AI FOR OCCUPATIONAL SAFETY

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WHY IS THIS TOPIC IMPORTANT?

Implementing comprehensive occupational health and safety measures in a company involves numerous obligations. Hazards and risks in the workplace must be identified and assessed, and appropriate preventive measures must be put in place to ensure the health and safety of employees, while preventing workplace accidents and occupational diseases. This includes creating and implementing risk assessments, providing safe equipment, training employees, organizing first aid, and complying with legal requirements. Meeting these extensive requirements demands significant resources, which are often limited in small and medium-sized enterprises (SMEs). AI-powered tools can support companies in fulfilling these obligations more resource-efficiently and cost-effectively. AI can quickly collect and evaluate large volumes of data, helping to ensure compliance with safety regulations, minimize workplace accidents, and create a safer working environment.

WHAT ARE THE POTENTIAL USE CASES?

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In general, AI can support companies in risk assessments, automating administrative tasks, and employee training. A key application is real-time monitoring using wearable devices and sensors that provide immediate alerts in case of potential hazards. This proactive approach helps prevent accidents and ensures a safer workplace. AI uses predictive analytics to analyze historical data, enabling SMEs to identify potential safety incidents early and take preventive measures. Automated safety programs can also be personalized through AI by tailoring content to specific job roles and past incidents, ensuring employees are better prepared. Moreover, AI systems can detect unsafe working conditions or improper equipment use through image and video analysis, allowing timely intervention. By integrating AI into occupational safety measures, SMEs protect their workforce and boost productivity by reducing downtime caused by accidents.

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AI IMPLEMENTATION: PRACTICAL EXAMPLE

As a roofing company, this business operates in a high-risk sector. Employees are exposed to daily dangers when inspecting roof conditions or taking measurements. To minimize these risks, the company increasingly uses drones. For this purpose, it relies on the AI system Airteam, which collects and processes company data and converts it into 3D CAD models. Instead of employees having to climb onto roofs, drones now fly around buildings and capture videos that are processed by AI for measurements and calculations. In the future, the company and Airteam plan to integrate anomaly detection into the software. This will allow the comparison of multiple recordings - so-called "3D clones"—taken at different times in order to identify deviations. The system can, for example, detect changes, missing elements, or the presence of leaves. By highlighting these anomalies, the company knows where to focus its attention for more detailed inspections. This AI-driven approach spares employees from dangerous roof climbs. The use of the new technology also contributes to long-term occupational health, allowing employees to work safely even at an older age. Beyond the safety benefits, using drones also increases efficiency by saving time and resources and improves the accuracy of roof inspections, enabling more precise analysis and well-founded decisions in roofing projects.

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WHAT NEEDS TO BE CONSIDERED?

The implementation of AI-powered drone technology for roof inspections requires in-depth knowledge of technical, legal, and social aspects. Data security is of the highest priority, particularly in AI-driven image processing, where personal data must be removed to protect privacy. Since companies have limited access to all information and must rely on software providers to ensure compliance with regulations and safety standards, careful selection of the right provider is essential. The use of drones requires obtaining flight permits and complying with strict legal regulations. Equally important is managing public perception through proactive communication, training employees on handling sensitive interactions with residents, and transparently explaining the technology's capabilities and data protection measures. AI-generated images of individuals or neighboring properties must be removed so that only the customer's property is captured. Companies must align technological innovation with community trust while continuously monitoring evolving legal and ethical standards.

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