

# INTEGRATION OF QUALITY, ENVIRONMENT AND SAFETY MANAGEMENT SYSTEMS IN A FOUNDRY

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The management systems in the Foundry in question were integrated by means of a quality management system according to ISO 9001 standard. This means that the quality management system is a basic management structure in the enterprise, into which elements of environment management and work safety management have been incorporated. In presented paper we describe some problems of management system integration in metallurgical industry.

*Key words:* foundry, quality management, standard, environment, safety

## INTRODUCTION

In modern enterprises the managerial staff must view management as a whole aspect, that is the relationships and connections between the involved processes. Such an approach is ensured by integrated management systems – i.e. „three subsystems of the enterprise which co-operate and complement each other: quality management, environment management and work safety management” [1-4]. The implementation of the above mentioned systems is much easier and more effective than the implementation of each of them separately. It offers the enterprise a greater effectiveness of functioning and full support of employees at all organisational levels. Conformity with ISO 9001:2008, ISO 14001:2005 and other standards related to occupational safety and hygiene enables an easier integration and greater cohesion of the integrated enterprise management system. Major elements contained in the standards regarding a quality management system, environment system and OSH (occupational safety and hygiene) system include the following:

- managerial staff responsibility,
- continuous improvement,
- documentation supervision,
- trainings. [5-8].

The most important of the above listed elements is continuous improvement, referring to the common goal of the systems, that is promoting and encouraging to purchase a product of service provided by the enterprise. Improvement of integrated management systems as well as each system separately is based on three elements: output, feedback and input. These elements have a decisive influence on the functioning of an organisation.

Selling a product or providing a service generates information about customer satisfaction.

The management systems in the Foundry in question were integrated by means of a quality management system according to ISO 9001 standard. This means that the quality management system is a basic management structure in the enterprise, into which elements of environment management and work safety management have been incorporated. The integration of quality and work safety management systems in ArcelorMittal Poland can be discussed in the context of the following levels:

- responsibility level,
- documentation level,
- development and verification level [7-10]

## INTEGRATION ON THE RESPONSIBILITY LEVEL

Integration on the responsibility level is mainly related to the appointment of one General Manager Proxy for quality, OSH and environmental affairs. This resulted in a change of the plant's organisational structure. The concentration of responsibility for three management areas: quality, safety and environment has a considerable impact on the effectiveness of the integrated management system and makes it possible to manage the enterprise in a modern way, taking into consideration all the aspects of management systems and improvement of all processes. All the plans and aims concerning work safety management in the Foundry have been included in „Work Safety Policy”. This policy expresses the top managerial staff's obligation to take care of the safety of work performed by employees on the premises of Steelworks Katowice and to promote OSH activities.

The work safety policy defines objectives within the scope of work safety management, which are closely related to state requirements for occupational safety and hygiene.

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The establishing of a separate policy was deliberate so that in the initial period of system implementation it was possible to outline guidelines for operation regarding work safety management, which are closely related to the state requirements.

## INTEGRATION ON THE DOCUMENTATION LEVEL

The introduction of a uniform manner of documenting integrated management systems is related to the application of uniform forms of procedures, instructions and records as well as the use of identical manners of implementing, verifying, approving and supervising of these documents. Moreover, the number of documents is reduced. The process of integrating the quality management system and work safety management system involves supervision of documentation, according to the adopted principle that quality documents provide a basis for other systems.

The supervision and coordination of works related to the preparation and implementation of work safety management system documentation was entrusted to appointed employees who had prepared and implemented the quality management system. System inspectors have been engaged in the implementation of the work safety management system. The aim of such action was to make use of:

- the acquaintance of problems related to work safety,
- employees' appropriate preparation and knowledge within the scope of quality management system,
- practical skills related to the preparation of system documents,
- ability to co-operate with persons managing other areas of enterprise activity,
- abilities to organise team work (initiating works, consistent implementation of plans).[8-13]

This resulted in the preparation of work safety management documentation over a period of a few months. The system documentation as well as the manner of its supervision have been developed in a way enabling other systems to be included in the integrated management system.

The preparation of documents taking into account elements of the quality management system and work safety management system (e.g. the procedure concerning supervision over the records related to the integrated management system, the planning procedure, preparation and conducting of audits, preventive measures, corrective measures, trainings, reviews carried out by the managerial staff), have contributed to a reduced number of system procedures in relation to the number of procedures necessary for the functioning of independent systems. The quantitative arrangement of the system documentation before and after integration has been presented in Table 11.

Table 1 **A quantitative arrangement of system documentation before and after integration [2]**

No.	Documentation arrangement	Type of document	Number of documents
1	System documentation before integration	Quality management system procedures	28
2	Theoretically separate documentation for each system	Quality management system procedures	28
		Work safety management system procedures	22
		Environment system management procedures	21
		sum	71
3	System documentation after integration	Quality management system	9
		Work safety management system	5
		Environment management system	4
		Integrated management system (quality, environment, safety)	17
		sum	35
Difference			36

## INTEGRATION ON THE DEVELOPMENT AND VERIFICATION LEVEL

Integration on the development and verification level includes the following elements of the management system [5, 7, 14, 15]:

- audits,
- trainings,
- corrective and preventive measures,
- reviews carried out by the managerial staff.

The integration process favours improvement. Training within the scope of the quality management system, work safety management system and environment management system have been combined into one subject area. The employees of the Quality Management System Team have been appointed to conduct integrated trainings. The QMS employees have taken part in numerous specialist trainings, also abroad – in France and Luxemburg, as well as in apprenticeships during which they acquired a theoretical and practical knowledge of the methods and techniques used to conduct trainings. Taking into consideration the employees' influence on the system integration and improvement as well as the achievement of the set goal, the training has been offered to the whole staff.

In the enterprise great importance is attached to the records related to all the management functions, which provide a basis for taking decisions. The records are used to: prove the compliance of the undertaken action with particular requirements and to evaluate the effectiveness of the quality management system and work management system functioning.

The integrated system implementation lasted 3 years. The duration of implementation was mainly re-

lated to the size of the enterprise. A large number of employees and complex production processes did not allow the system to be implemented fast. The employees of the integrated management system office had to develop a large number of instructions, workstation procedures and additional documents.

## CONCLUSIONS

The introduction of an integrated management system in the foundry leads to numerous benefits for the enterprise:

- a possibility to limit the number of documents by integrating them (in the foundry in question the number of documents has been reduced from 71 to 36),
- facilitation of the system auditing process,
- better supervision over the system.

The functioning of an integrated system allows concluding that it results in a reduced number of nonconformities and, in consequence, an improved competitive position of the foundry on the market.

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**Note:** The responsible translator for English language is Z. Dragon, Gliwice, Poland