

CONTROLLING YOUR INDUSTRIAL RISKS

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EXPERIENCE PROVES THAT THE WEAKEST LINK IN TERMS OF RISK MANAGEMENT IS NOT MACHINES, PROCESSES, TECHNOLOGIES BUT PEOPLE. PEOPLE MAKE MISTAKES AND THE MORE ADVANCED, THE MORE COMPUTERIZED, THE MORE 4.0 THE PLANT, THE MORE QUALIFIED PEOPLE ARE NEEDED TO MAINTAIN IT, TO MAKE COMPLEX DECISIONS, IN AN EVER MORE COMPLEX ENVIRONMENT.

Industrial disasters in Thailand and Singapore have made headlines recently, in a time when infrastructure projects and industrial plants, their workers and managers, are facing unprecedented pressure from the prolonged Covid-19 crisis and economic difficulties.

Official investigations have shown that technical errors are either the cause or a contributing factor of most accidents: lack of maintenance, non-compliance with regulations or internal best practices, wrong diagnosis leading to wrong technical actions, bad management decisions, often due to lack of knowledge and lack of accurate information.

Health, Safety, Environment (HSE) is of course intertwined with maintenance, yet these disciplines are often seen as separate.

In most companies, HSE is a noble profession, while maintenance is seen as an ugly duckling...

Converging standards

International standards offer great insight in the subject. According to the well-known ISO 31000 Risk Management standard, "Risk is the effect of uncertainty on objectives": there is no risk without objective. As per the European standard EN 13306 Maintenance terminology, the role of maintenance is "to retain in, or restore to, a state in which the items [under maintenance department responsibility] can perform the required function".

We note that the "maintenance department" can be any department in charge of maintaining an item (not strictly the one called "maintenance"). Typical objectives include availability, cost reduction, product quality, environment preservation. Maintenance is meant to reduce the effect of uncertainty on these objectives, mostly by reducing the probability of failure through preventive maintenance.

If you have a Preventive Maintenance plan in place, you already have a Risk Management plan.

More interestingly, the ISO 31000 Risk Management standard explicitly points to methodologies, tools and practices that are all well-known to maintenance partitioners: FMEA (Failure Modes and Effects Analysis), RCA (Root Cause Analysis), RCM (Reliability Centered Maintenance).

It emphasizes the need for a feedback loop between field activities and decision makers. The ISO 55000 Asset Management standard offers a risk-based approach to Asset Management (defined as "The coordinated activity of an organisation to realize value from assets.") fully aligned with ISO 31000 and a practical tool for implementation, with clear steps and control points. As a result of this convergence between Maintenance and Risk Management standards, a large variety of tools become available to the organization and maintenance professionals must take center stage in the Risk management effort.

The weakest link

Yet, experience proves that the weakest link in terms of Risk Management is not machines, processes, technologies but people. And not just "them", but "you and me" too! People make mistakes and the more advanced, the more computerized, the more 4.0 the plant, the more qualified people are needed to maintain it, to make complex decisions, in an ever more complex environment. There is no easy solution: no Digital Twin or Maintenance Drone that can magically solve all problems. Furthermore, in the ongoing crisis, companies face a more challenging human resources environment than before.

The experience of China comes to mind, a nation that has faced very similar HSE challenges in the booming two decades during which it became the factory of the world and the global infrastructure leader. The analysis outlined earlier in this article reflects the experience Siveco China, an Asset Management consultancy and digital solution provider originating from France, which has developed alongside its Chinese clients during this period, before expanding its business to Southeast Asia and elsewhere.

According to Siveco China, the challenge or rather the opportunity of Risk Management can only be tackled by placing people at the center. The ongoing crisis, increasingly strict regulations, give plenty of incentives for such a project. The best practices embodied in the ISO 31000 and ISO 55000 standards offer a credible framework, first to convince your boss, and then to run the project with a structured manner. ISO 55000 advocates prioritization and favors continuous improvement, which means you can start small and fast. The feedback loop between workers and managers, with proof of compliance, is best implemented through a digital tool designed based on the standards. This is where 4.0 finally appears, not as a magic wand, but as a tool in a worker-centric risk-based approach.

In times of crisis, companies and managers may be tempted to wait for the crisis to end. Experience shows that one crisis will soon replace the other. Good times will come too, during which pressure to improve may disappear, until the next crisis. While you wait, problems won't go away, new regulations may appear, competition will strengthen. This has been the case in China in the past decade. Some companies transformed themselves and their industry, while complacent players, among them leading multinationals, lost their competitive edge. The best time to act is now.



Chonburi Clean Energy (Thailand) benefits from this risk-based Smart O&M approach



Case study – Chinese storage terminal takes risk management to world-class level with bluebee®

In 2016, facing increasing regulatory oversight and toughening market conditions, LBC Shanghai Shipping Terminal (a 74,200 m³ bulk liquid chemicals and petroleum products storage terminal) decided to strengthen its risk prevention management system with Siveco China in line with ISO 31000 and 55000.

Critical assets and inspections points were documented and labelled with QR-coded tags. Technical staffs were trained to use a mobile application named bluebee®, running on explosion-proof ATEX-certified Android phones. The app helps capture information from the field, such as incidents reported in a structured manner for systematic analysis, and enforce best practices, such as inspections or troubleshooting procedures. It connects to a cloud-based risk management platform, which contains all inspection routines, standard operating procedures and technical data. The platform produces regular analysis reports, as well as real-time graphical indicators showing the project's progress, identifying risk areas, tracking the corrective and preventive actions taken.

With the app, scanning of QR codes, automatic time stamps and onsite photos prove that inspections are actually performed, in ways that a paper-based system with regular audits could never achieve (‘how do we know for sure the job was done’). Indeed, inspection forms (either preprinted or printed from a CMMS program), common in the industry, seldom accurately reflect the reality in the field: all checkboxes are invariably ticked off. Another key aspect of the system is that it enabled training on-the-job, in addition to classroom training on related concepts and methodologies during the implementation phase.

The project took three months and resulted in a robust Risk Prevention process, demonstrable to all stakeholders. It won a Chinese industry award for Asset Management digitalization and was shortlisted for the Outstanding Terminal Safety Technology Award at 2018 Global Tank Storage Awards in Rotterdam, no small feat for a Chinese terminal.

Siveco China (www.sivecochina.com/en) is a pioneer in the development of Smart Technologies for Operation & Maintenance, with a focus on mobile solutions "for the worker of tomorrow." The company helps facilities owners to optimize assets lifecycle and ensure regulatory compliance.

Siveco China has its Asian headquarter and R&D center in Shanghai, serving clients all over Asia and on the New Silk Roads. It is the only company in Asia to be ISO 9001-certified for this scope of business.

