

SCIENTIFIC PAPERS
OF THE UNIVERSITY OF PARDUBICE
Series A
Faculty of Chemical Technology
17 (2011)

**ENVIRONMENT PROTECTION AS PART
OF CORPORATE MANAGEMENT**

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Received September 30, 2011

Environmental Management Systems (EMS) are important voluntary tools used by the business sphere and other organisations in the world, as well as in the Czech Republic, for the management of the impacts of their activities, products and services on the environment. The article presents EMS as a tool for the management of the environmental aspects and impacts of organisations, depicts the development of their implementation into the practice deployed by organisations around the world and in the Czech Republic in the last 15 years and highlights the systems' benefits for the society and for the organisations themselves.

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Introduction

Management is a very specialised activity that no organisational unit can do without. Generally, it can be characterised as the summation of all activities that have to be done in order to ensure the function of the organisation [1]. The core of the management work lies in basic management activities that may be divided into two groups:

1. cross-sectional activities (decision-making, organisation, human resources management and work with information) and
2. activities fulfilling the management phase (planning, implementation and check).

Management (as a specific activity) should combine the units and workers of a company vertically (through superiority and subordination, i.e., various management levels) and horizontally (i.e., on the same management level) through planning, implementation, organisation and checking. This may be achieved only with effective communication. All the aforementioned activities form the management functions. Decision-making holds a special position as an integral part of each management activity.

A company's responsible approach to environment requires many changes. These have to include not only specific rectifying measures, usually of technical and/or technological nature, but primarily the entire management system in the company. Wider proactive corporate attempts at the integration of environment protection and sustainable development aspects into management systems were one of the most important factors of the environmental politics in the early 1990s. So-called Environmental Management Systems (hereinafter referred to as EMS) have been formed and gained wide support from the corporate sphere. The aim of this article is to present EMS as a tool for the management of environmental aspects and impacts, to show the development of the implementation of EMS over the last 15 years both globally and in the Czech Republic, and most importantly to highlight the benefits of the system for companies.

EMS – Tool for the Management of Environmental Aspects and Impacts of a Company on the Environment

EMS are among the most important voluntary reduction tools, i.e., instruments reducing the negative impacts of corporate products, activities and services on the environment (see, e.g., [2]). They are defined as a part of the overall management system that includes the organisational structure, planning activities, responsibilities, practices, procedures, processes and resources for the development, achievement, review and maintenance of the environmental

policy [3].

EMS are based on the inclusion of the requirements of environment protection into the management system so that the achieved result is the ensuring of economic growth, with simultaneous reduction of the negative impacts of corporate activities, products and services on the environment. The main target is, therefore, the support for environment protection with regard to the economic and social needs.

The EMS philosophy is based on the boosting of prevention and on the following prerequisites [4-6]:

1. the primary task is the involvement of the management in the following issues:
 - addition of environmental issues to the corporate management system,
 - definition of corporate environmental policy and the relevant environmental targets, formulation of the environmental program and gradual implementation of the plans in practice,
 - periodical reviews of the company's impact on the environment and the fulfilment of set targets and plans,
 - presentation of the achieved results to all involved parties (e.g., the public, clients, government authorities, banks, creditors, shareholders etc.) and
 - formation of a documentation system.
2. to verify the adherence to environmental laws and norms in the company:
 - to transform the set limits (qualitative, quantitative and time) for pollutants into reality in the company,
 - to evaluate the difference between the situation in the company and the desired situation,
 - to specify the rectifying measures for all detected insufficiencies and implement these measures.
3. to implement a system for gradual and continuous reduction of the negative impact of corporate activities on the environment:
 - most importantly, adherence to normative limits has to be ensured,
 - corporate's own limits, corresponding to the highest level technically possible at the time, also have to be set.

EMS supplement the corporate management system, ensuring that it respects the company's relations to environment as much as possible (even above the requirements of the law) and the relations to the company's surroundings, employees, customers and other public from the point of view of their environmental interests. EMS are built on the principle of continuous improvement. The improvement activities are based on the determination, resolution and removal/rectification of the issue in question.

There are essentially two standards for the implementation of EMS:

- ISO 14000 line technical standards (represented in the Czech Republic

primarily by the core standard ČSN EN ISO 14001 Environmental Managements Systems — Specifications with Usage Guidelines) and

- directive of the European Parliament and Council on voluntary participation of organisations in the corporate management and audit system from the point of view of environment protection (Eco-Management and Audit Scheme — hereinafter referred to as EMAS).

The text of environmental standard ISO 14001 was processed by Technical Commission ISO/TC 207 Environmental Management, in cooperation with the CEN/CS Technical Committee, in 1996; the standard was revised in 2004. It has global effect. EMAS is the directive of the Council of the European Communities in compliance with the Foundation Treaty of the European Communities and is binding as a whole for the governments of all member countries and directly applicable in all European Union member states. By joining the programme, the company commits to evaluating and improving the impact of its activities on the environment, thus simultaneously fulfilling the requirements for the protection and improvement of environment and the principles of sustainable development stipulated by the Treaty on European Union. The foundation document of the EMAS programme is the European Parliament and Council directive no. 1836/93 from June 29, 1993. The directive was reviewed first in 2001 and then in 2009, when the registration option for organisations from countries that are not European Union members was introduced.

EMS according to ISO 14001 have been implemented in the industry in the Czech Republic on voluntary basis already since 1992. Czech Republic's government supports the implementation of EMS, primarily according to EMAS, in line with the European Union procedures, in the long run. EMAS is perceived as a voluntary corporate activity aimed to improve the impact of the company's activities on the environment and provide the public and other involved entities with relevant information.

From the viewpoint of the entire society, the implementation of EMS is motivated by the protection of human health and environment against the potential impacts of corporate activities, products and services and the improvement of the quality of the environment. The implementation of EMS in companies does not affect only the society as a whole, but influences also the companies themselves. Attempts at environment-friendly approach do not have to represent just an economic burden for the company — even though it is apparent that the implementation of EMS will induce costs. The experience from advanced European and American companies shows that in the medium term the benefit from successfully functioning EMS usually exceeds the costs of the building and maintenance of the system [7].

There are several factors motivating companies to implement the systems (see, e.g., [4]):

- The need to inform the involved parties (customers, public, authorities etc.) about the impacts of corporate activities on the environment. If the company fails to take their environment protection requirements into consideration, it will not be able to compete.
- Pressure on companies from their business partners.
- Awareness of company's own responsibility for the environment.

Environment protection has been gaining increasing importance in recent years, determining the design and production of products. The integration of environment protection into the overall management system is an instrument that enables the company to define and systematically manage the level of environmental conduct that it has set for itself.

Implementation of EMS in the World and in CR

EMS are being implemented around the world and in the Czech Republic both according to ISO 14 001 and according to EMAS.

As of the end of 2009, a total of 223,149 organisations held EMS certificates compliant with ISO 14 001; this is 16× more than at the end of 1999. The highest increase in the number of certified organisations was registered in 2009 (up 34,334, i.e., 18 % on the total number of certified organisations registered as of December 31, 2008). In Europe, the certificate was held by a total of 89,237 organisations as of the end of 2009 (in 48 countries/economies). The highest increase in the number of certified organisations in Europe was registered in 2008 (up 13,021 organisations, i.e., 20 % on December 31, 2007). Europe is thus the no. 2 continent in the number of certificate holders. Figure 1 depicts development of the number of certified organisations in the world and in Europe.

The Czech Republic ranked 10th globally as of the end of 2009, with 4,684 issued certificates. CR placed first among EU member states with comparable population (10 mln inhabitants). The highest increase in the number of certified organisations was seen in 2009 (up 1,366, or 41 %). Massive growth was registered also in 2004 (the no. of certified organisations increased by 769, i.e., 248 %) and in 2005 (up 834 organisations, i.e., 165 %). Figure 2 depicts the development of the number of certified organisations in the Czech Republic.

There were totally 4,542 organisations of various sizes and activity fields registered with the EMAS programme on the territory of the European Union as of April 21, 2011. Germany (1,402 registrations) has the highest number of organisations registered with the EMAS programme, followed by Spain (1,228 registrations) and Italy (1,035 registrations) [9]. The most frequently represented organisations are those active in the segment NACE 84.11 — General public administration activities (265 companies) [9]. Also strongly represented is 55.1 — Hotels and similar accommodation (171 registrations) and 38. — Waste (236

registrations). 25 organisations from the Czech Republic are registered with the programme, with almost half of them falling into the activity segment CZ-NACE, section F — Construction Industry.

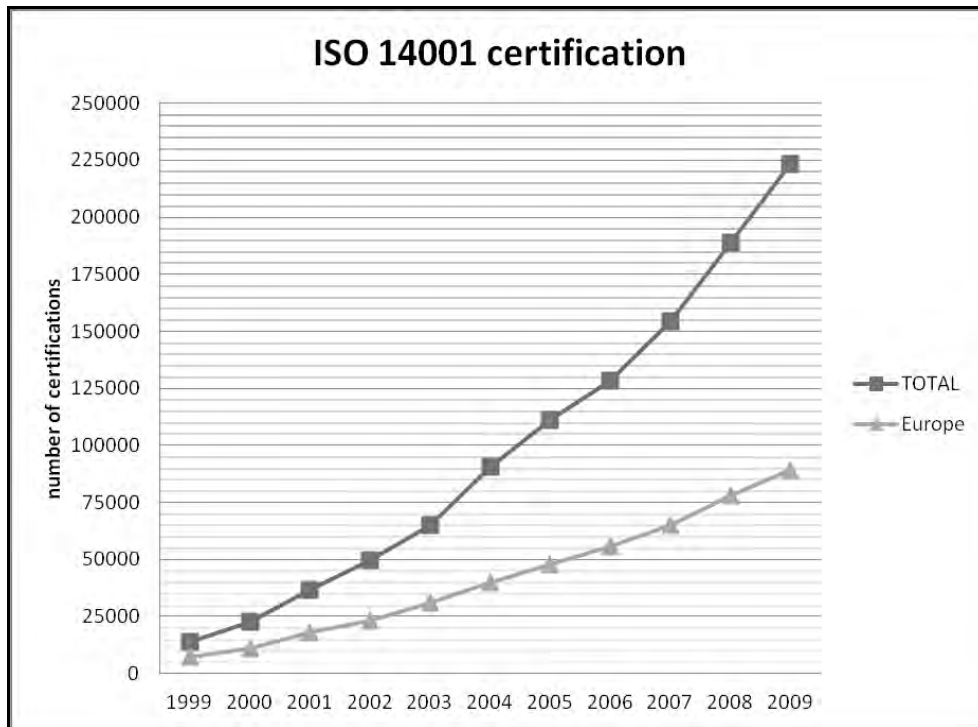


Fig. 1 Development of the no. of certified organisations in the world and in Europe in 1999-2009 [8]

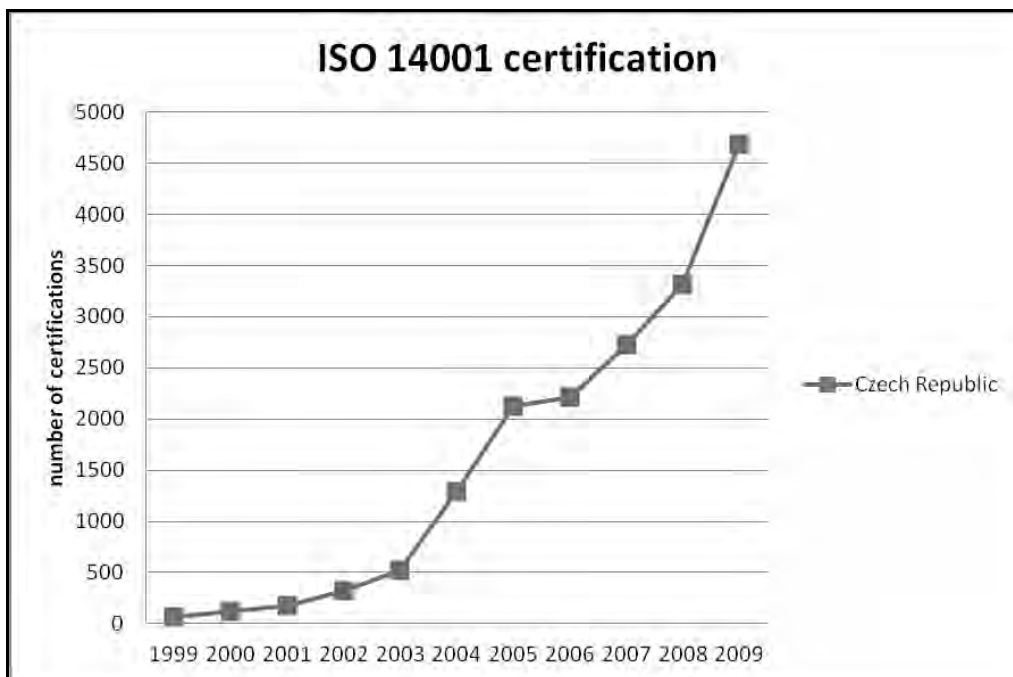


Fig. 2 Development of the no. of certified organisations in the Czech Republic in 1999-2009 [8]

The previous text indicates that the number of certified and registered organisations has been growing significantly since 1999. The organisations clearly prefer to use systems built according to the internationally valid standard, ISO 14 001. The no. of certified organisations in the world is growing faster than in Europe. The Czech Republic is among the countries with a high number of certified organisations.

Benefits of EMS

Professional publications list the following benefits that companies may gain from the implementation of EMS (e.g., [10-12]):

- compliance with legal requirements is achieved, the company's negative impacts on the environment are reduced,
- order is implemented (in operation, documentation, environmental responsibilities),
- risk of accident for which the company would be liable is reduced; savings on fines and other sanctions related to environmental damages and compensation for caused damages are reduced through the removal or reduction of the number of accidents and incidents that damage the environment,
- operating costs are reduced (e.g., the consumption of raw materials and energies etc.),
- the company's communication with the involved parties is improved,
- the communication within the company itself is improved,
- the company's image improves,
- the company gains the confidence of authorities in the issues of its relationship to environment protection, good relationships with the public and the municipality are boosted,
- the company may improve its competitive position,
- sales and other certificates (e.g., permits, licences etc.) are easier to obtain, the company has easier access to capital, as it complies with some creditors' investment criteria.

The fact that the companies' attempt at responsible approach to the environment is carried out into the field of prevention is regarded as an indisputable benefit of the EMS. This is not a one-off attempt at achieving something, but a dynamic system aimed to move forward continually, i.e. continuous improvement of the company's environmental performance.

The aforementioned benefits are confirmed also by surveys carried out in the corporate sphere. For instance, the research carried out in 2003 by the University of Pardubice and the EMAS agency brought the following basic conclusions

regarding the benefits of EMS for companies [13,14]²:

- The respondents have stated the following main reasons for the implementation of EMS: permanent interest in the protection of environment; improvement of the company's image and credibility; responsible conduct and co-existence with the surroundings; higher competitiveness and better relationships with the public and government authorities.
- Over 90 % of the respondents expected the implementation of EMS to improve their work in the area of environment protection; to create environmental awareness in all employees; to improve the company's image; to meet the legislative norms for environment and to improve the environmental performance.
- The respondents regarded the gaining of the ISO 14001 certificate or the registration with the EMAS programme as an important tool for boosting their competitiveness. They linked the implementation of EMS to improved image of the company, higher credibility for investors and creditors (and thus easier access to capital) and wider options in the area of export and public contracts.
- In some areas, the benefits have not met (or have met only partially) the respondents' expectations (e.g. the financial institutions in the Czech Republic do not accentuate companies' environmental performance sufficiently, environment-friendly approach is in some cases not being viewed as an important criterion for the selection of business partners etc.).
- 28 % of the respondents regarded the implementation of EMS as an important criterion for the selection of business contacts and 66 % took EMS implementation into consideration as a secondary criterion. The study has therefore indicated that a vast majority of the respondents (94 %) takes the approach to environment into consideration in their choice of business contacts. The inclusion of environmental protection aspects into the overall management system might therefore have represented a competitive advantage for the company in the conditions back then.

The study has clearly confirmed that EMS represent a major tool for the protection of the environment. 99 % of all companies from the reviewed set would decide to implement the EMS again. This allow us to make the judgement that the functioning of the EMS in most companies brought benefits that exceeded the complications related to the implementation of the system and the total costs of EMS implementation. The research has shown that the implementation of the systems is a very good tool for environment protection, not only for large

² A total of 450 companies which had EMS implemented at the time of the research have been polled. 254 of the companies returned the questionnaire, i.e. the rate of return reached 56.44 %. The reviewed sample featured companies of various sizes from various segments. The co-author of this article (J. Hyršlová) was the head researchr for the University of Pardubice.

companies, but also for medium-sized and small enterprises.

The previous text indicates that the benefits of EMS may generally be perceived on environmental, economic, social and organisational level (this classification of benefits is stated, e.g., in Ref. [15]). The environmental benefits include the mitigating of the impacts of economic activities on the environment, primarily thanks to savings in material and energy consumption. The preventive nature of the systems contributes towards the improvement of the preparedness for accidents. The economic benefits of EMS include their contributions towards competitiveness. A company with responsible approach to environment protection that communicates its environmental performance to the involved parties becomes a credible (business) client. The economic benefits are formed by the material (raw material) and energy savings, i.e., the savings in the area of operating costs. The costs of waste disposal are also reduced. Higher engagement of the employees into the operation of the company forms the social benefit of the implementation of the system. Thanks to regular training and education programmes, the employees identify with the issues of effect on the environment and propose measures for improvement of corporate activities. Internal communication and relationships on the workplace improve as well. Organisational benefits include the benefits achieved through better organisational structure, which determines the responsibilities of individual employees for allocated tasks exactly.

Conclusion

The environmental performance concerns the impacts of the corporate activities, products and services on the environment; it characterises the company's approach to environment. The environmental performance is a multidimensional concept; company activities can induce various environmental impacts (in the field of the usage of resources as well as exhaustion of pollutants into air, water or soil). A company's conduct in one area may be viewed as very positive, while its approach to the solution of another environmental issue may be perceived very negatively. The environmental problems related to corporate activities or induced by them may be solved in various ways (various approaches and various measures). A company's approach to the solution of environmental problems and the implemented measures are closely tied to the company's economic performance and cause various responses from the involved parties (stakeholders). The environmental performance of a company must therefore be judged very cautiously and its links to the company's economic and social performance always have to be taken into account.

Many stakeholders still use the argument that the improvement of the environmental performance necessarily has to be accompanied by a drop in the economic performance (reduction of environmental impacts leads to higher costs).

The basis of this presumption is [16,17]:

- The environment serves as a source of materials and energies and all waste flows lead into it (solid waste, wastewater and air emissions). If corporate activities have high material and energy requirements and their availability is limited, it is apparent that production costs will grow gradually.
- The implementation of measures that will contribute to the reduction of environmental impacts (may involve the prevention of the formation of waste, or end of the pipe technologies), may indeed lead to higher corporate costs. These measures bring investment costs and may result into higher operating costs.
- The measures may also lead to changes in the field of productivity; the efficiency of environment-friendly processes and new production processes may be lower than the efficiency of the original processes and procedures. The period of transfer to new technologies and processes often brings additional costs (existing productions are being shut down, new productions are being launched gradually, have to be defined and verified). Furthermore, the investments into the reduction of the environmental impacts of corporate activities use up the financial resources that might have been invested into other, potentially more beneficial investment projects (opportunity costs are thus being incurred).
- New environment-friendly production processes and procedures may have a negative impact on corporate revenues (new processes may reduce the quality of products temporarily and result in lower sales or lower sales prices).

The implementation of measures mitigating the impacts of corporate activities on the environment does not necessarily have to induce higher costs, i.e. cut the company's profit. The improvement of the environmental performance may be accompanied by major cost savings. The improvement of the environmental performance goes hand in hand with innovations that may boost the efficiency of the company's processes significantly. Savings are achieved in the consumption of materials and energies, as well as the waste disposal costs (lower amounts of waste are produced, the costs of waste disposal are lower and savings are made also in overhead costs). The company is generating substantial savings, as fewer input materials leave through waste flows. Improvements occur also in the field of safety and health protection, and the costs incurred as a consequence of negative events (e.g., accidents, incidents, work injuries) are also reduced. New work procedures may result also into an increase in the value of the product for customers. Sales volumes, or sales prices, may thus also grow. The improvement of the environmental performance contributes towards the improvement of the company's image; this may have a significant effect on customer loyalty and boost the company's sales. The company may also gain access to new markets. Its position in the segment of public contracts gets improved, for instance. By using

instruments such as ecolabelling, the company may influence customer preferences significantly and gain new opportunities.

The previous text indicates clearly that the environmental performance is linked closely to the economic performance; a company's approach to the environment influences also its shareholder value. A company's environmental performance and its approach to social issues influence the success of its business. Mutual links between the economic performance, environmental performance and social performance are depicted in Fig. 3.

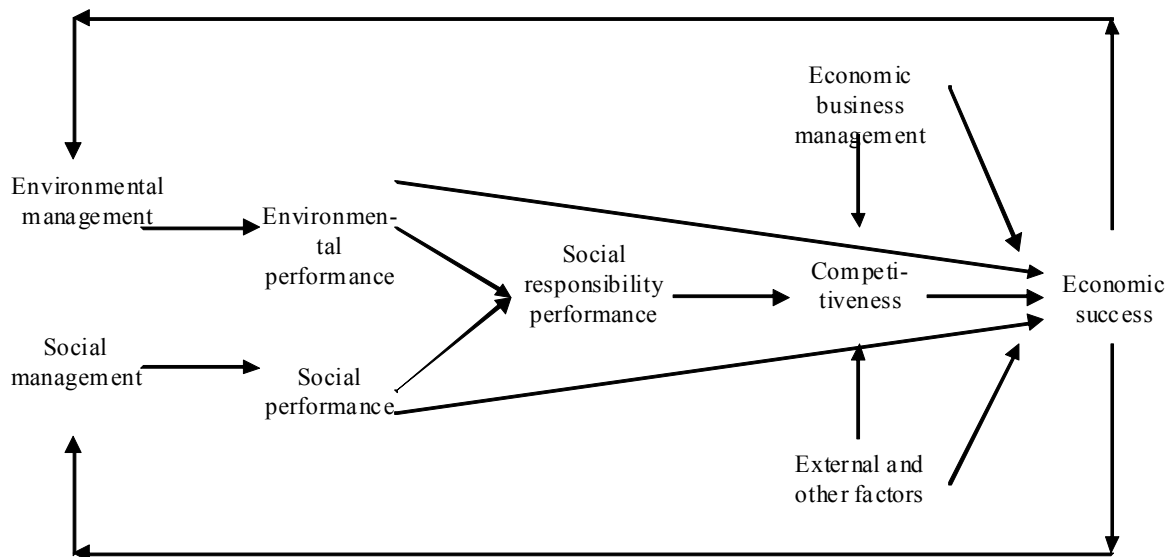


Fig. 3 The impact of environmental performance and social performance on business success [18]

Environmental Management Systems (EMS) are an important tool for the management of a company's environmental performance. Over the last fifteen years, companies have gradually begun integrating environment protection aspects into their corporate management systems. EMS based primarily on ISO 14001 are being used widely both in the Czech Republic and in the world. The companies' aim should not be to "merely" implement and maintain the system — i.e., to achieve the certification or registration of the system. Even though environmental management standards provide the companies with tool for efficient environmental management system and may help them achieve environmental and economic targets, in many companies the environmental aspects have not been reflected thoroughly in the overall management system and gaining the certificate or registering the system was the end target. To achieve all benefits of EMS (from the point of view of the society as well as the company) implementation of environmental aspects into the entire company's management system must be ensured. The target is to ensure the achievement of corporate targets (incl. both the economic performance and the environmental performance). A company's approach to the environment must be rooted in the corporate strategy and environmental aspects and impacts have to become a part of the management tasks

and decision-making issues on both the tactical and operating levels. The environmental aspect has to form an inseparable part of all phases of the management cycle, contained in planning, implementation and check. Environment protection has to be anchored into all corporate activities on all organisational levels within the company. Environmental aspects have to form an integral part of the decision-making processes of all managers on each level of management and have to be reflected in the conduct of all of the company's employees. The effect on environment must be analysed for every newly implemented activity and every newly readied product. Attention has to be paid primarily to environmental activities that contribute towards continuous growth of shareholder value; we must focus on the future and long-term impacts that support sustainable development.

Acknowledgements

This work was supported by the Ministry of Education, Youth and Sports of the Czech Republic under project No. 1M0524 (Research Centre for Competitiveness of Czech Economy).

References

- [1] Veber J., Dědina J., Hružová H., Fotr J., Gordon-Smith R., Kleibl J., Koselka F., Kořenář V., Kotoučová J., Kovář F., Littová J., Malý M., Němec P., Nesterak J., Obrmanová E., Pavel K., Pernica P., Pichanič M., Pour J., Slávik Š., Srpová J., Truneček J., Vlček R., Vodáček L.: *Management – Foundations, Prosperity, Globalization* (in Czech), Management Press, Prague, 2007.
- [2] Remtová K.: *Planet* **14**, 5 (2006).
- [3] ČSN EN ISO 14001 *Environmental Management Systems - Requirements with Guidance for Use* (in Czech), Czech Standard Institute, Prague, 1997.
- [4] Dirner V., Rania M., Grosse H., Kret J., Kura M., Lapčík V., Mezřický V., Novák J., Ochodek T., Raclavská H., Raclavský K., Rohon P., Sákra T., Schejbal C., Smolík D., Šiška F., Štěpánek Z., Vít M., Zamarský V.: *Environmental Protection – Basics, Planning, Technology, Economics, Law and Management* (in Czech), Ministry of the Environment, VŠB-Technical University of Ostrava, Ostrava, 1997.
- [5] Smolík D., Havelka M.: *Ecological Aspects of Company Decision-making and Foundation of Ecological Management* (in Czech), Ministry of the Environment, VŠB-Technical University of Ostrava, Charles University Environment Centre, Prague, 1994.
- [6] Veber J.: *Environmentally Oriented Management System of Enterprise* (in

- Czech), Ministry of the Environment, VŠB-Technical University of Ostrava, Charles University Environment Centre, Prague, 1996.
- [7] Mikoláš J., Moucha B.: *Your Enterprise and Environment at Access to the European Union* (in Czech), Ministry of the Environment, Prague, 2004.
- [8] *The ISO Survey of Certifications 2009*. [online] [cited Feb 3 2011] Available from internet URL: <http://www.iso.org/iso/survey2009.pdf>.
- [9] *EMAS Registr.* [online] [cited Feb 3 2011] Available from internet URL: <http://www.emas-register.eu/>.
- [10] Veber J., Plášková, A., Hůlová, M.: *Quality, Environment and Occupational Safety Management – Legislation, Systems, Methods, Practice* (in Czech), Management Press, Prague, 2006.
- [11] Kubínová Z., Šantora Z.: *EMAS in SME* (in Czech), GEN, Prague, 1998.
- [12] Sablik J.: *Organizational and Economic Aspects of Building Environmental Management Systems* (in Slovak), MASM, Žilina, 1998.
- [13] Hyršlová J.: *Management* **10**, 48 (2006).
- [14] Hyršlová J.: *Implementation of Environmental Management Systems and Company Experience in the Czech Republic*, In Rashmi Joshi (ed.): *Environmental Management Systems for Competitive Edge in Business*, Icfai University Press, 2009.
- [15] Kreuz J., Vojáček O.: *Business and Environment* (in Czech), Oeconomica, Prague, 2007.
- [16] Hyršlová J., Vávra J.: *Corporate Economic, Environmental and Social Performance*, In Proceedings of the International Scientific Conference “ICQME 2007”, University of Montenegro, Podgorica, Montenegro, 2007.
- [17] Hyršlová J.: *Sustainability Accounting at Corporate Level*, VSEM Prague, Prague, 2009.
- [18] Schaltegger S., Wagner M.: *Managing and Measuring the Business Case for Sustainability*, In Schaltegger S., Wagner M. (Eds.): *Managing the Business Case for Sustainability*, Greenleaf Publishing, Sheffield, 2006.