



AN INTEGRATED APPROACH TO BRIDGE DIFFERENCES IN SAFETY CULTURE

(COMMENDED CASE IN THE EUROPEAN CAMPAIGN ON SAFE
MAINTENANCE 2010/2011)

1. Case metadata

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C33.1.2 - Repair of machinery

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19641D	Risk assessment
11201B	Safety and health management
19681D	Safety audits
19801D	Safety communication
19961D	Safety culture
00201D	Sub-contracts

2. Organisations involved

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3. Description of the case

3.1. Introduction

SPIE is a provider of electrical and mechanical engineering and HVAC (heating, ventilation and air conditioning) services, energy and communication systems. SPIE enhances the quality of life by helping local and regional authorities and companies design, build, operate and maintain facilities that are more energy-efficient and environmentally friendly. SPIE has more than 29,000 employees working from nearly 400 locations in 30 countries. In Belgium, SPIE offers a wide range of services for the markets of industry, infrastructures and service sector with a workforce of 1124 employees.

SPIE Belgium was awarded (with a partner company) a multi-year contract for mechanical maintenance works within the TOTAL refinery in the port of Antwerp. This case will focus on the contractor-client relationship between SPIE and TOTAL.

Mechanical maintenance traditionally is a high-risk activity with a statistically high number of accidents. Preventing accidents related to mechanical maintenance within an oil refinery requires a good client – contractor relationship. There are several aspects to take into account with respect to this relationship:

- Both sides have a different background when it comes to safety culture.
- Contract negotiations: The safety culture may have been taken into account on company level, but during negotiations or the formal preparation of the contract (e.g. safety plan or generic risk analysis), safety culture is not necessarily taken into account from both sides (contractor – client) when considering the individual operators.
- The client operator usually views the contractor as an unknown intruder with a toolbox who intends to tamper with “his” production equipment, whereas the contractor usually views the client operator as a hindrance to a smooth maintenance intervention. Getting these two to trust each other and to communicate effectively and smoothly on safety issues is essential in avoiding incidents and accidents.

3.2. Aims

Since SPIE was awarded with a three year contract with a possible extension of 2 more years (contract was finally for 5 years: 2005-2010) there was a unique possibility to manage safety in a structured way. Rather than to fall in to the traditional routine of an occasionally abrasive relationship where each side defends its own point of view and interests, a conscious effort was made to build trust early on to ensure an open communication flow between both parties. From the beginning the parties worked together on how to improve the safety at the worksite.

The efforts by the maintenance contractor were focused along three axes: material elements, training and worker attitudes and behaviour.

3.3. *What was done, and how?*

Material elements:

From the perspective of the maintenance contractor, one of the necessary elements to earn the trust of the client is a visible commitment to professionalism (which is also an essential element of performance, so there is internal interest as well). First and foremost, professionalism is supported by using professional equipment that is well maintained. As required by the SCC checklist (Safety, Health and Environment Checklist Contractors), this system ensures the objective assessment and certification of the safety management systems of contractors providing services to the (petro)chemical industry and other industries), such inspections are marked on the equipment with either a colour-coded cable tie, or a small round sticker. The marking system information is made available to every member of personnel, but also to the client for use in his audits (see below).

As to communications on the floor, simple material markings are more effective than bundles of papers. To advance safe and simple indications in preparation for maintenance interventions, SPIE introduced its “SPIE tags” (small metallic tags to be affixed to equipment in preparation of interventions by the supervisor during the preparation of the work, preferably also in the presence of the client operator) – see figure 1. This way, any confusion caused by documents can be avoided by the simple instruction: no tag = don’t touch. The tags are more sustainable and recognizable than the normal tags.



Figure 1: “SPIE tag” small metallic tags to be affixed to equipment that is safe to work on

Training:

All maintenance interventions must be executed by qualified personnel; qualification implies training, and more specifically training that is suited to the risks encountered. Since the beginning of the project SPIE and TOTAL had the opportunity to streamline the training program for both TOTAL and SPIE workers. Managers and prevention officers were involved from the beginning in this process.

A three tier training system has been developed for the SPIE personnel involved on the TOTAL site. All personnel has received the basic safety training and has passed the subsequent knowledge test required by the VCA** checklist. Supervisory personnel have passed the equivalent test for supervisors. In addition, all personnel must have received specific training before executing critical tasks (basically anything that has to do with electricity, hoisting, working on flanges, etc...).

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Furthermore, the client has added a number of his training requirements for risks that are specific to (parts of) his plant, and SPIE personnel have received the same training as the client personnel according to the specific training requirements. TOTAL and SPIE employees followed the training together which contributed to a mutual language and understanding. Training attendance is recorded not only in company files but also in a personnel “safety passport” that the individual technician carries with him. In this way, any supervisory personnel (client or SPIE) or even outsiders can verify the qualifications of anyone executing a task at any time.

One important training that was given to all personnel of SPIE in 2009 was the execution of Last Minute Risk Analysis (LMRA). Given that the local work environment may have changed between the moment of the work preparation and the actual maintenance intervention, it is essential to make the individual technicians as autonomous as possible on safety evaluation. To this effect personnel have been trained to take time to evaluate and react to previously undetected risk factors prior to starting any task. Formal reporting of these is imposed only when they encounter risks they cannot handle themselves (thus not creating unnecessary additional paperwork). The training focuses on the limitations of human observation in “habitual” environments and stresses the need to concentrate on safety/risk observation before starting work. The training is periodically refreshed through the distribution of pictures taken on actual SPIE Belgium worksites to enable the workforce to do a LMRA, the results of which are to be discussed at the next toolbox meeting.

The content of the training program is regularly repeated during the monthly toolbox meetings. These meetings are attended by SPIE employees but also by a representative of TOTAL.

Worker attitudes and behaviour

Both client and contractor entered the contract with their own mental framework and habits for safety. Coordinating these from day one is essential to avoid misunderstandings and the associated risks and frictions that they cause.

As the client had a well established audit system to evaluate contractor performance, SPIE Belgium chose to use this as a learning opportunity about the client safety culture and use the feedback to adapt to the clients expectations. On a regular base one maintenance worker of SPIE was picked out randomly for an interview. A reward system was established to reward technicians for a good performance during these audits. Employees received two cinema tickets. This was a conscious choice. In this way also the family/friends of the employee were involved. The new system is perceived more effective than the traditional approach of sanctioning people for giving unsatisfactory answers. Additional training is a far better reaction to detected individual weaknesses.

As part of the above mentioned LMRA training, technician were also taught to address colleagues in a positive manner on safety/risk issues. Such interventions were all too often viewed as “telling someone off”; the added value of the “added pair of eyes” taking care of the safety of a colleague was thus stressed to facilitate such communications. This was also stressed during the toolbox meetings.

3.4. What was achieved?

During the project the following results can be presented:

- No lost time accidents during the contract period (2005-2010);
- A marked improvement over time of the results obtained on client (TOTAL) safety audits (see figure 2);
- Despite the high risk profile of the activities, the 2009 Contractor Safety Award was won by SPIE Belgium and its partner on the TOTAL Antwerp refinery.

Furthermore general statistics of SPIE show that within the industry sector (including the project for TOTAL), the number of small incidents decreased during the last years. A recent external safety culture audit among employees of SPIE shows that trust in the supervisor is higher in the industry

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sector than the other sectors SPIE is working in and accepting risk is lower in the industry sector than the other sectors SPIE is working in.

An estimation of the costs for the training activities for the TOTAL project is difficult to give, since some costs are related to general training of SPIE workers and some costs are made specifically for TOTAL or by TOTAL.

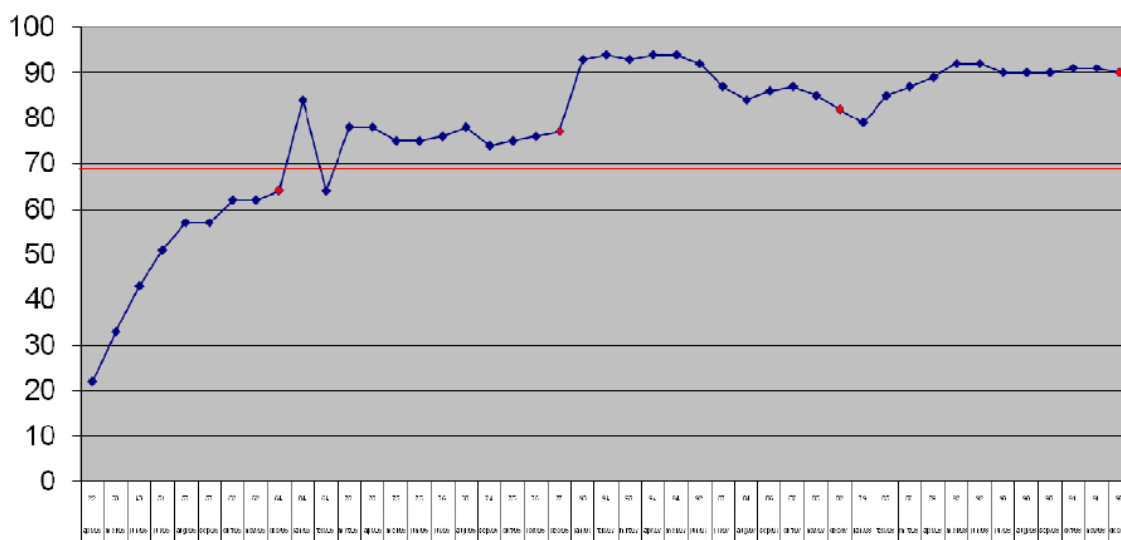


Figure 2: Overview audit results from April 2005 till December 2008, the score is composed of several audit indicators, with a minimum of zero and a maximum of 100.

3.5. Success factors

An important success factor was the collaboration with the client regarding safety issues from the very beginning of the project. Both parties focused on what they could contribute to make the work safer. The alignment of the training program and technical interventions and the active training of the workers led to a:

- A proactive prevention approach by operational staff during the preparation of maintenance interventions.
- A positive attitude by contractor labour when challenged on safety issues.

Due to this proactive approach more information came available about the actual risks at the workplace. More reports with information about near accidents and misses are a valuable addition to the existing accident statistics and make adequate actions possible.

3.6. Further information

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3.7. *Transferability*

The strategy applied by SPIE is such that it can be easily applied to other contractor-client relationships especially within the oil and gas industry but also in other sectors.