban solid waste management plant located in Nostian (A Coruña - Spain).

TUNNELS OF THE HIGH-SPEED LINE

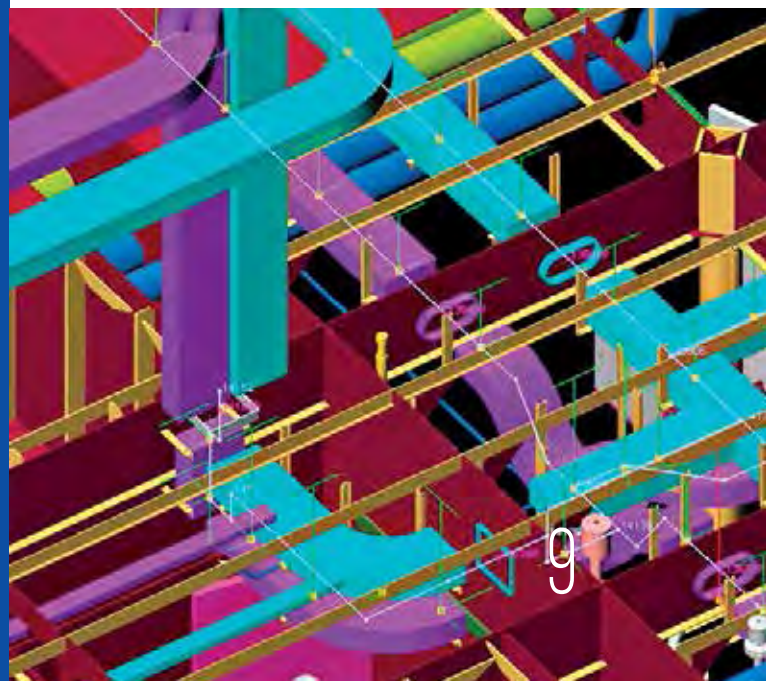
OURENSE-SANTIAGO • (PROSEGUR)

Installation of **security and signalling elements** along tunnels of the high-speed line Ourense – Santiago.

FIRE DETECTION AND CCTV

INDITEX • FRANCIA • (PROSEGUR)

Installation of **fire detection and CCTV** systems for Inditex **clothing boutiques** in Toulouse, Paris and La Rochelle (France).





PHOTOVOLTAIC PARK

BADAJOSZ · (ISOLUX CORSAN)

Whole installation of **photovoltaic park** Valverde de Mérida (11.45 MW). Installation of photovoltaic panels and motors, their control panels and the cabling of all the components.

SOLAR THERMAL PLANTS

GRANADA · (COBRA INSTALACIONES Y SERVICIOS S.A.)

Electrical installation of auxiliary boilers for **solar thermal plants** Andasol-1 and Andasol-2. Installation and commissioning of control and instrumentation equipment.

MAINTENANCE OF THE COMMUNICATION NETWORK CORREOS TELECOM

(ERICSSON NETWORK SERVICES, S.L.U.)

Maintenance of the communication network of Correos Telecom. Modifications and overhaul of elements and equipment to upgrade the network to new technologies.

SANTIAGO AIRPORT

SANTIAGO DE COMPOSTELA · (ISOLUX CORSAN)

Electrical installation in the new terminal area of the Santiago airport. Installation of cable trays and pipes, control and distribution panels, cabling and connections of different equipment (pumps, air conditioning units, filters, boilers, lighting, etc.)

PHOTOVOLTAIC PARKS

CASTILLA-LEÓN

(TEYDI (Técnicas Eléctricas y Desarrollo Integral, S.L.))

Whole installation of **photovoltaic parks** MOTA-1 (1 MW), MOTA-2 (1,5 MW), CAMPOLUGAR-1 (1 MW) and CAMPOLUGAR-2 (1 MW). Installation of photovoltaic panels and motors, their control panels and cabling of all the components.

Supply of control panels for the **photovoltaic park** MOTA 1 (1 MW)

SOLAR THERMAL PLANT

C. REAL · (COBRA INSTALACIONES Y SERVICIOS S.A.)

Electrical installation of trackers for **solar thermal plant** Manchasol-1 and Manchasol-2. Installation and commissioning of controllers for the movement of parabolic troughs in the solar collector field.

Electrical installation of tracing for piping and tubing in **solar thermal plant** Manchasol-2.

AIR CONDITIONING SYSTEM

(OPERADORA DE COMUNICACIONES "R")

Supply of control and distribution switchboards for **air conditioning system** in the head office of the Spanish phone company R.

WATER TREATMENT PLANT

CANAL DE ISABEL II GESTIÓN

(ERICSSON NETWORK SERVICES, S.L.U.)

Supply of main switchboard for distribution and control for pumping automation in the new **water treatment plant** of Canal Isabel II in Madrid (Spain).



