

ABSTRACT

This thesis aims to study, analyze and present to the scientific community how electrification was developed in the province of Valencia in its lesser known early stage. We have studied: how the first Valencian electricity companies were formed; how they were created; what were the factors that motivated its creation; what was the origin of the capital needed to establish them; how they grew; what was the role of the Valencian bourgeoisie in the creation of these first companies and what was their experience in the market.

For this aim, we have collected information from different archives, the most relevant being, the Historical Archive of Iberdrola "Salto de Alcantara" and the Archives of the Provincial Council of Valencia. The first one stores information about the companies which, after successive procurement processes, ended up forming part of *Hidroeléctrica Española*, which was eventually named *Iberdrola*. In the second archive, we have found all of the license applications for people or companies addressed to the Governor of Valencia to carry out their activities, including the development of hydraulic concessions and the layout of power lines. Finally, in the Municipal Historical Archive of Valencia, we have located the information relating to the first electric facilities in the city.

This meant we could draw an initial development strongly linked to the milling industry, because the mills were the first devices that were used in low voltage electricity for own lighting and nearby towns

In Chapter 2 of this document we describe the historical and economic environment that allows us to place economic activity within the Spanish framework and particularly, that of Valencia. In this situation of colonial decline and protectionism within the political stability that led to the Restoration, two factors influenced the recovery: the development of rail transport and the telegraphy. The important role played by technology diffusion exhibitions, both international and local, stands out here.

Then you need to set the technological context in which Spain participates as an importer of electrical technology goods. This is not so true of hydraulic technology, in which we see that companies like "La Maquinista Valenciana" (Valencian Machine Co.) supplied the turbines that turned water power into usable energy. We emphasize

here the importance of the Gramme dynamo and arc lamps, and how these first lamps were gradually replaced by the more advanced filament. All this settle the first electric use that was lighting, especially street lighting.

To better understand the process of initial electrification in the province of Valencia, we analyze how the process occurred in Catalonia, a process that had earlier been driven by Dalmau and his *Sociedad Española de Electricidad* (Spanish Society of Electricity). This company created a subsidiary in Valencia in 1883 that had an outstanding start in the Valencian Regional Exhibition of that year, but Dalmau's effort was not rewarded and the company soon folded. In Valencia, the street lighting contract had been awarded to the well-known politician and businessman José Campo who owned the gas factory located in Llano del Remedio. Campo had a virtual monopoly of the lightning market and it was not going to be easy for any other entrepreneur to force his way into the field which Campo considered his domain. All attempts to do so failed.

In the last decade of the century, some millers decided to install a generator coupled to the hydraulic mechanism of the mill. Then came the expression of the *light mill* (*molí de la llum* in the Valencian speaking areas) extending throughout the province. Some of them also had a steam support. This thesis describes in detail five cases that later gave rise to four pioneering companies: Forés mill in Silla, the Nou Moles in Valencia, the Daroqui mill in Manises, the Peñesroches mill in Montroy and Guarner in Játiva.

The next step on the road to electrification occurred with the formation of the first companies and a jump of scale here can be clearly observed. First there is a general commitment to the use of alternating current for it was easy to transform its voltage and reduce power losses in transport. This advance allowed the use of more distant waterfalls from urban centers and with greater usable energy. So started *Sociedad Hidroeléctrica de Valencia* (Hydroelectric Company of Valencia), whose aim was to provide electricity to the population of Gandía and other close populations to Alcoy river basin. This company stems from the mill Forés. In the location of Játiva and after the transformation of the Guarner mill to an electricity factory, comes Serra and Ramirez, a company named after its creators. In the Ribera Alta and about the same time, an important process of electrification was started by Juan Vicente Pardo. Later, after the death of Campo, in the city of Valencia the electric lighting market opened again, with *Electro*

Hidráulica del Turia (Turia Electro Hydraulics) appearing from the west, and *Sociedad Valenciana de Electricidad* (Valencia Electricity Company) from the east. Electro Hidraulica del Turia was created by incorporating three mills as electricity assets, the Nou Moles mill, that of Quart and the transformation of the Daroqui mill, which would prove the important center of production of the new company. All these Valencian companies with Valencian capital were prior to "Hidroeléctrica Española" (Spanish Hydroelectric Co.), which was created in 1907. From that date, electrical success is already remarkable, and a safe investment, so that other companies appear willing to compete.

Finally, we outline the importance of the river Jucar, and especially the waterfalls next to Millares, in the configuration of the further electricity market. We focus especially on one known as the "Salto de las Agujas" (Needles falling), which had been owned by "Hidroeléctrica de Valencia" (Valencia Hydroelectric Co.). No one in the Valencian society was able to take the necessary step to intensive generation. This step required a significant investment to provide the great hydraulic works that were necessary. Finally, "Hidroeléctrica Española" (Spanish Hydroelectric Co.) acquired these two Jucar concessions that, after a difficult and expensive operation, would give it hegemony over the Valencian market.

The thesis concludes by explaining the model of initial electrification in the province of Valencia, validating the role of the Valencian bourgeoisie in the initial wave and noting its failure on the way to the intensive generation. All this helps to explain how we arrived at the current situation.