

## Key Projects in the Area of Occupational Health and Safety Management – Case of Polish Company

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**Abstract.** Project management in the area of occupational health and safety management is related to implementing conditions that affect the safety of industrial practices. The goal of the paper is the review of the systematic projects in the area of the occupational health and safety management system in the chosen Polish large company that developed and adopted practices enforcing work safety system.

### Introduction

The Fourth Industrial Revolution requires the health and safety of workers to be adapted to new economic and corporate environment. This process of strategic and organizational adaptation requires research, development and innovation (RDI) in occupational health and safety as a key tool to anticipate undesirable events and facilitate preventive decision-making in advance (Rubio-Romero, 2004). As a result, research into new occupational health and safety solutions become a necessity that is closely linked to companies' competitiveness [1, 2].

Occupational health and safety are generally defined as the science of the anticipation, recognition, evaluation and control of hazards arising in or from the workplace that could impair the health and well-being of workers, taking into account the possible impact on the surrounding communities and the general environment. This domain is necessarily vast, encompassing a large number of disciplines and numerous workplace and environmental hazards [3-5].

The literature on industrial safety focuses upon numerous themes related to the activities of different players such as the errors made at operational level, communication between teams, the issues of management and of leadership and the impact of strategic decisions and organizational dimensions [6]. Some studies show the difficulties and the limitations encountered by industrial safety specialists when they seek to establish some counter power in relation to the orientations or decisions that can jeopardize safety [7-9]. Some research confirms, that industry uses rigorous project management, modern and safe facilities and robust rules of occupational health and safety but accidents continue to cause human and social problems [10-12].

According to Recommended Practices for Safety & Health Programs in Construction elaborated by Occupational Safety and Health Administration establishing a safety and health program at the job site is one of the most effective ways of protecting company most valuable asset: workers. Losing workers to injury or illness, even for a short time, can cause significant disruption and cost to company as well as the workers and their families. It can also damage workplace morale, productivity, turnover, and reputation. Safety and health programs foster a proactive approach to "finding and fixing" job site hazards before they can cause injury or illness. Rather than reacting to an incident, management and workers collaborate to identify and solve issues before they occur. This collaboration builds trust, enhances communication, and often leads to other business improvements [13].

EU-OSHA's foresight studies and review projects aim to anticipate and prioritize risks to help develop OSH practices and policies in areas such as digitalization and green jobs, and stress and

psychosocial risks. EU-OSHA also provides easy-to-use resources to help put prevention in the workplace in practice, as well as a range of guidelines being developed to keep workers safe during the pandemic, both on the front lines and adapting to teleworking. The Agency's involvement in the development of the Carcinogens Action Plan and its Healthy Workplaces campaigns demonstrate the Agency's commitment to promoting a culture of prevention across Europe and beyond, which is at the heart of EU OSH policy [14].

The paper presents review of the key projects in the area of occupational and safety management in chosen large Polish company that let also indicate solutions to improve the health and safety conditions on the chosen work placement in companies' group from SME sector.

### **Characteristic of the Analyzed Company**

The analyzed company is an integrated multi-energy concern operating in Central Europe and Canada. It provides energy and fuel to over 100 million Europeans, and our advanced products are available in nearly 100 countries on 6 continents. ORLEN Group companies operate:

- production in the energy segment (generation of electricity and heat), and in the refining and petrochemical segments, including crude oil processing and production of refinery, petrochemical and chemical products and semi-finished products;
- commercial: distribution and sale of electricity and heat, electricity trading, wholesale and retail sale of fuels, petrochemicals, chemicals and other products;
- services: storage of crude oil and fuels, transport, maintenance and repair, laboratory, security, design, administration, insurance and financial services;
- related to exploration, appraisal and production of hydrocarbons.

In accordance with the Strategy of the ORLEN Group adopted in November 2020, the key goal of the Company is to be a regional leader in the field of energy transformation, to build new energy capacities from renewable sources and to implement the decarbonization process, while maintaining operational efficiency and financial strength in traditional business segments.

The ORLEN2030 strategy is based on renewable energy and modern petrochemistry, which pave the way for the transformation of the ORLEN Group until 2030. The development of new areas of activity takes into account technological changes, environmental and consumer trends. The implementation of the strategy will lead to further diversification of the Company's revenue sources, in line with the long-term goal of achieving emission neutrality in 2050.

Ensuring safe working conditions for the employees of the ORLEN Group, employees of external companies performing work on its behalf, as well as the safety of operational and production processes is treated as a priority. Within the scope of this objective, multi-directional activities are carried out in the field of continuous improvement of the work safety culture and maintenance and development of the existing safety standards. In accordance with the assumptions, the implementation of strategic goals was focused, among others, on:

- continued implementation of unified safety standards in the ORLEN Group as part of the Safety Plus+ project;
- improving the contractor management system and achieving the involvement of contractors at the level of identifying with the vision of co-creating a safe workplace;
- initiating, designing and implementing projects and solutions in the aspect of counteracting the COVID-19 pandemic;
- implementation of various activities to improve the awareness of safe work performance and to create proactive attitudes among employees and contractors.

### **Key Projects in the Area of the Occupational Health and Safety**

In the year 2021, "*Directions for the development of the personal and process safety area of the ORLEN Group*" were developed for the years 2022-2026. One of the important undertakings will be to support the processes of taking over capital control over companies and their groups in the

area of occupational safety. As part of the implementation of these activities, a coherent work safety management system will be created within the ORLEN Group, mainly in terms of incorporated companies. A common occupational safety policy of the Concern will be defined and uniform safety standards will be implemented in the ORLEN Group. One of the main objectives will be to maintain the values of key KPIs in the area of occupational safety  $TRR1) \leq 1.70$  and  $T1PSER2) \leq 0.3$  while implementing the processes of taking capital control over companies / groups of companies.

The area of occupational safety of the ORLEN Group is regulated by national regulations applicable to a given area, European Union regulations, harmonized national standards and rules resulting from good practices identified in the fuel and energy industry.

In the area of personal, process and fire safety as well as the safety of operations related to dangerous goods, uniform Safety Standards, Technical Standards and Guidelines are issued for the ORLEN Group companies. They contain good practices identified in the Group's companies, as well as standards applied in the considered areas in the leading companies in the industry. In 2021, the ORLEN Group completed the process of implementing uniform safety standards under the Safety Plus+ project, which includes the implementation of 15 safety standards constituting the highest functioning safety standards identified in the fuel and energy industry. In 2021, technical standards were developed and issued for the LOGISTYKA+ and DETAL+ projects. The aim of the projects is to standardize and increase the level of work safety in the area of logistics and petrol stations in the ORLEN Group. The technical standards were developed in cooperation with representatives of the occupational safety areas of the companies covered by the projects and constitute a set of guidelines based on the best practices applied in the ORLEN Group.

The vast majority of ORLEN Group companies operate an Occupational Health and Safety Management System in accordance with PN-N-18001 / OHSAS 18001 (until March 11, 2021) / ISO 45001 - the scope of certification covers their individual activities, for which only in a single case an exemption for processes. The scope in question applies to all employees of organizations in which this system operates. The Process Safety Management System based on the US OSHA 1910.119 standard has been implemented in the production companies of the ORLEN Group. The system allows for the effective implementation of activities in the area of operational excellence by improving the technical safety of process, storage and auxiliary installations, and thus preventing the occurrence of any undesirable events that may potentially affect the safety of employees and/or production processes. The Process Safety Management System (SZBP) as an element of the general management and organization system of PKN ORLEN was introduced in order to ensure the highest safety standards in workplaces and to meet the national requirements of Art. 252 of the Environmental Protection Law of April 27, 2001 (consolidated text, Journal of Laws of 2021, item 1973, as amended) in the field of systemic process safety management and further increasing the effectiveness and efficiency of actions to prevent major industrial accidents.

The concept of the safety area management in the ORLEN Group, is based on building and developing a uniform safety standard within the ORLEN Group, while increasing operational excellence and preventive excellence in personal and process safety. The strategy includes the following strategic areas: Management and leadership, Personal security, Process security. In the following years, these assumptions will be continued as part of the implementation of the "Development directions for the area of personal and process safety of the ORLEN Group 2022-2026".

The Comprehensive Prevention System is the basic element of the Occupational Health and Safety Management System, which consists of internal organizational acts in the field of occupational health and safety, fire and chemical safety, radiological protection, technical safety, process safety and safety of operations related to dangerous goods.

The PKN ORLEN Safety Units are a set of basic rules that must be followed along with all applicable regulations and standards, and the Safety Units for PKN ORLEN's own petrol stations, which are a set of basic rules to be applied at PKN ORLEN's own service stations.

The Safety Standards, Technical Standards and Guidelines of the ORLEN Group are unified requirements in the field of occupational safety, process safety and fire safety, safety of operations related to dangerous goods, containing good practices identified in the ORLEN Group companies, as well as standards applied in the considered areas in the leading concerns in industry.

In the ORLEN Group, legal regulations regarding occupational safety have been identified, taking into account the aspect of the company's operations. The implementation of these requirements has been ensured and ongoing supervision of legislative changes in the area of occupational safety is carried out. In 2021, an important element of the process was ensuring compliance in the implementation of preventive measures regarding the COVID-19 pandemic in the aspect of changing legal requirements, ongoing supervision of the changes in question and responding to them.

More than 2,300 on-the-job training courses in the field of operations with dangerous goods have been conducted. The correctness of the preparation of transport documentation was verified, the drivers' licenses and the compliance with the regulations of vehicles that were dispatched to transport dangerous goods were checked. The correct marking of the vehicles, the marking of the packages, the completeness and correctness of the equipment that should be in the vehicle were checked.

### **Projects in the Area of Safety Standards and Technical Standards**

The ORLEN Group conducts various activities to continuously improve the area of occupational safety management. These include, among others: setting and implementing strategic goals at the level of both the ORLEN Group and individually for individual companies, monitoring KPIs in the area of occupational safety of the companies and the ORLEN Group, developing plans to improve health and safety conditions, performing annual health and safety analyses, implementing to improve the work safety culture of employees and contractors (e.g. "Safe Contractor", "ANWIL Safe Program", "Report a Threat", Behavior-Based Safety Programs, "Occupational Safety and Health Protection Days in the ORLEN Group", etc. ), the functioning of control and audit systems, both internal and external, an extensive training system for employees and contractors, incentive systems for employees and contractors (e.g. "Health and Safety Incentives Programme", "Security Eagles" competitions, "Good Personal and Process Safety Practices" ORLEN Group", "Millions of man-hours without an accident at work of an employee and contractor in the ORLEN Group"), implementation of post-inspection assessments, preventive and corrective actions identified in the area of occupational safety, implementation of good practices identified in the fuel and energy industry.

In the scope of improving the safety management system, consultations with external advisors and cooperation with universities are carried out. In 2021, the following tests were carried out in selected companies: consultations on the Occupational Health and Safety Management System in accordance with the ISO 45001:2018 standard, while PKN ORLEN continued the implementation of the strategy of cooperation with universities. Objectives and tasks in the area of occupational safety are implemented in the ORLEN Group companies, taking into account their own OHS Service, with the support of the resources of ORLEN Eko Sp. z o. o. or with a small share of outsourcing of health and safety services.

The best practices are constantly identified, both through the exchange of experience between the ORLEN Group companies and the use of the experience of global oil and gas companies. Among the implemented projects, we can mention the LOTO System and the Employee Support System.

The Employee Support System is a behavioral program aimed at strengthening safe behaviors' and eliminating risky behaviors. The implementation of this project is one of the multi-directional activities aimed at improving the safety culture of the ORLEN Group. In 2021, development workshops were organized for Advisors of the Employee Support System. The aim of the workshops was to improve the skills of effective training, sharing knowledge and experience with PKN ORLEN employees and contractors, using various methods of knowledge transfer. One of the most important elements of the Employee Support System are conversations between SWP Advisors and employees of PKN ORLEN and external companies. Therefore, SWP advisers should communicate effectively so that the message reflects their intentions as faithfully as possible and employees understand this message correctly.

The LOTO system is a planned action that includes disconnecting the power supply from industrial equipment and machines for the duration of maintenance or repair work on them. The purpose of the LOTO system is to eliminate accidental and uncontrolled switching on of machines or the release of dangerous energy during operation, investment and repair works as well as service and maintenance works, so as to prevent accidents and events resulting from unexpected start-up or re-supply of energy to machines, devices or installations.

Cooperation with universities is one of the elements of implementing OHS standards.

In 2021, the 5th edition of lectures on the subject "Technical Safety" was conducted in the field of full-time and part-time studies in the field of Chemical Technology. It was a continuation of the project implemented in 2017-2020 by the Occupational Health and Safety Office, the PKN ORLEN Technology Office and the Warsaw University of Technology, Branch in Płock. The initiative concerned a series of expert lectures, conducted in accordance with the idea adopted by PKN ORLEN to educate the future engineering staff of the company in areas relevant to the oil processing and energy industry and as part of the adopted strategy of cooperation with universities. In addition, cooperation with the Lodz University of Technology (through the Education Centre in Płock) was continued in the field of post-graduate studies on Industrial Process Safety.

The ORLEN Group conducts a competition entitled "Good practices of personal and process safety, in which the companies of the Concern take part". The aim of the competition is to spread good practices in security that promote a pragmatic and modern approach to security, including all technical, quality, efficiency, communication, organizational and infrastructural solutions. The implementation of the competition supports the process of improving and streamlining the elements of work safety management and increasing the motivation of employees. Participation in it gives the opportunity to exchange knowledge and experience in the field of shaping the safety culture between the ORLEN Group companies. In addition, the competition "Millions of man-hours without an accident at work of an employee and contractor in the ORLEN Group" is being carried out, also intended for the companies of the Concern. In this case, the aim of the competition is to promote accident-free work.

The ORLEN Group companies carry out ongoing identification of threats, risk assessment and analysis of accident events. The process in question is carried out in the scope of developing and updating the Occupational Risk Assessment for individual work positions of employees, performing work environment tests, identifying hazards in work instructions and monitoring working conditions. An important aspect of this process is the implementation of the Report a Work Safety Threat program in the companies. The process of hazard identification, risk assessment and analysis of accident events is carried out individually by the companies and at the level of the ORLEN Group. In this case, it is carried out using the following tools: Safety Alerts, Lesson Learned, analysis of accidents at work using the "event tree" method, Safety Meeting. Accidents and emergencies occurring in the ORLEN Group are subject to analysis and assessment of the possibility of their recurrence.

An element that is constantly improved and necessary for further development on the scale of the ORLEN Group are interdisciplinary meetings of representatives of the areas of personal, process and fire safety, the Technology Office and other areas of the organization, as part of the so-called safety meeting.

### Summary

In order to constantly supervise the state of process safety of the company's facilities in accordance with legal requirements, emphasis was placed not only on adapting activities to standards and requirements, but also on hazard analyses as part of investment projects and periodic reviews and updates. Knowledge of the level of risk of a potential adverse event is an important element when making decisions regarding the effectiveness of security measures used to prevent failures. Training in the field of the process safety management system was conducted for newly recruited employees as part of trainings conducted at the Training Centre and for employees of fuel terminals. The conducted training confirmed that knowledge sharing is one of the practical organizational activities aimed at minimizing the risk of emergencies.

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