

SELECTED PROBLEMS OF DEVELOPMENT OF THE STEEL INDUSTRY IN POLAND

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The article presents the background of the general condition of the Polish steel industry the basic problems associated with the functioning of enterprises in a competitive market.

Key words: steel industry, Poland, restructuring processes, innovation management

Izdvojeni problemi razvoja industrije čelika u Poljskoj. U članku se opisuje pozadina općeg stanja poljske industrije čelika te osnovna problematika vezana za funkcioniranje poduzeća na konkurentskom tržištu.

Ključne riječi: čelična industrija, Poljska, procesi restrukturiranja, inovativno upravljanje

INTRODUCTION

Today's steel market is very unstable. An increase in production and sales within the years 2005 - 2007, a subsequent drop in 2008 and 2009 and another increase in 2010 and in the first half of 2011 show evident problems faced by the steel industry. [1-4]. The apparent steel consumption has grown by almost 20 %. Demand for steel products from other sectors including automotive, metal, construction, machine - building, shipbuilding, household appliance and other industries has been growing. For example in 2010 the domestic metal industry recorded a high, 21 % increase in the sold production compared to 2009. Such direct relation indicates the need for building a strong competitive position in the steel market. Special attention should be drawn to the problem of prices. The situation is complicated because the markets of raw materials and energy are characterized by high variability of prices and the problem may become even more severe soon. Compared to 2009 the year 2010 visibly showed an economic revival (GDP grew by approx. 3,8 %). It can be proven by the fact that there was an increase in both the steel production (approx. 8 million Mg of steel and approx 7 million Mg of steel products) and the import of steel. While analyzing the conditions for development of the Polish steel industry it is necessary to make reference to production volumes of the entire domestic industry. Compared to 2009 in 2010 there was an increase in production by approx. 10,4 % and in sold production by approx. 9,8 % (industrial processing sector recorded a growth of almost 11,1 %). On the other hand, there were no major changes in the percentage-expressed structure of assortment of long hot rolled products (bars, wire rods, heavy and light sections, rails). The same applies to flat hot

rolled products (thick sheet, strip metal). The conditions for development outlined here indicate the need for developing an efficient and effective system to enable implementation of innovations of any kind. Therefore, the aim of this article is to present basic problems related to the development of the Polish iron industry in view of its present state by focusing on both internal and external business conditions.

PRESENT PROBLEMS OF THE POLISH STEEL INDUSTRY

Generally speaking the technical level of the Polish steel industry meets international standards. Products also meet customer standards, norms and requirements. At the same time the utilization of production capacities was low and amounted to approx. 61,5 % on average. There are thus potential production reserves that can be instantly used. However, compared to 2009 Poland's share in the total steel production in the European Union did not change and amounted to approx. 5 %. At the same time a high increase in import of steel to Poland was recorded. Compared to 2009 it grew by almost 22 % and amounted to 6,7 million Mg. By comparison, export of metallurgical products was higher in 2010 by about 5 % than in 2009 and amounted to 4,2 million Mg. Better economic situation in 2010, though resulting in an increase in steel production and thus in revenues (by over 33 % compared to 2009), did not enable attaining a positive net financial result. The reason of such negative phenomenon are the growing prices of raw materials and fuels. When discussing the problem of costs, we need to take into account the problem of unemployment. At the end of 2010 the rate of employment in the steel sector was over 25 000 people, but it was lower than the rate in 2009. We do however observe a change in quality. Companies hire persons with higher

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qualifications and competencies, which is necessary due to the use of modern, automatic and numerically controlled machinery, equipment and technological lines and due to the implementation of modern organizational solutions and IT systems.

In the experts' opinion the Polish steel industry is relatively modern considering the equipment, process lines and technologies used in production. This applies to both energy saving and protection of natural environment. Despite that the new decisions contained in the Climate and Energy Package and other documents show that it is necessary to conduct further and expensive adaptation works. Today's level of carbon dioxide emission (CO₂) by metallurgical plants is about 4 % of the domestic emission. It is not easy to lower that rate. The biggest CO₂ emission is generated by commercial power plants (approx. 59 %), heat and power plants and heating plants (approx. 20 %). The problem, however, remains, likewise the problem relating to the necessity of meeting environmental norms and EU directives in order to minimize negative impact of the steel industry on the natural environment [5]. The situation related to the protection of natural environment is even more difficult because the National Allocation Plan of CO₂ Allowances for the years 2008 – 2012 for the iron and steel industry approved by the European Commission in 2010 provides for the level of slightly above 11 million Mg of CO₂ while all Polish companies received a right to emit over 208 million Mg of CO₂ per year. We hope that the limit will be increased to reach the level close to the level demanded by the Polish government. The necessity of reducing greenhouse gases emission will result in a number of problems and needs related to investment expenditures. When discussing the ecological problems it is necessary to say that in 2010 the EU Council adopted new regulations concerning emission of gas and dust pollutants. All the actions undertaken are aimed at significant reduction of acceptable emission limits for nitric oxide, sulfur dioxide, dust emissions, etc. Although their level is approx. 1,8 % (the remaining 98,2 % is CO₂ emission), the steel industry faces very a big challenge to reduce that level. Other problems that need solving include: waste, sewage and water management. The problem of environmental protection becomes even more important when, besides the analysis of problems of the iron and steel industry, we take into consideration the coke industry which is closely related to the steel industry.

ENTERPRISE MANAGEMENT WITH THE APPLICATION OF CONTEMPORARY MANAGEMENT CONCEPTS

The steel industry like any other industry must strive to implement various new solutions, new technologies and methods of organization and management. Creation, development and implementation of innovations in the conditions of global economy have become an

obligation today. Collaboration between the industry and scientific and research institutions becomes essential. Changes that have taken and that are still taking place in the Polish science system are related to the fact that the science has been strongly linked to the industry. In consequence those new solutions should bring positive effects in industrial practice (easier transfer of knowledge or technologies).

In order to meet European standards, Poland has to strive to develop the knowledge and innovation based economy. Poland has to take into account the requirements of sustainable development without neglecting the requirements of competitiveness. Furthermore, actions should be strengthened to enable development of economies characterized by high employment rate, which are economically effective at the same time. All those projects require significant financial support. Such support is especially needed in the area of research and development. In that area Poland, by adopting the Lisbon Strategy, undertook to attain a 3 % share of expenditures for research and development in the Gross National Product. Considering a new attitude of scientific institutions (new system for evaluation of quality of their work and regular audits) whose basic task is to do research and developmental work for the economy's needs and transfer of technology to the industry, a new standard of collaboration between science and industry can be expected with maintained clear procedures and rules of competitiveness and effectiveness. Such collaboration will be characterized by demand and supply relations. The new system should better protect intellectual property and promote commercialization of scientific research results. Moreover, it should provide better dissemination of scientific research results and effects of scientific and developmental works. The system should enable expanding the assortment of products (and deepening the degree of their processing), facilitate the transfer of new technologies and new organizational solutions to businesses, which in turn should result in increased efficiency of its operation. By introducing modern and innovative solutions, namely product innovations, technological (process) innovations and organizational innovations (enhancement of management systems and processes) to the industrial practice, companies can significantly improve their market position.

At the turn of the century the Polish steel industry underwent deep transformations. The reason for such changes was the fact that markets had opened and it was necessary to adapt to the requirements of competition in a free market. Moreover, the steel industry, classified as a strategic industry because the majority of its products is used in almost all processing industries, had to undergo deep restructuring. Steel products do not often have their substitutes. Thus, raising the competition level of the steel industry translates into the growth of competition of other sectors. The changes implemented during the restructuring processes included: changes in the assortment of products; changes in technological processes; offer of products with a higher degree of

processing; changes in the machine park and its automation; organizational and ownership changes; changes in employment structure.

Initially the changes were of rectifying character and were often connected with the utilization of simple resources. Later on, the changes focused on development. Generally speaking all the strategic actions were concentrated on:

- adapting the products to market requirements by improving their quality and expanding their assortment, etc.
- modernization of present technological processes and on the introduction of new processes by reducing material consumption and burdensome effect on natural environment,
- introduction of modern machinery and technological lines to production by shortening production cycles, improving the organization of production, reducing the employment rate, material and energy consumption and by increasing automation of production processes,
- improvement of the employment level and structure – by reducing the number of employees, improving productivity and reducing costs of labour,
- improvement of the economic and financial situation of companies by reducing production costs, generating profits, maintaining financial liquidity and gaining permanent creditworthiness;
- enhancement of organizational solutions and on the utilization of new management concepts and methods;
- ownership changes within the sector by consolidating the steel industry (the first important step was the establishment of Polskie Huty Stali S.A. composed of independent Katowice, T. Sendzimir, Florian and Cedler steel plants), by integrating basic production activity of the consolidated steel plants and by spinning off auxiliary and service operations.

The restructuring processes and current directions for development require preparing and implementing available and relatively modern concepts, methods and techniques of management. That area of each company's operation, namely organization and management, which had been underestimated for a number of years by managers, became one of important areas that can bring measurable and immeasurable effects. Conditions for development posed by the global economy are inextricable from the requirements set. While developing and implementing their strategies companies strive to improve their competitive position, or at least to maintain it. Companies are in a constant search for areas where they can gain advantage. One of such areas, with relatively modern technologies, machines, equipment and process lines, is the efficient and modern management. Innovative processes and an ability to manage such processes play an important role not only in the literature, but in practice, too. As regards the steel in-

dustry the following should be taken into consideration:

- organization of collaboration with scientific and research institutions, universities, etc. in order to enable efficient transfer of modern technologies;
- organization of work related to the technical preparation of production,
- organization of the production process by applying modern, flexible, computer-supported production processes and systems;
- wide utilization of available methods and techniques to support management;
- implementation of new solutions in the area of logistics, etc. [6].

The implementation of the above activities should be based on the utilization of (tangible and intangible) resources to the maximum and should correspond to the chances arising from the business surroundings. In order to ensure effectiveness of the activities undertaken in the area described above it is necessary to use the tools such as:

- Project Management
- Change Management
- Knowledge Management
- Value Based Management

The observation of processes implemented in the steel sector companies, focused on constant improvement of their management systems shows that they constantly strive to raise the level of their competitiveness in strategic terms. Work is mainly focused on the implementation or enhancement and practical utilization of:

TQM – Total Quality Management; Lean Management concept; Business Process Reengineering concept; MRP (MRP I, MRP II, MRP III/ERP – Enterprise Resource Planning) class systems; Benchmarking concept; Outsourcing concept; CRM – Customer Relationship Management; Collaborative Planning Forecasting and Replenishment; Solutions that support efficient customer service (ECR – Efficient Consumer Response); EDI – Electronic Data Interchange; BSC – Balanced Score Card; Just In Time systems; strategy for customer logistic service; other including: Single Minute Exchange of Die, Total Productive Maintenance, 5S, Six Sigma, etc.[7].

The process of searching, planning, preparing and developing innovative solutions in enterprise management is a chance, but can be a threat to a company. The strategic position attained by the company depends on many factors including its present competitive potential and innovative solutions used, which are considered as a way for turning the resources that form its strategic potential into its strategic position. Much depends on how fast the company is able to adapt to world standards in management. For the steel industry companies the activities should be aimed at gaining a good position in the supply chain. Growing globalization that affects business, deepening integration processes and development of advanced IT technologies help achieve market success only when the level of collaboration between

companies and strength of such relationships grow. Today, however, there is competition within entire supply chains, between every link of the supply chains including suppliers of raw materials, materials and components, manufacturers, logistic companies and organizational units that deliver products to the end customer. Such way of perceiving the problem indicates the need for reorganization and integration of the supply network. Interoperational processes including the ones mentioned above like ECR, CPFR or VMI (Vendor Managed Inventor) need facilitating.

SUMMARY

The issues presented in this article emphasize the need for introducing any type of innovation to the steel industry companies and for implementing modern management tools in industrial practice. Due to the complexity of problems related to effective enterprise management, one needs to constantly support oneself with various concepts, methods and techniques of organization and management. The necessity of using such organizational innovations and ability to use them arises from development of IT technologies. The application

of a number of innovative solutions, or concepts and methods derives from the fact that companies participate in the collaboration processes (supply chains) and arises from the need to compete and build a strong competitive position in global markets. It should be emphasized here that undertaking such ambitious and risky challenges by the steel sector companies is an obligation in these days, and if such actions are skillfully managed, they may guarantee a strong position in today's difficult markets.

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Note: Nowak P is responsible for English language, Katowice, Poland