METALLURGICAL PRODUCTION OF THE POLISH ECONOMY

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Abstract

Metallurgy of Iron is the oldest branch of the metallurgical industry in Poland. In the mid-nineteenth century the Polish lands has reached a new foundry technology. This involved the use of coal. This enabled the increase in steel production. In Poland, for many years, the industry is thriving, and actively operating area of the economy. The paper attempts to present the changes in the Polish metallurgical industry caused by globalization of the markets. Attempts have also been made to identify opportunities for development of the Polish metallurgical industry.

Keywords: metallurgy, steel, industry, Poland, globalization.

1. INTRODUCTION

Iron casting is the oldest branch of the metallurgical industry in Poland. Until the mid-nineteenth century, concentrated in the Old Polish Basin (the oldest district of Metallurgical Industry and the Polish territory, now in the form of residual steel). In the mid-nineteenth century the Polish lands has reached a new foundry technology. This involved the use of coal. This enabled the increase in steel production. Then the iron and steel production concentrated in the Upper Silesian Industrial Region (GOP), where there were rich deposits of coal. After World War II steel industry expanded by opening two big conglomerates - Ironworks “Katowice” in Dąbrowa Górnicza and Sendzimir Ironworks in Cracow.[9]

In 1965 iron mining was abandoned because of diminishing resources. It saw a Polish dependence on imports from the USSR. Currently, the iron comes mainly from Ukraine and Russia. Currently in Poland 25 ironworks are operational, of which 18 were built before the First World War. The average age of steel plants is 40 years. In the recent years steel production levels decreased dramatically due to falling demand. The industry generated substantial losses. Currently, Poland produces long, e.g., bars and rails or semi-finished steel.[2]

2. POLISH OVERVIEW

In Poland steel ironworks are located in the vast majority in the GOP-u and its vicinity. The largest ironworks are located in Dąbrowa Górnicza, Świętochłowice, Siemianowice, Zabrze, Cracow, Częstochowa, Zawiercie and over in the village of Mala Panew in Ozimek. In addition, ironworks are also outside the region in the GOP-and the surrounding area: in Ostrowiec Świętokrzyski, Stalowa Wola, and Warsaw.

Non-ferrous metallurgy is divided into: metallurgy of copper, zinc and lead smelting and aluminium smelting.

Copper metallurgy traditionally developed in the region of Lower Silesia, where there were water supplies. However, they were exhausted. Layers of material discovered in turn the monocline, where there Legnicko-Głogowski Copper District exists. These are the richest copper deposits in Europe and one of the richest in the world. However, because the deposits deep in arrears, their full exploitation is not possible.[2]

Copper is mined in Poland and in the mines of: Lublin, Polkowice-Sieroszowice and Rudna. Ores from these mines are sent to the ironworks and Głogów, Głogów II, and Legnica. Copper ores are accompanied by
other components that go with them raises, such as silver, gold and platinum. Copper metallurgy in Poland is currently too complex and outdated. Approximately 60% of copper is earmarked for export. [1]

Metallurgy of zinc and lead, developed originally in Tarnowskie Gory in the sixteenth century. In the mid-nineteenth century metallurgy of these elements in Poland accounted for 60% of world production. Currently, the main production region is the region Olkus-Zawiercie, Bytom and Chrzanów. Decks in arrears fairly shallow and have a considerable thickness. Lead and zinc smelter are located near the mines in Miasteczko Śląskie, Katowice and Bukowno circle near Olkus. Poland exports zinc to Western Europe, however, this export is gradually decreasing.

Aluminium metallurgy dates back to the beginning of 1954, when it launched in Skawin first alumium smelter in Poland. In the 60s of the twentieth century opened another ironwork in Konin, in the 80s closed steel ironwork in Skawina. Currently, aluminium smelting is based on bauxite imports from Hungary, a full profile of production leads ironwork in Konin (arise here: sheet, strip and aluminium foil.).[4]

Metallurgy is a major branch of industry, which deals with obtaining metals from ores, using it to include scrap is also reworking the rolling plastics and forgæs (metal casting), derived products have applications in engineering, construction, transport and other sectors of the economy. Smelter production in Poland plays a big role. Since the mid-twentieth century, the quantity produced per capita steel was the determinant of the level of the country.[3]

Metallurgical production is characterized by a focus on who holds the raw material base as well as energy. Large companies are focused on this area, working together. It is also important location near the sea port, in order to facilitate the transportation of finished products and raw materials needed. Metallurgy is one of the industries with biggest impact on environment. Metallurgy deals with the theoretical foundations of the steel industry. Metallurgy of iron produces ferrous alloys such as carbon cast iron, cast steel, stainless steel. They may in its composition to include the blending of different elements, impurities and alloying elements. Receiving alloys begins with receipt of appropriate blanks, in a blast furnace, pig iron obtained is processed into steel in the open-hearth furnace process, converter or electric furnace.[3]

Non-ferrous metallurgy deals with the processing of metals, metallurgical processes, such as pirometallurgic, electrometallurgy, vacuum metallurgy, and other treatments in order to obtain the highest quality of metal or alloy. The steel industry in Poland has a long history and rich tradition. In the vicinity of New Słupia primitive tolls remains were discovered, designed about 2000 years. At the turn of second and third century one of the largest European centers for steel industry operated in Staropolskie Basin. Its greatest growth occurred in the sixteenth and early seventeenth century

Metallurgy experienced the biggest boom in the first half of the nineteenth century. At that time started the Staszic project - build a steelworks on the Kamienna River. In the upper reaches of the river, there would be access to raw materials, semi-central part of the production, downstream, and the finished products. The project was cotinued after Staszic, by K. Drucki-Lubecki funded mainly by the Polish Bank. A similar project was carried out on the Malá Panew River at the Opole Silesia.[2]

In the second half of the nineteenth century, the use of coke in iron products has affected the development of metallurgy in Upper Silesia. In 1796, the first coke dried blast furnace was lunched in this part of Europe in Gliwice. The furnace was, built and designed by Scot J. Baildon In 1802 one of the largest ironworks in Europe was operating in Chorzów (Royal Ironworks, Kosciuszko Ironworks today). Ironworks metallurgy developed in other parts of Poland (Katowice, Świętochłowice, Siemianowice Śląskie, Bytom, and Dąbrowa Górnicza).

In addition to the development of steel industry of Upper Silesia other ventures have also in other parts of the country. In 1836 was founded a steel ironwork in Zawadzkie in 1837 in Ostrowiec, at the end of the nineteenth century in Zawiercie and Czestochowa, the turn of the century - establishment of the ironworks in Szczecin. In 1937 a national plan for industrialization was initiated by E.Kwiatkoweski. As part of this project
began several investment including at the confluence of the Vistula River, the San oases Dunajec, Central Industrial District building.

Stalowa Wola steelworks built a village on the San Pławno, Stalowa Wola steelworks was one of the biggest investments financed within this project. Its members came into heat and power plant, steel ironwork with two open-hearth furnaces, mechanical plants.[5]

Following completion of the Second World War, all the money spent on reconstruction of physical facilities, destroyed during the war. Steel production in 1947 far exceeded the level of 1938. Since the 50s began an intensive reconstruction and modernization resulting in the nineteenth century ironworks including in Upper Silesia in the district of Czestochowa, where he built Ostrowiec steel ironworks. In 1957, the Warsaw steel ironwork has been running two of the largest precious and so far the metallurgical conglomerates: in 1954 the glassworks in Krakow. Lenin (now Steel Poland ironworks) in 1976 in Dąbrowa Górnicza, foundry, Ironwork Katowice:. The ironwork in Cracow, ironwork sheets, the only such in Poland, it serves for the production of car body sheets (automobile) and the production of devices such as washing machines, refrigerators, etc. In 1972, he was in Strzemieszyce, around Dabrowa Górnicza mikroironwork specializing in production of stainless steel accessories including surgical implants, to connect the bones, the elements used in medicine.[2]

After World War II Poland’s economy was geared primarily to the development of heavy industry. This was conducive to flourishing steel industry. The process of modernization and technological innovation in industry, which accelerated in the 1990s caused a decline in production and demand for steel. In 1991, the amount of production in open hearth furnaces accounted for 29.1% of total output. The extraction of steel by this method is very burdensome for the environment. Production of steel by continuous casting, much safer for the environment, was only 7.6%. At the time, in the EU countries, production of steel in open hearth furnaces was being discontinued with continuous casting reaching 80% of total output. Early 90s was a period in which began the organizational structure of industry changes and changes in technological processes. This was to adjust domestic production to meet the growing needs and to enter the competitive market. Has started to eradicate open-hearth furnaces, continuous casting lines formed of steel and electric stoves. Increased number of stainless steel and flat products.

Non-ferrous metallurgy, mainly zinc processing lead, copper and aluminium. Metallurgy and steel-lead-silver in Poland has a long history. In the Polish lands (Area of Bytom and Olkusz) in the twelfth and thirteenth century, known techniques for processing these materials. Zinc deposits were initially treated as waste and was stored in dumps. Only in the second half of the eighteenth century saw the development of metallurgy of zinc. Upper Silesia until the end of the nineteenth century belonged to the world’s largest zinc smelting districts. Upper Silesia, initially supplied 40% of world production, and then 20%. Copper metallurgy is one of the new industrial branches in Poland, despite existing in the Sudeten Mountains and the centres for copper smelting. In 1957, she discovered a rich copper deposits in the area of Lower Silesia, it initiated the development of copper metallurgy. Formed Legnica Copper District Glogowski.

In areas where, exploiting zinc-lead ore in the Upper Silesia, copper ores in Lower Silesia, the development of smelting copper and lead is most intense. The main centres of smelting lead and zinc smelter is one in Katowice and Trzebinia, upgraded and expanded after World War II, and steel ironworks in Bukowno, Tarnowskie Góry, Legnica, Glogów (Żukowice). Copper ores is accompanied by silver, which is recovered on an industrial scale. In the years 1970-1990 the amount collected in silver has increased from 231 tonnes to 832 tonnes. In 1988, amounted to more than 1000 tons.[4] Growing branches of the metallurgy of aluminium, the raw material is alumina, which is imported from abroad. An attempt to obtain alumina from domestic raw materials, dealing with it, and T. Bretsznajder and J. Grzymek, these methods were not applicable on an industrial scale. Aluminium smelters because of high energy demand are located near the plant. In 1954, in Skawina founded Poland’s first aluminium smelter was located near the coal power plant.
In 1981, aluminium smelting was discontinued because of too much burden on the health and environment. The ironworks and processing plants is usually in the vicinity of the existing steel ironworks, metal processing is carried out noncast. Such establishments work in Warsaw and Wroclaw.[4]

The European steel industry is a world leader in its sector. Its annual turnover is around 200 billion Euros; it directly employs 420 thousand people and produces about 200 million tons of steel per year. The steel industry is highly cyclical, receptive to general economic conditions and reliant on the condition of a number of other industries, including the automotive, appliance, construction and energy industries. As these industries have experienced a downturn so too has steel, thus negatively impacting the industry. Recent iron ore price hikes in the second quarter of 2010 have exacerbated the cost prices squeeze suffered by leading steel companies over the past two years as a consequence of the 2008 financial crisis.

The leading companies in steel producing in 2009 were ArcelorMittal, Corus and Gruppo Riva. These companies are engaged in the production of multi-purpose and multi-service steel products such as sections, flat-rolled products, tubular products, specialty steel products etcetera. In many countries, there is a tendency for high-volume end-users to purchase direct, while low-volume customers buy from stockholders and service centres.

3. SUMMARY

World steel consumption trends show steady but moderate growth. Increases the degree of concentration of production and consolidation of companies in the world steel industry. Created a growing, national corporations in general, less absorbent. The main reason for the consolidation of companies is becoming increasingly intense competition in global markets and ever more expensive technological advances.

Changing these processes in the production chain from crude to highly processed end products results in:

- increased capital expenditures for their implementation,
- productivity growth lines with simultaneous decrease in unit manufacturing costs,
- increase product quality.

A characteristic feature of these changes is:

- faster growth of expenditure on upgrading the production of highly processed than the semis,
- a stronger decline in unit costs of intermediate goods rather than highly processed,

A result it makes the semis in the world market competition is becoming more ruthless, which reduces almost to zero profitability.[6, 7] This encourages companies in the steel industry, leading far-reaching policies to connect to the vertical corporations in which the sale of highly processed and highly cost-effective can be upgraded earlier phases of the production of intermediate goods on the other hand, the natural tendency to monopolize the markets encourages enterprises to connect to the horizontal corporations. This applies not only to industry, the best example is the successive transformation of the agreement of the steel in Western Europe.[7] In Poland, there are completely different processes - decrease production of steel. The decrease in production was the result of many factors among which the three most important are:

- the collapse of many industries,
- the recommendations of the European Union to reduce production to meet national level,
- competitive steel products from neighboring countries, not always fair, supported by subsidies and procurement foreign companies operating in Poland.
Ordering of foreign steel products by a foreign or partially Polish foreign companies operating in Poland is partly caused by a lack of confidence in the products of the Polish industry, and partly aimed at reducing unemployment in the European Union by an increase in the demand for European companies.

The steel sector overall is confronted with major challenges notably in terms of costs and access to raw materials and energy, which have a serious impact on the industry’s performance. Moreover, the increasing capacity, production and international engagement outside the EU constitutes a threat as market share is being lost to non-European countries such as China, the C.I.S., India and Brazil.

LITERATURE

a) Monographic publication


b) Article in professional journal


