

JOSÉ GREGORIO BRIZ

GENERAL MANAGER OF THE CIVIL ENGINEERING AND ARCHITECTURE
STRATEGIC BUSINESS UNIT

and JOAQUÍN BOTELLA

PROJECT MANAGER FOR THE FIGUERAS – PERPIGNAN
INTERNATIONAL HIGH-SPEED LINE

QUESTION: If we consider SENER's long career, what would you highlight as the strongest points of the company compared to its competitors?

José Gregorio Briz: In the civil engineering area we are experts in all fields. Our distinguishing feature is that, in technologically complex projects, such as railways, particularly high-speed lines, underground rail systems, airports, etc. we have a global vision that we apply in all the process, since in order to design an infrastructure you have to know how it is going to be operated, its exploitation model. We take care of everything, from the initial conception through to start up, we can contribute with ideas to the client, advise about what type of transport system the client should consider, develop everything that has to do with conceptual engineering, detail engineering, we can support operational issues and even carry out the testing and commissioning, etc. This latter aspect is of great importance, particularly in turnkey projects. A railway, an airport or a metro system brings enormous

technological complications, which are made obvious in the testing and system approval phases. There are no engineering companies in Spain that deal with the process in its entirety, although there are some in the rest of the world, which is why SENER now competes globally. I think that this is our main asset.

Q: Could you give me an example of integral engineering?

Joaquín Botella: One of the latest examples of SENER's integral engineering is the international HSL section Figueras – Perpignan, where we have support the client in works that go from the design development until the last testing phases of the line. These are works in every technical specialities: open sky platform, tunneling, line electrification, safety installations of the movement and communications, tunnels' safety and, also, technical and interfaces coordination between all the design aspects. Valencia underground system was another one, we did the preliminary design projects for lines 3 and 5 and the integral management of the lines, including the design supervision, site management and collaboration work with the operator and with the Valencia underground. The Bilbao underground network was another integral project with different contracts: we did the preliminary studies, the function of the project, which collected together all the characteristics the line should have, layout design, installations, detail design for several sections of line 1 and 2, works supervision and then the line 1 start-up contract. In high speed we have done, for example, the Preliminary Design of the HSL in the Madrid – Zaragoza and Madrid – Valencia sections, the building projects of some line sections and site supervision, not just right of way but also catenary and another types of equipments of the line. The same applies to projects outside Spain, such as the Lisbon underground. In these cases, we seek to show the client that we can monitor the life cycle of the whole project, from the moment an idea is conceived until it is commercially operational. We take care of everything, and not all companies know how to do this.

“SENER
is competing
globally right
now”

*José Gregorio
Briz*

Q: One of the keys to success has been the international expansion, do you intend to continue with it?

J.G.: Yes, but without neglecting the national market, since if we



José Gregorio Briz, General Manager of the Civil and Architecture SBU.



are not well-known inside Spain we can hardly be known outside it. The challenges of the coming years are, apart from strengthening the national market, which is still our core market, to consolidate markets that now enjoy strong growth, such as Poland, Portugal, etc., later we must attend to the whole market around the Caribbean, particularly Mexico, but also Panama and Columbia, and perhaps USA, now that we have a Division in San Francisco. Another focal point of activity is in the United Arab Emirates, where we have also opened an office, in Abu Dhabi, and there are a great number of opportunities in civil engineering and architecture.

Q: SENER has a Civil Engineering and Architecture Division and an Aerospace Engineering Division, with an Aeronautics and Vehicles Department. Do they carry out joint projects?

J.G.: On the one hand, we have the engineering-architecture pair, which is one of the keys to our success: we address infrastructure projects with our own architecture studio, which works very well and is very well integrated with our engineering team. We occasionally decide to bring in an external architecture team, particularly in different markets, where we incorporate teams that are more conversant with local culture, or simply because the client asks for this, but our own architecture team, which knows very well how the planned installation works, has to oversee everything, particularly in questions related to functionality. On the other hand, we work on rolling stock with SENER's Aerospace Division (DAE), but the approach is very different and at the same time very complementary: our civil engineering department works for the Administration, taking care of the specifications of what is needed and which conditions the vehicle must fulfil and, eventually, we check the parts sent and begin built by the manufacturer. The DAE works for these kind of clients, such as CAF or Talgo, doing detail engineering. It is very important to have communication between both parties, and have both points of view well understood, because this is what will allow DAE to carry out good projects

and what will allow us to make good recommendations and specifications to our clients. The work of both groups is enriched by the exchange of technology and information. For example, this allows our civil department to issue realistic and well-grounded specifications. We are not going to include conditions impossible to fulfil and subsequently generate an amendment to the agreement between the client and the manufacturer, which always entails an additional cost. Clients are aware of this and appreciate it.

J.B.: Besides, there are other ways of cooperation in railway projects, such as the aerodynamic studies related to high speed railway operation: the effects of lateral wind, aerodynamic effects in tunnels and track ballast flight phenomena, jointly developed by the DAE and the civil sections, and that are already being applied in several HSL in Spain and in the international Figueras - Perpignan line. Those studies received the SENER 2008 Innovation Awards.

Q: What role does innovation play in civil engineering?

J.B.: We have been working in many R&D developments for a long time now. We have a train simulation model that can calculate travel time between two stations, energy consumptions, and all the aspects of movement at all times. It is an internal development that we use in almost all railway designs and improve continually. We also have another one for designing the traction network of a railway system, capable of measuring the whole electric traction network of a line. Also, innovation projects are being conducted with ADIF, such as IF Zone, related to the latest generation of electrical traction substations, and we now have a project with the Ministry of Development, Aurigidas, which continues to study the effect of ballast flight in HSL, etc. In projects, Barcelona line 9 is the first driver-free line in Spain and one of the longest of this kind in the world, and then there are the Automated People Movers for airports; With AENA, we made the first one in Spain years ago. In the future, we must continue to invest in R&D&I, as the lines will be faster and faster, linking more points on the planet, and international. It will be necessary to plan lines for speeds higher than the current ones, for example 500 km/h, so that in a few years, when these speeds can actually be reached, the infrastructures will be ready.

J.G.: In civil engineering, maintaining one's position requires increasingly large investments in R&D. SENER is interested in areas where there is little competition, those which have a very high technological component and where we have an advantage over the rest. However, being on the crest of the wave of technology requires effort and investment in terms of time and ideas. On top of this we have the advantage of being multidisciplinary, which makes technologically complex works much easier: questions related to safety, official approval and turnkey projects are easier to handle when you have experienced technical departments that learn and adapt very easily. We were the first to create railway and airport fixed installations departments, unlike run-of-the-mill civil engineering companies that only have civil engineers and afford installations a second-class treatment. Our path is one of success that others have tried to follow, with better or worse results, but we are still way ahead of them. ■■

“We can follow the whole life cycle of a project”
Joaquín Botella



Joaquín Botella, Project Manager for the Figueras - Perpignan High Speed Line.