



# ≡ Ardanuy ≡



CONSULTING ENGINEERS AND ARCHITECTS



## PRESENTATION



**Josep-Maria Ribes**  
PRESIDENT & CEO

**Railways**  
**Undergrounds**  
**Tramways**  
**Construction**  
**Telecommunications**  
**Energy**  
**Industry**  
**G.I.S.**

**Feasibility studies**  
**Planning**  
**Design and projects**  
**Work supervision**  
**Technical assistance**  
**Purchase Management**  
**Project Management**  
**Consultancy**

**Ardanuy Ingeniería, S.A.** is an **engineering and architecture consulting** company specialized in **studies, projects, work management and technical support for railways, undergrounds, trams, construction, electromechanic systems and the energy field: electrical engineering and hydrocarbons, telecommunications, environment, waste management and industry.**

The company was founded in December 1992 and currently employs a permanent team of **100 fully qualified engineers and architects**. Other experts also act as consultants to Ardanuy's staff in specific projects. The company's sales for the year 2009 exceeded **9,200,000 Euros**. More than 750 projects have been carried out since the company's beginning up to the spring of 2010.

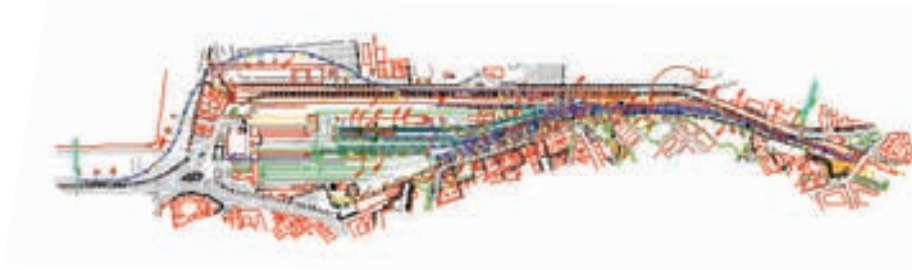
**Ardanuy Ingeniería, S.A.** operates mainly in **Spain**, where it has offices in Madrid, Barcelona, Valencia, Seville and Tenerife; also in America: **Chile, Cuba, US, Puerto Rico**; Africa: **Morocco, Egypt, South Africa**; or Europe: **United Kingdom, Ireland, Poland, Romania, Hungary, Bulgaria, Latvia, Lithuania and the Czech Republic**. **Ardanuy Ingeniería, S.A.** currently has **three subsidiary companies: one in Lithuania (UAB Ardanuy Baltic), one in Morocco and another in Poland (Ardanuy Polska Sp. z.o.o.)**. Some projects have been developed under the frameworks of the following programmes: Ispa, Phare and Tacis, implemented by the European Union and the EBRD (European Bank for Reconstruction and Development) with the support of Ardanuy's office in Brussels. The company also maintains the quality control standard ISO 9001:2001 as well as the international environmental standard ISO 14001. The company is a member of EFCA (European Federation of Engineering Consultancy Associations), TECNIBERIA (Spanish Association of Engineering, Consultancy and Technological Services Companies), FIDIC (International Federation of Consulting Engineers) as well as collaborating with IESE (Business School of the University of Navarra). Parts of the company's profits are invested in the R&D programme and donations to NGOs.



**Headquarters in Madrid**



## RAILWAYS, UNDERGROUNDS AND TRAMWAYS



In this sector, **Ardanuy Ingeniería, S.A.** carries out projects for high-speed lines (up to 350km/h), intercity lines (160-220km/h) as well as local and suburban lines that connect residential areas with important cities. **Ardanuy Ingeniería, S.A.** is highly specialised in **rolling stock**, infrastructure projects together with those related to superstructure and facilities: **track, signalling, ERTMS, CBTC, ATP, ATO (Automatic Train Operation), telecommunications, digital transmission systems, radio communications, conventional and rigid catenary, DC and AC power traction substations, remote control systems and traffic remote controls (CTCs).**

The company has undertaken several studies, projects and work supervisions for new railway lines, track renewal or duplication, new stations, electrification, signalling and communications, as for example: High-speed line Barcelona - Madrid, Madrid - Toledo, Madrid - Valladolid; the Guadarrama tunnel (27 km) and the railway station in Cádiz, among others.



**Ardanuy Ingeniería, S.A.** has also developed, within its R&D programme, two software packages for mixed traffic, **RailPower** and **RailTraffic**, to calculate the location of electric traction substations on rail lines or undergrounds as well as the power, voltage drops and journey time depending on the diverse types of rolling stock. These developments have partly been financed by the Spanish Ministry of Science and Technology (PROFIT programme) and the IMADE (Madrid's Development Institute).

In the field of urban transport, the **company has led numerous projects for lines and underground stations, trams and transport by cable** in many cities: Barcelona, Madrid, Valencia, Bilbao, Seville, Málaga, Alicante, Tenerife, San Juan de Puerto Rico, Valparaíso (Chile). Apart from the rail installations, the company specialises in **electrical and mechanical installations for tunnels and stations**: medium and low voltage, lighting, ventilation, air conditioning, pumping stations and fire protection systems among others. Some projects in this field include: work supervision of the signalling of lines 1 and 2 of Metro de Barcelona (non-stop service), technical support for work supervision of a stretch of the line Zaragoza-Huesca and the detail project for the electrification of line 1 of Tenerife's tram.

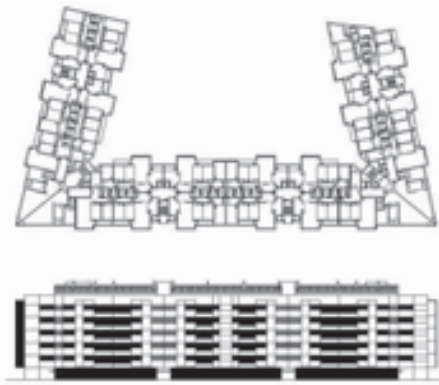


The company's clients in this field are the Public Administrations, Local Corporations and both national and foreign Railways and Undergrounds. As a specialized company, Ardanuy collaborates with other big engineering companies (SENER, IDOM, TYPSA, PROSER, IBERINSA ...). The company is a member of RAILGRUP (Railway Companies Association in Catalonia) and ADAF (Rail Action Association) led by RENFE and in which the main players of the Spanish rail sector participate.



## ARCHITECTURE AND CONSTRUCTION

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The Department of Architecture, Construction and Town Planning of **Ardanuy Ingeniería, S.A.** offers a wide range of services: site location, feasibility and technical studies, designs and projects, work supervision and administration (on behalf of the owner), technical support and advice, project management, pathology studies, safety and health studies, etc. The company is involved in projects for **Hotels, Residences, Hospitals, Shopping Malls, Office and Residential Buildings, Plants, Industrial Park Planning, Alteration, Rehabilitation and Restructuring of Buildings.**

The department carries out the complete execution concerning new buildings, both **architectural and artistic design** as well as all the engineering aspects: **floor mechanics, structures, topographical survey, etc.** These projects also include high-technology services and the corresponding **electrical and mechanical facilities**: integrated control, air conditioning and heating, fire protection, transformation centres, low tension and lighting, electrical equipments, telecommunications, drinking water, sanitary hot water, communications and anti-trespassing systems.



Many projects in this field can be highlighted: town-planning parks, universities, hotels, offices, residential buildings, restoration of historical buildings and many rail and underground stations, as for example: the new library of the Universidad de Navarra (15,000 m<sup>2</sup>), the new ADIF's station Término de Cádiz, and the supervision of the installations of the new hospitals (Norte, Sur and Santa Cruz) in Tenerife.

In these projects, the company has collaborated with other construction companies: ACS, DRAGADOS, ACCIONA, FCC, COMSA, DUMEZ, OHL, PLODER, etc, and with some administrations: IASS (Social Service Institute) from Tenerife.



## CIVIL ENGINEERING, G.I.S.



### Roads and Civil Engineering

**Roads and Civil Engineering** represent an important activity within **Ardanuy Ingeniería, S.A.** In this field, the company is highly competitive and specialised in designing compatible solutions with a sustainable development.

The company has been present in many transport infrastructures works planned by Spanish public administrations: **high-speed lines, conventional lines, roads, undergrounds and tramways**; covering from the outset, feasibility and informative studies, preliminary designs, basic projects, construction and work phases, and the technical support.

The company is very experienced in the most common specialities of lineal civil works: alignment, geotechnical works, drainage, structures, track, roadbeds, environment, health and safety; both in new works and rehabilitation and improvement works, developing strong and specific methodologies to carry out all of them.

The roads and Civil Engineering department of **Ardanuy Ingeniería, S.A.** has participated in several projects concerning energy and industry, designing its accesses, foundations, structures, land rehabilitation, etc. for new installations of energy generation and transportation.

### Geographical Information System (G.I.S)

**Ardanuy Ingeniería, S.A.**, offers applications development in GIS medium for public administrations, logistics, distribution and transportation companies, emergency services, business centres and big service companies for water, gas, electricity, telecommunications, railways, factories, industrial plants, etc.

To be highlighted is the software pack Rail-KM (Rail-Knowledge Management), which allows all information and documentation concerning railway lines to be included in a single application. This software has been fully developed by the R&D department of **Ardanuy Ingeniería, S.A.** and partially financed by IMADE (Madrid's Development Institute).

A Geographical Information System (GIS) called SIGGLO has also been developed in order to manage more than 4,000 km of pipelines which belong to the company CLH (Spanish logistics company in refined products).





# ENERGY

## Energy



**Ardanuy Ingeniería, S.A.** has wide experience in the field of energy production and distribution, having carried out many **electrical engineering** projects: electric traction substations, voltage lines, distribution and transformation centres for voltages of 400, 220, 132, 66, 45, 30, 20, 15, 6 y 3 kV for electric traction both in voltages AC and DC.

The company has completed projects and work management for more than 200 traction substations -with a total installed capacity of almost 3,000 MW- located in Spain, France, Morocco, Chile, Bulgaria, Poland and South Africa, among others.

Concerning **high-voltage lines**, the company has accomplished more than 1,200 km of voltages that range between 400 kv and 15kv.

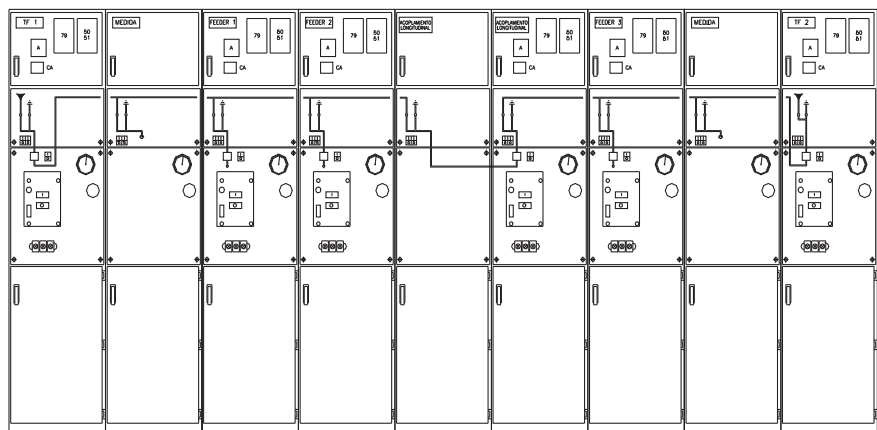
In addition, many low-voltage distribution projects have been developed. In this area, the company is responsible for the electrical engineering and associated mechanics, as well as for the construction and auxiliary civil works (earth moving, access roads, drainage, etc.).

Within this speciality, **Ardanuy Ingeniería, S.A.** has developed numerous projects for high-tension distribution centres for the electric company ENDESA FECSA.



**Ardanuy Ingeniería, S.A.**, offers its consulting services and technical support in the area of renewable energies, a sector which is currently experiencing a significant growth in Spain, especially wind power, PV solar power, hydroelectric power and cogeneration systems for industrial plants and other centres. The company is a member of the Spanish Energy Association.

**Hydrocarbons** treatment in refineries and other places is another of the fields in which the company is involved. Projects on loading stations for diesel oil distribution for the oil company CEPSA-ELF have already been completed: pipelines, control systems, deposits, etc.





# SAFETY ENGINEERING

## Safety Engineering

Within the rail sector, **Ardanuy Ingeniería, S.A.** has carried out many projects in the field of Safety Engineering. The company works with construction companies, rolling stock and equipment manufacturers and installation companies, participating in the Safety Cases of products and applications (generic and specific), as well as carrying out Independent Safety Assessments (ISA) for these companies and rail administrations, in accordance with regulations CENELEC EN 50126, EN 50128 y EN 50129.

These works include RAMS analysis (reliability, availability, maintenance and safety) of different areas: infrastructures, signaling, electrification, communications, power supply, etc. on rail lines.

In addition, **Ardanuy Ingeniería, S.A.** specializes in health and safety coordination during works, and is also in the process of implementing a management system for risk prevention in the workplace, in accordance with regulation OHSAS 18.001:2007.



## Clients of Ardanuy Ingeniería, S.A.

### Public administrations

International Cooperation Agency, Arpegio, European Bank for Reconstruction and Development (EBRD), Comunidad Autónoma de Madrid, Consorcio de Aguas de Asturias, Consorcio de Transportes de Bizkaia, Administrador de Infraestructuras Ferroviarias (ADIF), Eusko Jaurlaritza/Gobierno Vasco, Generalitat de Catalunya, Generalitat Valenciana, Gestió d'Infraestructures, S.A. (GISA), ETS (Red Ferroviaria Vasca), Cabildo Insular de Tenerife, Spanish Ministry of Development, Mintra, European Commission (Ispa, Phare, Tacis), Kedainiai Municipality (Lithuania), Telsiai Municipality (Lithuania), Eastern Distribution Networks (Lithuania), Defence Ministry (Lithuania), Ignalina Nuclear Power (Lithuania), Vilnius University (Lithuania), Klaipėdos University (Lithuania), etc.

### Railways

ADIF, RENFE, Metro de Madrid, Ferrocarriles de la Generalitat de Catalunya (FGC), Ferrocarriles de la Generalitat Valenciana (FGV), Ferrocarril Metropolitano de Bilbao, FEVE, EuskoTren, Metro de Barcelona, Metro de Bilbao, Metro de Valencia, Metro de Sevilla, Metro de Málaga, Metropolitano de Tenerife, Trambaix-Trambesós, ADIF, BDZ (Bulgaria), EFE (Chile), Merval (Metro de Valparaíso, Chile), MAV (Hungary), ONCF (Morocco), SNCFR (Romania), LDZ (Latvia), LG (Lithuania), PKP (Poland), Tren Urbano de Puerto Rico, BART (San Francisco) etc.

### Engineering and Consultancy Companies

ALATEC, AEPO, ARCADIS, AUDING, BBJ, CLOTHOS, COTAS, COWI, DE-CONSULT, EPTISA, ETT, EUROESTUDIOS, EUROPROJECT, GETINSA, GPO, GOC, IBERINSA, IDOM, INECO, INFRAES, INITEC, INOCSA, INTECSA-INARSA, INTRAESA, LIBRA, OVE ARUP, PEYCO, PROSER, QUALITY SYSTEMS, SECOFISA, SENER, SGS-TECNOS, SERCAL, SYSTRA, TEC-4, TIFSA, TRAIN, TRANSURB CONSULT, TYPESA, ATKINS, etc.

### Construction and Promoting Companies

ACS, ACCIONA, ALDESA, AZVI, COMSA, FCC, FERROVIAL, ISOLUX, OHL, etc

### Industrial Companies

ALSTOM, BACH ELECTRANS, CEPESA, CLH, ENDESA, EFACEC, GRIFOLS, MONTREAL, RETEVISIÓN, SIEMENS, TRANSPORTES DE BARCELONA, TRAPSA, UNIVERSIDAD DE NAVARRA, ZARDOYA OTIS





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