

**Title: Digitalization of Work Permits and automation of controls for the improvement of operational safety in High- Risk Industrial plants**

**Author: E.Sampino, M. Celebre, C. Raimondo**

The management of work permits represents one of the key elements for ensuring high safety standards in the High Risk Industrial plants.

This paper presents the experience gained in the full digitalization of the work permit issuance, control and archiving process through the implementation of an IT platform designed to ensure traceability, regulatory compliance and enhanced operational efficiency.

The project involves the definition of a digital ecosystem capable of integrating internal databases (company registries, technical equipment codes and related geolocation, personnel qualifications for both internal staff and contractors, active order authorized on SAP) enabling automatic and blocking checks in accordance with legal requirements (e.g Legislative Decree 81/08-Italy and State Regions Agreements) and the established procedures of the Refinery.

Particular attention is given to work in confined spaces, where the work permit management software performs automated verification of personnel suitability, including qualifications, training and compliance with regulatory requirements.

The system also included an innovative signature management, incorporating both qualified electronic signatures using the smart cards/USB tokens, and graphometric signatures when using mobile devices, thereby ensuring full legal validity.

The system is complemented by advanced field monitoring tools, including georeferencing of open work permits in the field and tracking of entry and exit of contractor personnel managed by the external operators of the unit plant.

Finally, the use of a dedicated digital App (eSAM, electronic safety audit monitoring) for audits and inspections of work permits further enhances the effectiveness of the management system, ensuring a continuous improvement model focused on prevention.