SPAIN, HIGH-TECH COUNTRY
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Renowned worldwide for its history, language, climate, diversity and tourism, Spain is so much more. Spain is a high-tech country, with first-class infrastructures, research centres and leading companies in a wide variety of sectors, including energy production and management, major public works projects, transport management, environmental technologies, information and communication technologies, health technologies, naval and aerospace technology, and automotive technology.

Dynamic leading-edge Spanish companies in the field of infrastructure place Spain at the very top of the league, with firms involved in projects spanning the globe. Spanish construction and engineering companies are also internationally prestigious global leaders, with a record of pioneering projects worldwide, boasting a high degree of know-how. Spanish companies manage nearly 42% of the world’s major transport concessions.

Spain is at the vanguard of energy production and management technologies. In the field of renewable energy, Spain is a global leader in every area. Likewise, some of the world’s top companies in the area of electricity, oil and natural gas are from Spain, and they stand out for their application of the latest innovations to sustainably obtain, produce, and manage energy resources.

Strongly committed to all those fields able to improve environmental sustainability, Spain is also an international reference for comprehensive water-cycle management, recycling, and exploiting waste. The top producer of desalinated water in Europe, an European leader in treated water reuse, Spain stands out not only for its technological innovation, but also for its regulatory framework.

Spain is an undisputed world technological power in high-speed trains. With the largest high-speed railway network in Europe, and second largest in the world, Spain also boasts the most modern and technologically advanced train fleet. The Spanish railway industry is present on six continents, involving many Spanish firms in some of the world’s most important railway infrastructure projects.

Spanish industry also holds leading positions in aerospace systems, the naval sector, and ICT. Moreover, Spain has one of the best universal health systems in the world, at the vanguard of management and administration, a pioneer in implementing advanced technological solutions, such as e-prescriptions and electronic medical records. Spain ranks fifth worldwide in health technology exports, and is a key player in highly specialised strategic areas such as production of essential plasma-based medicines. Some foreign multinational industry leaders have established their centres of excellence, production and distribution in Spain. Spain is, moreover, a reference in medical research.

Finally, Spain is at the top in automotive technologies. It is Europe’s number-one manufacturer of industrial vehicles, and second largest for commercial vehicles. Furthermore, Spain ranks third in Europe and sixth in the world as a manufacturer of auto parts. This report aims to highlight—without any intention of being exhaustive—Spain’s immense technological potential, and that of its companies in many strategic areas.
Spanish construction and engineering companies are involved in the world’s most important infrastructure projects, in more than 90 countries on 6 continents.

- ACS is the largest western construction company in the world, and is the world leader in kilometres of tunnel built with a tunnelling machine.
- OHL is the world leader in hospital construction.

Some projects in which Spanish companies are involved include:

- Expansion of the Panama Canal (consortium led by SACYR), one of the largest international civil engineering projects.
- SR99 Tunnel in Seattle (ACS), 2,700 m long, using the world’s largest tunnelling machine.
- Terminal T2 of Heathrow airport (FERROVIAL), the first new generation terminal (the greenest in Europe).
- Açú Superport in Brazil (FCC and ACCIONA), the largest port project currently underway. It will be the third-largest port in the world, and the one with the greatest capacity in the Americas.
- Crossrail Programme (FERROVIAL), the largest infrastructure project in Europe.
- Belo Monte Hydroelectric Plant, Brazil (TYPSA), the third-largest hydroelectric plant in the world.
- St. Gotthard Tunnel, Switzerland (FCC), the longest tunnel in the world.
- Montreal Hospital Centre and Sidra Medical Research Centre in Qatar (OHL), two of the most technologically-advanced hospitals in the world.

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Highways in Brazil, Chile (ABERTIS, OHL), USA (ACS, FERROVIAL), Canada ACCIONA, ACS, FERROVIAL, India (ISOLUX CORSAN), Australia (ACS, FERROVIAL, OHL), etc.

Cable-stayed bridge over the Danube between Vidin (Bulgaria) and Calafat (Romania) (FCC) that forms part of Corridor IV, linking Dresden with Istanbul.

Cable-stayed bridge over the Firth of Forth (Scotland) (ACS), one of the largest infrastructure projects in Europe.

Bicentennial Viaduct, Mexico City (OHL), that boasts one of the most advanced electronic toll systems in Latin America (INDRA).

Monaco Floating Dock, the largest floating dock in the world (DRAGADOS-ACS, FCC), 350 m long, 28 m wide, and 25 m high.

Alqueva Dam, Portugal, the largest reservoir in Europe (ACCIONA).

Atotonilco Wastewater Treatment Plant, Mexico (design by TYPSA).
Spain is home to the world’s top transport infrastructure management company by number of concessions of highways, railways, airports or ports under construction or management (ACS). In this category, GLOBAL VIA-FCC-BANKIA ranks 2nd, ABERTIS 4th and FERROVIAL/CINTRA 7th. In capital investment (2013*), FERROVIAL/CINTRA ranks 1st in the world, followed by ACS (HOCHTIEF+IRIDIUM), SACYR (7th), GLOBALVIA-FCC (8th) and OHL (9th). Other Spanish companies are also among the largest in the world: ACCIONA, ISOLUX CORSAN, SENER, TECNICAS REUNIDAS...

Spanish companies manage nearly 40% of the major transport concessions in the world*

- ABERTIS is the largest operator in the world in the sector of highway concessions, managing more than 7,500 km around the globe, especially in Latin America.
- FERROVIAL is the largest manager of transport infrastructures in terms of volume invested. It manages five airports in the UK.
- OHL is one of the top 10 operators in the world, and number-one in Latin America, in terms of investments made, number of concessions, and km under management.
- 3,000 facilities for air traffic management in more than 140 countries use the Spanish technology of INDRA, the world leader in supplying air traffic management systems (including China, Australia, India, and Germany—100% of its airspace).
- ISOLUX CORSAN has a leadership position in India (more than 1,500 km of highways and 500 km of power transmission lines).
- ACS is the company which has built the most underground railway projects worldwide, including in New York’s subway system.
- Spanish companies (ACS, ACCIONA, CAF, FCC, FERROVIAL, ISOLUX, OHL, SACYR) are involved in building and managing or leading underground transport systems in such major world cities as London, Rome, New York, Washington, Hong Kong, New Delhi, Algiers and Sao Paulo.
- Spanish companies are leaders in the management of toll roads and parking systems: ABERTIS, FERROVIAL, INDIAR, ISOLUX, OHL.
- AENA is the world’s leading airport organisation in terms of passengers (200 million).

* According to Public Works Financing Ranking 2013.
Spain sets the world’s standards in this field, and is a technological powerhouse.

- It has the largest high-speed train network in Europe, and the 2nd-largest in the world.
- It boasts the most modern and technologically advanced train fleet.
- Spain leads high-speed rail design and projects.
- Spanish companies are managing the Mecca-Medina high-speed rail project, the most important infrastructure project in the Arab world in decades, led by the Spanish-Saudi consortium AL SHOULA GROUP, comprising 12 Spanish companies (RENFE, ADIF, INECO, TALGO, OHL, COPASA, COBRA, CONSULTRANS, INMATHEA, INABENSA, DIMETRONIC and INIBESA) and the Saudi firms AL SHOULA and AL ROSAN.
- OHL is leading the construction of the high-speed railway linking Ankara and Istanbul, one of the 3 most important railway projects in the world. CAF is supplying the trains.
- System 1 of Mexico City’s Urban Rail System, the largest passenger railway concession in the Americas, was built by a consortium of Spanish companies led by CAF with the participation of ADIF, INECO, OHL, INDRA and INABENSA.
- CAF is in the world’s top 10 for design, manufacturing, maintenance and supply of railway equipment, material and systems, using leading-edge technology.
- TALGO is one of the world’s top 5 manufacturers in terms of high-speed trains manufactured and in operation, with a high capacity for technological innovation.
- ADIF is leading the project for the European Rail Traffic Management System, or ERTMS.
- The Da Vinci System, developed by INDRA and the intellectual property of ADIF, is the platform of reference in rail traffic management. The Mecca-Medina line will use this management technology.
- Spanish companies are involved in the underground railway systems of cities from around the world, including London, Rome, New York, Washington, Hong Kong, New Delhi, Algiers, Sao Paulo and Riyadh (ACS, ACCIONA, CAF, FCC, FERROVIAL, ISOLUX OHL, SACRAM). Among them, two of the largest international civil engineering projects are the construction of three lines of the Riyadh underground (by an international consortium led by FCC, amounting more than 6.000 M€) and Line 2 of the Lima underground system (recently entrusted to a group led by FCC and ACS).
Electricity, Oil and Natural Gas

Spain ranks 3rd in the European Union in terms of installed hydroelectric power. IBERDROLA is among the 5 largest electric companies in the world.

ABENGOA is an international leader in developing electricity transmission and distribution.

ISOLUX-CORSAN is one of the world’s major operators in the field of installation and maintenance of high-voltage electricity transmission and distribution.

ENDESA is one of the leading electricity operators in Latin America, leading the supply of electricity to 5 of its 6 largest metropolitan areas (Bogotá, Lima, Buenos Aires, Rio de Janeiro and Santiago de Chile).

ACS is one of the world’s major developers of energy installations.

GAS NATURAL FENOSA is the largest integrated natural gas and electric company in Latin America. It is the number-one operator for natural gas distribution in Latin America, and one of the principal liquefied Natural Gas operators in the world.

Acciona and Dragados Offshore (ACS) have built the world’s first offshore natural gas terminal for unloading and regasifying liquefied natural gas, the Cajón Adriatic Terminal (Adriatic).

REPSOL is one of the world’s 10 largest private oil companies, and a leader in extraction technologies. It has made 5 of the world’s most important discoveries in recent years.

TECNICAS REUNIDAS ranks 1st in Europe and 6th in the world for engineering and building turnkey refineries. It is one of the European and world leaders for petrochemical engineering projects. It built Europe’s largest refinery, in Turkey, and the largest hydrotreater in Russia.

ACS is the world’s largest operator for open-pit mining services.

CEPSA is the world leader in production of LAB, a raw material for detergents.

The KALEIDOSCOPE PROJECT for processing seismic images, with 100% REPSOL technology, has been named one of the five most innovative projects in the world by the American Institute of Electrical and Electronics Engineers.
Renewable energy

Spain ranks among the world leaders in all areas of its industrial fabric, with top global firms and high investment in R&D&I giving it an international comparative advantage.

Spain is the European leader in wind power generation, ranking 4th worldwide in installed power.

Spain is the 3rd country in Europe and 4th worldwide in installed solar photovoltaic energy.

Spain has the highest installed solar thermoelectric capacity in the world. It has power plants in operation using the 4 available technologies: tower, parabolic cylinder, Fresnel and dishes.

More than 70% of the thermoelectric solar energy projects in the world are being developed by Spanish companies.

Spain is the world leader in different subsectors, such as manufacturing trackers or concentrated solar power systems. Spanish companies cover the entire silicon production chain.

Spanish companies are industry leaders:

- IBERDROLA is the world's top company in renewable energy production (mainly wind). At the vanguard of offshore wind-farm technologies, building some of the largest in the world.
- ABENGOA, world leader in the thermoelectric sector. Abengoa has the Mojave plant (California, USA) and is building and managing what will be the world's largest solar thermal plant in Solana (Arizona). Abengoa’s Solucar plant in Seville is the world’s most important private research centre.
- ACS-COBRA ranks 3rd worldwide in solar-thermal energy.
- ISOLUX CORSAN is the world leader in installed photovoltaic capacity.
- GAMESA is the world’s 4th largest manufacturer of wind turbines.

- ACCIONA, 6th largest company in the world in terms of wind power and 9th in solar thermal energy.
- SENER also holds leadership positions.
- ACCIONA, SENER and TSK are building the “Noor” solar thermal plant in Ouarzazate (Morocco), using parabolic trough technology, which is number 1 of its kind in the world in production capacity.
- In the Biofuels sector ABENGOA BIOENERGIA is one of the largest producers of bioethanol in the world. BIO-OILS, ACCIONA ENERGÍA and INFINITA RENOVABLES are all leaders in biodiesel production.
- RED ELECTRICA ESPAÑOLA has developed a world-class pioneering centre for optimising management of the integration of renewable energy, especially wind power, into the CECRE network.
- ACCIONA ENERGÍA has the world’s largest control centre for renewable energy installations.
Spain ranks 2nd in Europe as a manufacturer of commercial vehicles, and 11th worldwide.

Number-one manufacturer of industrial vehicles in Europe.

Leader in electric car technologies.

3rd in Europe and 6th in the world in auto parts manufacturing, with high investment in R&D.

GESTAMP is the world leader in designing, developing and manufacturing metal parts and systems for the automotive industry, with 94 plants and 12 R&D&I centres in 19 countries, and world leader in hot stamping, and number 1 in opening systems and mechanisms.

GRUPO ANTOLÍN ranks number 1 in the world for headliner substrates and other parts. One out of every 4 cars manufactured worldwide incorporates ANTOLÍN products.

ZANINI is the world’s leading manufacturer of wheel covers.

FICOSA is the world’s number-one manufacturer of rear-view mirrors for industrial vehicles.

Spain is an attractive place to invest, due to its competitiveness and highly-developed parts industry, as shown by the strong presence of multinationals from this industry.
Spain is ranks 1st in Europe and 3rd worldwide in ISO 14001 certificates for environmental management systems.

Spain is the world leader in every phase of the integrated water cycle management.

It is the top producer of desalinated water in Europe and the Americas.

4th country in the world in installed desalination capacity.

1st country in Europe and 2nd worldwide in the reuse of treated water.

7 of the world’s largest desalination companies are Spanish. ACCIONA, ABENGOA WATER, ACS, AGBAR, AQUALIA (FCC), CADAGUA (FERROVIAL), DHI, SACYT (SACYR), TECNICAS REUNIDAS, TRAGSA—control the world’s principal desalination installations: the biggest in the world, in Mexico (ACCIÓNA), the largest in India (ABENGOA WATER), El Realito and Acueducto II Mexico (FCC), etc.

Spanish companies are among those receiving the most global water intelligence awards: FCC (El Realito), ACCIONA (world’s best water company), ABENGOA (third) and SACYR (fourth). ACCIONA’s Beckton plant won for most innovative.

ACCIÓNA is the world leader in desalination of seawater and saltwater by reverse osmosis and in the construction of desalination plants.

AQUALIA (FCC) is the world’s 3rd-largest integrated water management company, and ranks 1st in Latin America.

ACS is the world leader in design, construction and operation of waste treatment facilities.

BEFESA is Europe’s number-one steel and aluminium waste recycling company.

URBASER (ACS) is one of the companies with the largest number of urban waste treatment facilities under management in the world.

FCC ranks 1st for industrial waste management in Austria, and 2nd in the UK.

Spanish companies are leaders in sustainability: AMADEUS (technological solutions), GAMESA (renewable energy), GAS NATURAL (natural gas distribution), IBERDROLA (electricity) and REPSOL (oil and natural gas production).*

* According to the 2013 Sustainability Yearbook, by ROBECOSAM and KPMG.
Spain ranks 5th in Europe by volume of ICT and telecommunications invoicing.

TELEFÓNICA is Europe’s top telecommunications company by investment volume, and 7th worldwide in capitalization of assets. Present in 25 countries and operator of reference in Latin America.

Spain is Europe’s number-one country in smartphone use.

INDRA is the world leader in electronic ID technologies and biometric solutions.

Spain is a leader in electronic signature services (FÁBRICA NACIONAL DE MONEDA Y TIMBRE/ROYAL MINT), ranking 5th in Europe and 9th worldwide in e-government.

AMADEUS is a worldwide reference in advanced technological solutions for the travel industry. Leader in global distribution systems (GDS), it is the largest travel and tourism transaction processor.

GRUPO ZED is the world’s top company in the development and distribution of mobile content.

SOFTONIC is one of the world’s most important download portals.

More than 650 million bank cards with EMV chips—10% of the world total—incorporate Advantis software marketed by SERVIRCO, which is the leader in Latin America.
Spain’s universal healthcare system is at the international leading edge in management and administration.

Spain has pioneered the implementation of high-tech innovations such as e-prescriptions and electronic medical records.

Spain ranks 3rd worldwide in assisted reproduction. GRUPO IVI is the world’s largest provider of these services.

Spain ranks 5th worldwide in health technology exports.

5th worldwide in biochemistry and molecular biology.

5th Eurozone country in scientific production, and 9th in the world.

Top-ranking country in Europe and 3rd worldwide in agrobiotechnology.

GRIFOLS is the world’s top company in production of plasma and haemoderivatives and holds a leading position in clinical diagnosis systems and medical supplies and equipment.

PHARMAMAR (ZELTIA) is the world leader in developing innovative cancer treatments using marine-based drugs.

INDRA, TELEFÓNICA, OESA and EVERIS are leading e-health companies, with a high R&D&I component.

Spain has the highest rate of altruistic organ donation in the world, doubling the EU average, and 8 points higher than the USA. The Spanish model for transplant management is widely considered the gold standard, has been recommended by the world health organization, and is being implemented in many parts of the world. The WHO has designated Spain’s national transplant organization (ONT) as a global partner in this area.
AIR AND SPACE TECHNOLOGY

Spain’s aeronautical industry ranks 5th in Europe in terms of turnover, with heavy investment in R&D&I.

AIRBUS and HISPA\NAT are industry leaders.

Spain ranks 7th worldwide in satellite manufacturing.

Spain is the European leader in space programmes.

Half of the world’s commercial airplanes include Spanish technology. Spain is one of few countries in the world with the capacity to carry out the entire airplane production cycle.

AIRBUS, with partners including Germany, France and Spain, is a global leader in aerospace and defence.

AIRBUS DEFENCE AND SPACE, managed by Spain, is the world’s 2nd-largest manufacturer of military transport aircraft, and Airbus Helicopters is a global leader in civilian and para-public helicopters.

INDRA is one of the world’s top flight simulator companies, leading in such areas as helicopter simulators (the 1st certified in the USA for training with night-vision goggles, and the 1st certified by Chinese aviation authorities).

IBERIA is the world’s leading carrier between Europe and Latin America.

GMV is the world’s number-one independent supplier of ground control systems for commercial telecommunication satellite operators, and ranks among the world’s top 5 suppliers of telematic systems for public transportation.

HISPA\NAT is the world’s 8th largest satellite telecommunications operator, ranking 4th in Latin America, and the first operator to bring ka-band service to Latin America.

SENER is leading the European space agency programme developing effective technology for satellite formation flying.
Spain is a leader in naval military technology. The Spanish company NAVANTIA is a worldwide reference in the naval construction industry. It is among the world’s top 5 companies in military vessel design, present in more than 25 countries. Its advanced technology has won such contracts as building ships for the royal Australian Navy.

INDRA, a leader in advanced systems (radar, electronic defence, communications), supplies some of the world’s major navies.

SENER is able to design and manufacture any kind of vessel, thanks to its Foran software.
Information and Communication Technologies (ICT)

I IBM: centre of excellence to develop solutions for the healthcare industry (Barcelona).

I HP has established R&D centres in Spain.

I AMADEUS, technology supplier of reference in the international travel industry, chose Madrid as the headquarters for its new R&D&I centre.

Biotech and pharmaceutical industry

I LILLY: has set up one of its production plants in Spain, as well as one of the largest private R&D centres in the world.

I GSK: "Diseases of the Developing World Drug Discovery Centre (DDW)" one of the few in the world devoted exclusively to discovering new treatments for malaria, tuberculosis and other diseases characteristic of developing countries. CIB (Basic Research Centre), of great strategic significance for raising the level of productivity in the early stages of discovering new drugs.

I BAYER: has centralised its worldwide aspirin production in its research centre in the Spanish region of Asturias.

I CELGENE: first research centre devoted exclusively to R&D&I outside the United States, the CELGENE Institute of Transnational Research Europe (Seville).

I SERONO: has concentrated in Spain its global production of growth hormones.

I PZIFER, NOVARTIS, and GENZYME have also put their bets on Spain.

Aerospace industry

I AIRBUS: Centre of Advanced Composite Materials for Producing Curved Carbon Fibre Reinforced Plastic Panels (one of 3 centres of excellence in the world). Horizontal Stabilisers Centre of Excellence for all the AIRBUS aeroplanes in the world.

I BOEING: first R&D centre outside the USA, Boeing Research and Technology Europe.

Train and high-speed rail infrastructures

I BOMBARDIER: centre of excellence in railway signalling engineering and propulsion centre in Trápaga (Vizcaya).

I THALES ESPAÑA: world centre of excellence in railway signalling, space and security for energy production and distribution centres.