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Operational monitoring in the technological process in the aspect of occupational risk

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Abstract

Improving the technological process should be aimed at fulfillment of the requirements posed by all of the interested parties. The new standards ISO 9001:2015, ISO 14001:2015 and project of the standard ISO 45001 introduce to the integrated scope the term of operational control, which application should limit the risk of not fulfilling the requirements. Therefore, the aim of the study was to prepare the operational monitoring model within the occupational safety. The proposed methodology poses the guidance for the risk assessment of the process as well as for the identification of the key technological features and parameters, which as the operational parameters of the process, should undergo supervision.

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1. Introduction

So far, the quality of the technological process has been appointed exclusively by the technological quality having the reflection in the quality of the product being introduced on the market. In theory, the technological process should course within the set conditions, however, in the reality, it is accompanied by numerous threats which with some extent lead to the occurrence of the incompatibility in reaching the quality aims [1]. Therefore, it is necessary to control the process realized by the measurements of the current values describing the condition of the process and the devices, confirmation of the compatibility of the obtained values with the accepted criteria, current monitoring enabling the identification of the deregulations occurring within the process as well as the control directed towards the stabilization of its realization [2-4].

However, one should take into account that the process control – so far interpreting as the quality control – will be slowly replaced by the integrated process control, within which the control covers also the environmental factors

and these ones concerning the work safety. The base of such a integration within control has created in the organizations the integrated process approach ensuring the identification of both: input and output of the processes – in the integrated meaning – and being promoted by the standard ISO 9001:2008 [5] and strengthened by the standard ISO 9001:2015 [6]. One should also expect that the established position of the process control will be ensured by more and more largely understood process management as well as the new consolidated structure of the standardized requirements [3,7,8].

These requirements stated by the following standards: ISO 9001:2015, ISO 14001:2015 and ISO 45001, aim at ensuring not only the compatibility of the structures which would support the integration process but also the process considering the accompanied risk and control of these processes in the situations while in the environment are active some factors distorting the regular course. While analyzing the requirements stated by the new standards, on one hand, one should consider that the outcome of the integration, which is based on the common points identification within the requirements stated towards the integrated systems, can be just the integration of standards and not the real integration of the implemented systems in the organization [9]. On the other hand, one should pay close attention to the structure of the requirements directed towards the new standards and pose the question if in reality it can be the base of the operational control of the integrated character [3,6,10-12].

On the operational level, point 8 – *operation* – requires from the organization realizing the aims which have been planned previously, considering the outcomes of the actions undertaken on the stage of planning. However, officially, common for the following standards: ISO 9001:2015, ISO 14001:2015 and ISO 45001 is only the point: *operational planning and control* (8.1). It refrains from both: comparison of the standards' structure and the directive describing the guidance for uniting the requirements stated by various standards developed by ISO and covering the systemic requirements. The point question means the implementation of the solutions preventing from the variation from the planned aims of the following character: quality, environmental and occupational safety. From the organization it is required to define the process criteria and application of such control tools which will ensure confirmation of the process compatibility with the specified criteria. Simultaneously, in the point: *monitoring, measurement, analysis and evaluation* (9.1) one expects from the organization to define what, when and by which methods will be monitored [6,10-12].

According to the point 3.11.3 of the norm ISO 9000:2015, monitoring means: “determining the status of a system, a process, a product, a service or an activity”, however, according to the point 3.4.8 of the norm ISO 14001:2015 and the point 3.28 of the norm's project ISO 45001 – means: “determining the status of a system, a process or an activity”; in all the cases with the application of the check, supervise or the critical observation [10,11,13].

Meeting the requirements of the new standards is not easy, and especially within the scope of the operational control. Even though the operational control has already been an element of the standard ISO 14001:2004, and the quality supervision over the process has been written in the requirements stated by the standard ISO 9001:2008, the requirements concerning the operational control within the range of PN-N 18001 and the integrated management have not been present. Therefore, the organizations are looking for the “tailored”, own, authorial solutions which would enable for – based on the risk criterion – monitoring of the operational parameters being of the meaningful character for the integrated management system [3,5,14,15].

With regard to the above the proposed authorial methodology creates the basis for the supervision of the key operational parameters of the process. The chosen elements of the application have been presented for the continuous casting process. The described methodology is consistent with the quality and environmental monitoring and can be used within the range of any organization realizing the technological processes in a compatible way with the integrated requirements.

2. Methodology

The developed methodology covered the compilation of the guidelines for estimating the occupational risk of technological process and identification of the key operational parameters. It reflects the originality of the study.

The method allowing for the complex assessment of the realized processes is the integrated assessment of its risk.

The result of the assessment should be the base for the decision concerning the way of dealing with the process' risk. Its lowering can be the result of the technical or technological solutions or – in the situation when there is no

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