

The main points of the theses:

1;

In the first chapter of my work I pointed out that the modern credit system (credit policy) and infrastructure developed positive after 1867. Started the influx of capital from abroad. So the development of the industry speeded up significantly. Came into existence a modern engineering and industry and it became the base of development of to the electrical industry. The activity of the Hungarian engineers, their innovations supported this development.

I pointed out, that the new electrical industry could form also in a less developed country.

I think, the innovation of Hungarian electrical industry included a complex activity in this period.

The managers of electrical industry recognized that the new inventions must be exploited for great masses of the society. Therefore needed a well thought-out innovation strategy. These innovations were such inventions as for example: the transformer, working up the parallel connected electric distribution system, the electric railway and the tungsten filament incandescent lamp.

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A lot of books published on Jedlik's work and scientific achievement in the last years. The researcher could use a correct *Ányos Jedlik* bibliography. But I could not complete the contemporary scientific literature. I found an early physical study (a course book), that referred to *Ányos Jedlik's* „forgony” (electric motor). The author was J.Pisky and was writing in Czech in 1870. I quote from book in chapter „Beginning of electrical engineering in practice” on page 24.

3;

The development of the infrastructure in the Habsburgian Monarchy became a determinative factor of production and influenced the market (created a market).

I illustrated the development of the transport in this period by the diagram 1 and tables 1 and 2. The postal service developed significantly, so positive affected the development of the modern infrastructure.

The first telephone network in Hungary had been built in Budapest. Budapest was not only political capital, but centre of technical development as well.

4;

In the conception of management, construction and economic planning of the Ganz electric company in 19. century was already present the strategy of marketing.

I studied the development of the parallel connected electric distribution system and the transformer as well. I demonstrated the connection in table 6.

5;

In the industrial/trade school of Hungary in Kassa, now Kosice, Slovakia (the school was established in 1872 and called upper trade school in engineering) firstly entered in the program of course the lecture „electrical engineering” in Hungary in 1889. So the school preceded the trade school of Budapest, where the lecture „electrical engineering” played a significant role in school education only from 1891.

But in the trade school of Budapest was no power plant and electrical work shop. So the practical teaching of technical experts was unsolved.

The trade school of Kassa had a power plant and it is today very significant in its history. The power plant served for electric lighting, but with an electric work shop floor and electrical laboratory it served for the school education as well. So the theoretical and practical training were realized in the school of Kassa.

6;

I made a list of generating and power stations in Hungary between 1878 and 1918. This table 8 is a novelty, because in full includes the electrification of north-western Upper Hungary. The novelty, the number of the not yet registered data of my study I summarized in the table 1.

Additional scientific (achievements) in my work:

- The putting into operation of a dynamo in Lewis-mill in Pozsony was in February in 1884. So this mill preceded other known objects of electricity.
- Probable first alternating current power line (2kV) in Hungary was built between Máriahuta and Zakárfalva in 1897.

The known generating stations in Hungary to 1918		Sum total in Hungary:	From this:			
			region in contemporary Hungary:	in Upper Hungary:	in Transylvania:	in the South:
In the book Horváth–Jeszenszky: „A magyar elektrotechnika története” (to 1900)		49	26	9	9	5
On the basis Straub Sándor’s statistics (to 1911)		222	93	40	54	29
8. table in my work (to 1918)	Factory’s, mine’s or private	172	51	87	17	17
	Power station	147	64	37	32	14
	<b>Sum total</b>	<b>319</b>	<b>115</b>	<b>124</b>	<b>49</b>	<b>31</b>
Total sum of generating stations by my research.		478	125	158	59	36

*Table 1.*

7;

The Hungarian electrical industry contributed with important inventions to the up-to-date industrial technology of the world.

- Quickly received the foreign innovations (for example: Zipernowsky’s dynamo in 1880).
- The Ganz-company with production of generators belonged to the forefront (1904).
- The incandescent lamp with tungsten filament (developed in company „Egyesült Izzó” in 1905) decided the competition between gas and incandescent lamp.
- The adaptation of telephone exchanges was only a home success, but the „telefonhírmondó”, an early cable-medium and the high-speed telegraph of Pollák and Virág were already internationally recognized already.
- By the invention of the parallel connected electric distribution system and the transformer with closed iron core of the Ganz-company started the competition between direct current and alternating current. The a.c. system is used now days all over the world. (This invention was patented by Károly Zipernowsky, Miksa Déri and Titusz Ottó Bláthy in 1885.)
- The induction consumption meter was developed by Bláthy in 1889. The construction of this instrument is the base of production up today.
- The three-phase a.c.traction system with 3000 V, 15 Hz of Kálmán Kandó was the first successful electrification of a railway-line in Italy.

8;

In addition to the big company formed a lot of small enterprises (firms) in turn of the 19. century. Some of these firms became later a big company. In the table 12. I compiled big and small electrical companies in Hungary between 1867 and 1918. This is first such summary of this special topic.

9;

The Hungarian economy could quickly and flexibly put into practice the science of electricity in turn of the 19. century. The inventions were made mostly by the industry. So were developed exportable products and technologies (for example in the field of machine industry, agriculture, transport).

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A lot of historical books were published in the last decades, but these books discussed the history of Hungarian electrical industry only of today's region of Hungary. The history of electrification in historical Hungary has been lost together with lost region. I made an attempt to replace this gap. I did research in the archives and museums in Slovakia. I collected a lot of dates and informations about electrical industry, electrification, electric power supply, tram networks and electric railways of north-western Upper Hungary. I compiled a bibliography of articles. I think, I hope to support the further research by this study.