

TWO-SEMESTER TRAINING PROGRAM FOR TOP INDUSTRIAL MANAGERS

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Abstract *¾ The restructuring of heavy industry in Poland, country in transition proves to be such a complex issue mainly because of its scope, a long-term perspective, and severe ecological and social consequences. It demands thorough knowledge and experience on the part of the managers involved in the process, which have got mostly engineering background. In 1994 two-semester American-Polish Post-Diploma Studies in environmentally friendly restructuring of industry were started in the Silesian University of Technology, a result of an agreement of cooperation between the Polish University and the Hubert H. Humphrey Institute of Public Affairs, University of Minnesota. Over the past seven years 176 people - presidents of companies as well as senior executives participated a two-semester course, gained vast managerial, ecological and technological expertise. 142 of them received a prestigious diploma issued jointly by both universities involved in the project. The diploma theses prepared by the students are of high theoretical and practical value, as they deal with organizational and technological issues important for the student's company. 20 participants of the seventh course will graduate the studies this fall.*

Index terms *¾ Restructuring of heavy industry, Post-graduate studies, Training program pointed to top managers, university-industry programs.*

INTRODUCTION

The Polish economy has been undergoing a long-term process of intense transformation started with the Polish peaceful revolution of 1989. When analyzing the beginnings one has to note that the economic changes have been connected with the shift from an extremely centralized economy characteristic of the communist system to the market economy of capitalism. Despite various difficulties, the passage has been very successful, which is reflected in high economic growth. On the other hand, the high level of unemployment, which has recently reach level of 16%, is undoubtedly a negative factor. The process of restructuring proves particularly difficult and complex in the case of heavy industry. The restructuring of heavy industry regions is not only a financial, technological or organizational problem, but it also, or perhaps even first, entails serious social

consequences (job cuts, the necessity to open new workplaces, training). Many workers employed in heavy industry (miners, steelworkers, etc) are resentful towards seeking new qualifications, and attached to their work, which has sometimes been the traditional occupation in the family for generations.

The problem of sustainable development and environment protection forms an important aspect of industry restructuring [1]. The dynamic development of heavy industry in the Upper Silesia in the past resulted in serious negative consequences for the environment. At present, both an increases in ecological awareness in the society and the global character of the economy require that economic development be accompanied by respect for the environment. Poland, as a future European Union member, has to adjust its economy to the world standards, which visibly decrease the erosion of in the natural environment. The change has to be done within a short period. Economic growth combined with the minimization of negative impact on the environment is particularly difficult to achieve in the Upper Silesia. The region lies in the central south part of Poland, near the Czech and Slovak borders. It covers only slightly more than 2% of the total country's area but is inhabited by almost 10 million people (1/4 of total Polish community). The area has numerous hard coal mines, steel and iron plants, non-ferrous metals works, power plants, heat power plants and chemical factories. The small region produces about 10% of the Gross Domestic Product. The fast industrial development of the Upper Silesia region that began early in the 20th century caused a great damage to the environment, which can still be felt today. The introduction of many pro-ecological installations brought a considerable reduction in the emission of gases and liquid waste, but solid waste and the contamination of the soil are still awaiting a solution. It is estimated that the small area of the Upper Silesia houses almost 50% of all solid wastes houses in all Poland. Some of the wastes are very difficult to recycle or neutralize.

THE AMERICAN-POLISH POST-DIPLOMA STUDIES

The American-Polish Post-Diploma Studies have undertaken the ambitious task of training top managers and senior

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executives in Upper Silesian industry. In the course of two-semester studies, they were supplied with a considerable amount of managerial and technological knowledge. The curriculum had been based on American models: similar programs applied in American universities were used. The curriculum for the American-Polish Post-Diploma Studies was developed by a team of experts from the Silesian University of Technology and the University of Minnesota. The curriculum comprised of 210 hours of interactive lectures, in which various case studies were discussed, both from American and Polish industry. Polish was the classroom language; lectures delivered in English were translated consecutively into Polish. The lectures were grouped in blocks running on two consecutive days, not more often than four times a month. Half of the program was devoted to management, with elements of environment protection (Strategic Planning, Marketing, Market and Ecological Institutions, Strategy of Restructuring, Social Aspects of Industry Restructuring, Environment Management, Ecological and Economic Law. This block of lectures was delivered mainly by American professors (University of Minnesota, Carnegie Mellon University, University of Pittsburgh, Oregon State University, Duquesne University, and University of Southern Indiana). The students also listened to short lectures delivered by experts from World Environment Center or Environmental Protection Agency. The other block of subjects concentrated on technological issues, with considerable emphasis put on environment (Ecological Reviews, Pollution Prevention, Pollution Control Technologies, Waste Management and Recycling, Efficient Use of Energy, Modern Environment-Friendly Technologies). Professors and experts from the Silesian University of Technology, University of Silesia, Warsaw School of Economics, and other Polish institutions delivered most lectures in these subjects. The participants received full sets of handouts for all subjects taught in the course of studies. Most materials were subsequently published as a textbook, bound in identical green covers, the same graphic form used. Names of the organizers and the sponsoring institutions were printed on the cover.

THE FIRST CYCLE OF THE STUDIES

The first cycle of the American-Polish Post-Diploma Studies was inaugurated in the fall of 1994, after an agreement had been signed between the Faculty of Materials Science, Metallurgy and Transport of the Silesian University of Technology and the Hubert H. Humphrey Institute of Public Affairs, University of Minnesota. The program started as a part of Environmental Training Project for Central and Eastern Europe – long-term training program financed by American Agency for International Development. The participants have received full set of training materials including 10 textbooks and more than 20 duplicated handouts. 38 senior managers mainly from steel and iron industry took part in the first year of the program. 35 of them

prepared diploma theses, utilitarian in character and relevant to their companies. All of the papers attained a very high level. Two of them were singled out as outstanding: one was devoted to waste management in foundries, while the other analyzed the negative impact of a metallurgical plant on the natural environment [2, 3].

THE SECOND CYCLE

The second round of the studies was directed at managers from non-ferrous metals plants. 28 senior executives started the studies and 24 completed them [4, 5]. The curriculum had not been significantly changed; only small adjustments were made, notably, a lecture in Logistics had been introduced. According to the earlier agreements, Polish professors and specialists delivered most lectures. Some of them had cooperated with American colleagues in the preceding year as the so-called co-teachers. As before, the participants in the second cycle of the Studies received full sets of handouts in the form of a book. 16 books were published altogether. Additional teaching materials were also prepared. Three diploma theses were marked as outstanding. One was devoted to economical aspects of the introduction of an environment protection program in a copper plant; another concentrated on a structural analysis of wastes in the zinc and leadplants. The author examined the sources of pollutants, their chemical composition, and the environmental risk accompanying storage. The third paper dealt with utilization of communal waste.

THE THIRD CYCLE

The third round of the Studies was directed at managers from power plants, heat power plants, and other institutions within the power sector. The curriculum was not significantly different from the preceding year. The only newly introduced elements were lectures in Public Relations and Human Resources Management. Thirty people from 21 institutions completed the Studies. The participants in the third year of the Studies received full sets of training materials illustrated all delivered lectures (16 textbooks and about 30 duplicated handouts). Six diploma theses were considered outstanding. One of them was devoted to the technical and technological solutions for environment protection applied in the newest Polish power plant. Another dealt with the directions and methods of restructuring put in practice in the Bielsko-Bia³a power plant (southern Poland). Yet, another concentrated on the plan for the development of companies undertaking modernization in the power engineering sector. The fourth paper dealt with environmentally friendly restructuring in a power plant planning to enter the stock market. The other papers discussed the technological and economic aspects of the reduction of SO₂ emission, and modernization and investments in a power plant that are based on the local fuel market [6, 7].

THE FOURTH CYCLE

The fourth round of the American-Polish Post-Diploma Studies was directed at managers from various types of heavy industry. 15 people from 9 institutions participated in the program [8]. The curriculum had been slightly modified by widening the scope of Environment Management Systems. 15 books and several complementary materials were published in that year. The level of the diploma theses was very high and, consequently, as many as 6 of them were awarded the outstanding mark. The first of those dealt with an environmentally friendly restructuring of a factory producing heading machines in the context of changes in the mining industry in Poland. Another paper discussed the environmental impact of steel works situated centrally in a large city. Yet, another concentrated on the technological modernization of the hot-dip process in the production of crude lead for a higher cost efficiency and a less negative influence on the environment. The subject of the fourth paper was such a restructuring of a coal mine that would not only bring financial gains but also improve the natural environment. One more paper was devoted to the adjustments in the company in compliance with the Act of Environment Protection and Shaping. The last one dealt with economical aspects of environment management in steel plant

THE FIFTH CYCLE

Twenty-three participants from 17 institutions within different kinds of heavy industry took part in the fifth year of the Studies [8,9]. The curriculum had not been significantly changed. Only one subject was added to the "Management" block: Technology Management. Due to the co-operation with the University of Silesia as many as six American professors were employed, which is more than in the preceding years. Specialists from France, Spain, and Germany. Also delivered lectures didactic materials accompanying all lectures were printed. 22 students produced diploma papers, five of which were found to be outstanding. Their subjects covered: the company information policy in crisis situations, meeting the demands of environment protection by the heaviest pollutants, the possibility of a crisis situation in a research-and-testing institution in the reality of economy transformation, an analysis of ecological productivity and cost-effectiveness of an installation for desulphurization of waste gases in a power plant, a pro-innovative policy in the power plant and its influence on ecological restructuring, particularly for the reduction of nitric oxides.

THE SIXTH CYCLE

17 participants from 10 enterprises have participated in the sixth cycle of the studies. They have represented different

kinds of heavy industry but mostly power engineering. Diploma theses prepared by the participants were connected with environment-friendly technologies, new strategy, marketing plans etc. All the topics were closely match strategy of their own companies [10]. Four of them were found to be outstanding. The first one is about wastewater usage in the "Łagisza" Power Plant. Membranes technologies enabled to solve some of the water problems. The second of them – Restructuring program of "Łaziska" Power Plant with references to a project of the environment protection managing system – presents the issue of organization restructuring of "Łaziska" power Plant. The third of them – Waste management in the "Siersza" Power Plant in the range of disposal and utilization of furnace and process waste materials. The fourth diploma thesis – The idea of creating of capital group around chosen leader following an example of Jaworzno Power Plant. Now, structures of Southern Power Concern are about to be set up. This company is to consolidate seven utilities of power generating and combined heat and power generating units. Its main purpose is to successfully privatize, according to the principle: "Big can more".

THE SEVENTH CYCLE

Twenty participants from 13 enterprises have participated in the seventh edition of the studies. All of them have represented power plants, heat power plants and other companies worked mainly for power engineering sector. Seven of participants have represented the Southern Energy Concern established only in January 2001. Defending of diploma theses is scheduled for November this year and the official graduation ceremony for a month later.

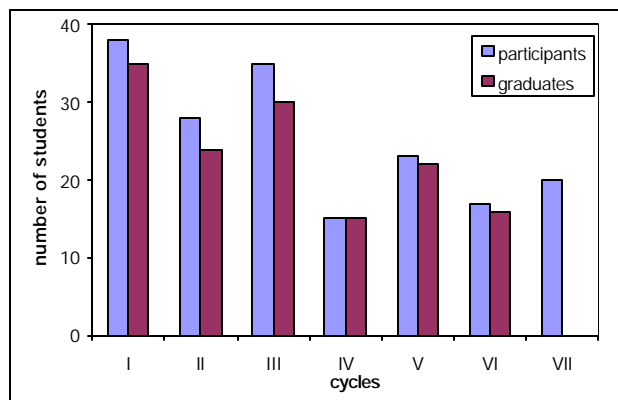


FIGURE.1
NUMBER OF PARTICIPANTS AND GRADUATES IN THE CYCLES OF THE PDS

SUMMARY

Summing up: 176 presidents of the board and senior managers from 86 different companies representing mainly big enterprises from all kinds of heavy industry participated in the studies in the years 1994-2001 (fig.1). 142 of them graduated the studies in years 1995 – 2000 receiving prestigious diplomas authorized by both partner universities: the Silesian University of Technology and the University of Minnesota.

Among the 142 alumni and 20 participants of the seventh edition, directors and members of the board of directors in their respective institutions were in a clear majority (66.9%) (fig.2).

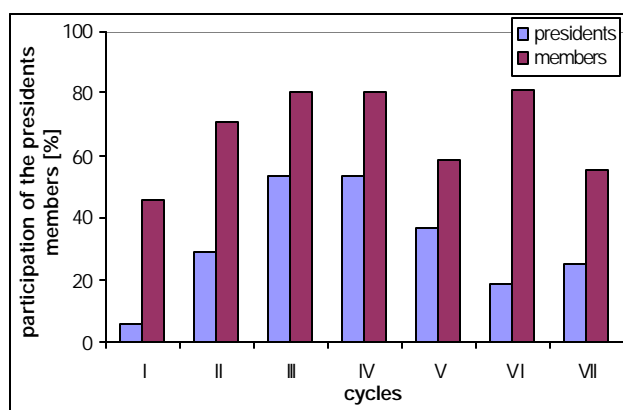


FIGURE. 2

PARTICIPATION OF THE PRESIDENTS OF THE BOARD AND MEMBERS OF THE BOARD IN THE CYCLES OF THE STUDIES

61 textbooks were published, as well as a few dozen of duplicated didactic materials. 17 American professors from 7 universities, 9 American experts from various institutions, 2 German lecturers, 1 French, 1 Spanish, 16 professors from the Polish universities, and 19 lecturers from other institutions had delivered the lectures.

The alumni have established an Alumni Club, which serves as a platform for discussion and sharing one's views. Completing the studies had also positively influenced professional careers of many former students. The cooperation between the Silesian University of Technology and the heavy industry in the region had tightened up.

The diploma theses successfully defended at the end of the studies have been put in practice in the industrial environment and have brought huge economic gains and very good ecological results. The demand for the studies is still quite high. Nowadays the studies (last three cycles) have been organized as fully self-sufficient, practically without financial support from any American or Polish donor institution. Next eight's edition of the studies scheduled for year 2002 will be also based upon fully self-sufficient rules.

Besides, it has been planned that in the future, the American-Polish Post-Diploma Studies will be turned into a standard university post-graduate program for engineers with a few years' experience in industry. The new studies will be named the Master of Business and Technology. Work has started too on the question of how to use the expertise from the Studies in the teaching of undergraduate and graduate students.

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