

**Ingeteam**

Innovation and Technology for Customer Service

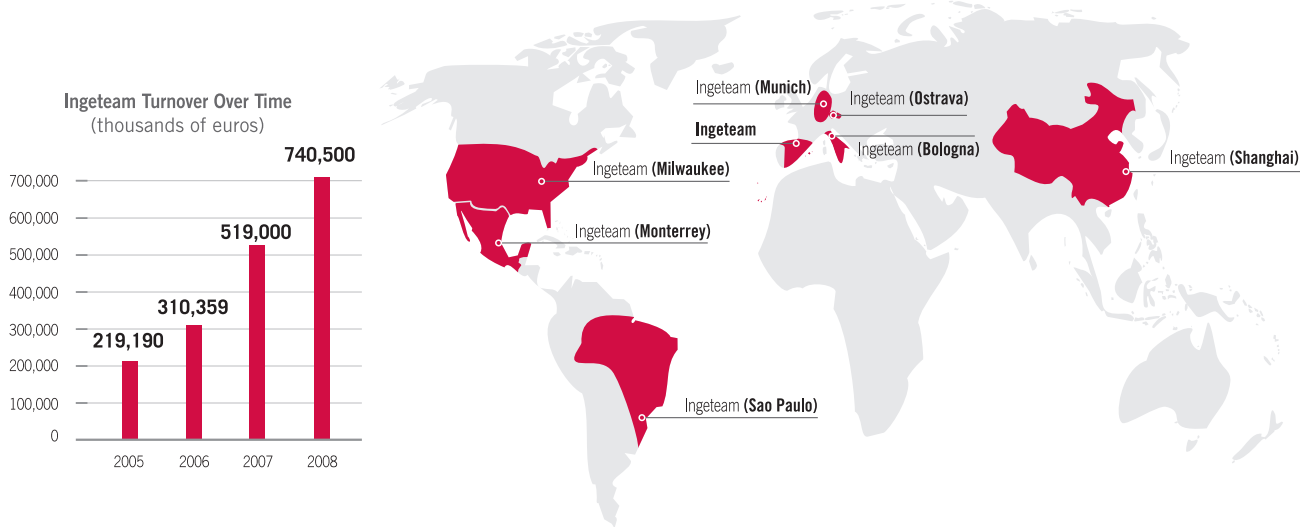


- A corporation structured into six divisions: **Energy, Industry, Marine, Traction, Basic Technologies and Service.**
- Technology and innovation as a driving force for growth. Investment in **R&D** in 2008: **25.500.000 euros.**
- **Innovation, service, quality and flexibility.** Total adaptation to our customers' requirements.
- More than 60 years of experience in the electrical sector and more than 35 in the electronic sector.



**Ingeteam**

International Presence



Integral Solutions for  
Conventional Power Generation

**Ingeteam**



A Comprehensive Offer with Individual Solutions Adapted to the Needs of Each Client or Project

Proven experience in power generation processes

Ingeteam Industry

Engineering, supply and commissioning of automation, electrical and instrumentation systems for **conventional power generation plants**:

- Cogeneration (combined heat and power)
- Combined Cycle Power Plants
- Modernization of Conventional Thermal Power Plants
- Desulfurization Plants, etc.

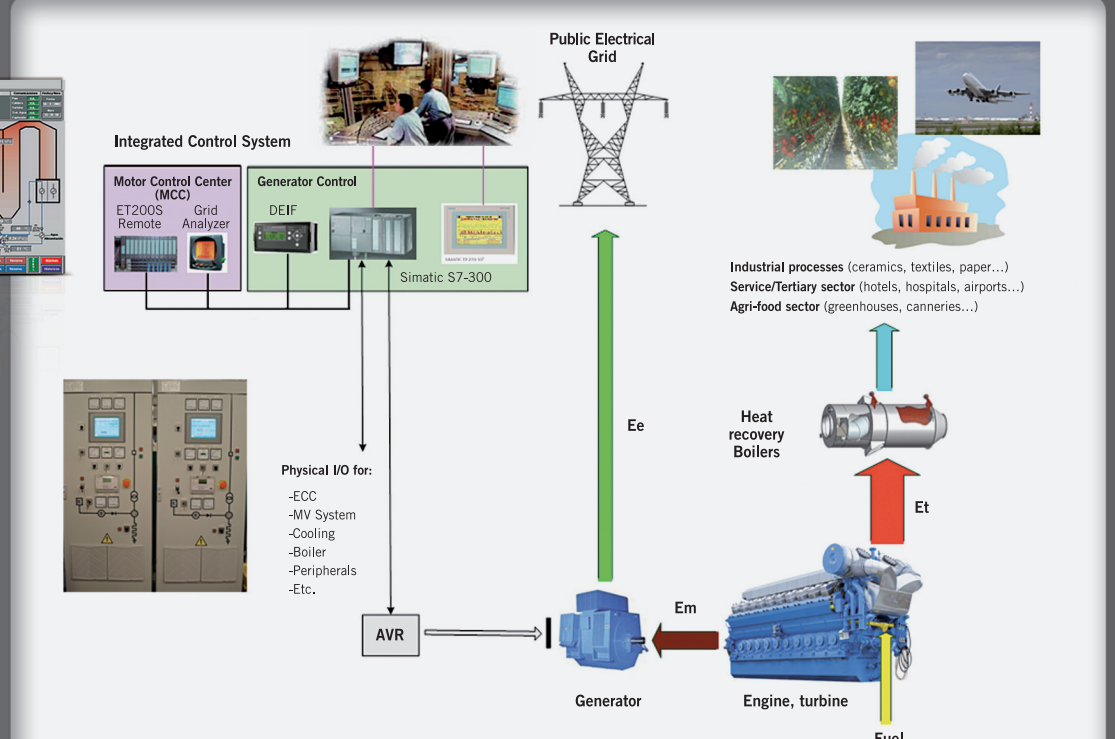
Turnkey Solutions

- Project **management and planning**.
- Complete **electrical engineering**.
- Development of **software, PLCs, SCADA and protection**.
- **Integration and coordination** with other suppliers.
- **Electrical assembly** and/or assembly supervision.
- Commissioning.
- Integral testing at our offices.
- **Training**.
- Maintenance services and **24-hour online** assistance.
- **Spare parts**.

Control Systems

Electronic equipment and specifically developed software is used for automation of power generation plants.

This leads into high quality an optimal final products and its adaptation to the particular features of each plant.



Integrated Control System  
Cogeneration Plants

- Interconnection to the electrical grid: line protection, measurement and control of positions.
- Integrated control for generators:
  - Control sequences.
  - Voltage and reactive power regulation.
  - Synchronization.
- Control of auxiliary systems (water, air, etc.).
- Boiler control.
- SCADA systems for supervision and control:
  - Monitoring.
  - Reports and trends.
  - Alarms and events.
  - Integration with other control equipment.
- Remote control, supervision and assistance.

Distributed Control System (DCS)  
Combined Cycle Power Plants (BOP)  
Modernization of Conventional Thermal Power Plants  
Desulfurization Plants

- Control and supervision of the plant's electrical grid.
- Logging of events and disruptions.
- Complete configuration from the Engineering Station.
- Alarm processing and generation of reports.
- Monitoring of the electrical variables.
- Communication with the plant's integrated control system.
- Communication with the substation's control system.
- Integration by communication with metering and protective elements.
- Specific control functions, such as: control of transformer voltage regulation, slow transfers from busbars, diesel generator control.

Design and Construction  
of Electrical Panels

- Distribution panels from 1 to 36 kV.
- Transforming substations.
- Motor Control Centers, MCCs, from 400 Vac to 7.2 kV.
- Control and protection panels.
- Lighting, pushbutton panels, etc.
- Vac and Vdc distribution panels.
- Desks, consoles, synoptic/block diagrams.

Complete Electrical Installation

- Electrical connection substation.
- Main and auxiliary services transformers.
- Electric generators.
- Medium-voltage distribution.
- General plant control system, regulation, electrical protection, monitoring and operation.
- Motor Control Centre (MCC).
- Low-voltage distribution and lighting.
- Batteries, UPS and DC distribution.
- Earthing Systems.
- Electrical installation.

Maintenance and Assistance Services

Ingeteam Industry has a specific division devoted to this specialty under the name of Complementary Customer Services, CCS.

CCS guarantees a range of after-sales services to address any customer need after the installation has been put into service.

Online and 24-Hour Assistance

- Scheduled preventive maintenance.
- Technical assistance.
- 24-hour hotline.
- Spare parts management.
- Ongoing training for maintenance technicians and operators.
- Online assistance permitting remote access to the plant from portable data devices, (PDAs, PCs, etc.), as well as online access to control and automation programs for the facility, the supports available in the facility: telephone, Internet, 3G, satellite, etc.

