

RISKworld

issue 3 spring 2003

the newsletter of risktec solutions ltd

SAFETY IN A CAN

Risktec is working with a world leading manufacturer of aluminium beverage cans to support their health and safety improvement programme.

Rexam plc, the FTSE 100 consumer packaging company, conducted a detailed health and safety audit of its operations in 2002. Risktec was engaged to review the audit findings and recommend a series of actions to support the overall Rexam risk management programme.



Key recommendations related to occupational health and safety roles and responsibilities, the risk assessment process, the monitoring of proactive performance indicators, and the formal management review of effectiveness.

Additionally, Risktec recommended a staged training process, together with topics for e-learning and intermediate level training.

For further information on Rexam visit www.rexam.com or contact Alan Hoy at Risktec on

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Welcome to Issue 3 of RISKworld. In the last issue, we were "on the move" to bigger offices in both Warrington and Aberdeen to accommodate our expansion. With over 115 projects from 55 clients, it is now 18 months since we started operations. But, how effective has our service been to our clients? To make sure we are on the right road to success, we commissioned an independent Customer Satisfaction Survey to find out exactly what our clients think of us.

The aim of the survey, carried out in line with our ISO 9001:2000 certification, was to help us build a better understanding of our clients' views on our strengths and weaknesses.

Employing a questionnaire and a structured interview, the general feedback was positive. The results concluded that 100% of the clients questioned would recommend Risktec Solutions to other companies. None of the clients questioned had a complaint with the service they received and 70% compared Risktec favourably to our competitors.

Clearly we are pleased to receive such a positive endorsement of our service and performance. In fact, the outcome of the survey has led to Risktec receiving a Gold Benchmark Award for Customer Satisfaction.

Room to improve

Nevertheless, there are some specific areas where we need to improve, mainly relating to communicating progress on projects. We are actively addressing this feedback by placing greater emphasis on communication, progress reporting and relationship building.

We are grateful to all clients who participated in the survey.

The company is committed to developing sustainable and long-term business relationships and the continuous improvement of all aspects of our service is a key part of this commitment.

How we scored:

Survey Category	Customer Satisfaction
Services	84%
Personnel	93%
General	61%
Overall satisfaction achieved	86%

Over to you

Our aim is to make RISKworld informative and relevant. In this issue we consider two themes at the extremes of safety and risk management: the quantification of risk (page 5), and the importance of developing a competency culture which takes "risk management on paper" to "risk management is how we do business around here" (page 2).

We would be very pleased to hear from you if you have any suggestions for topics you would like to see covered or any other improvements for future issues.

Please send your suggestions to Steve Lewis.

Risk Management by Co

It may be obvious that companies with high levels of competency throughout their organisation are better performers in the medium to long term and deal more effectively with change.

The same observation applies to competency in both risk and safety management. Organisations that commit to understanding and managing the risk to their business, their employees and the public, are much better equipped to prevent unplanned events occurring and to recover from disruptions if something does go wrong.

Despite the relentless drive of new technology, all businesses are managed by people, and it is the competency of individuals to carry out their tasks and to act in unison with others, that provides inherent risk management and resilience for so many companies.

In successful companies, risk and safety management is a continuous process which is part of day-to-day management activities. But there is not a "one size fits all" solution. In

implementing an effective approach to risk and safety management, organisational, industrial and national cultures also need to be taken into account.

Competency in risk analysis

At the heart of good safety and risk management is Risk Analysis - the process of identifying and assessing credible risks (to the business, its people, its processes, the environment, etc.). Without a clear understanding of the risks faced, the implementation of appropriate risk control measures is not possible.

Essential to all good quality risk analysis is competent people: people with specific knowledge of the business and its dependencies, and those with the skills to assimilate and analyse information and draw conclusions. It is important to appreciate that risk analysis provides a "snap-shot" and is constrained by the knowledge and experience of the participants and the availability of information.

Outputs from the risk analysis are the credible risks that the business faces, together with the required (existing or not) controls or safeguards that reduce risks to an acceptable level.

Competency in preventing loss of control

The business may decide that additional controls are warranted to reduce risk levels to meet company standards, industry best practice or legislative requirements. For ease of understanding, controls can be categorised into 'operational' or 'engineered'. Operational controls are those



which are directly operated by people, whereas engineered controls are active or passive systems which operate without direct intervention by people.

In order to ensure continuous risk management, it is of course vital that these controls are maintained. For operational controls this is achieved by ensuring that operators remain competent to carry out their tasks. Their competency will be supported by ongoing training and assessment and it is particularly important that new operational staff are also competent.

Engineered controls require regular maintenance and it is essential that the maintenance is carried out by competent people. Where systems must be taken out of service for maintenance, it is critical that they are reinstated properly. Periodic checks of safeguards may be appropriate to ensure their ongoing availability.

By investing in people and their competency, companies can build in considerable resilience to the risks they face



It is th

Competency

Competency in recovering from unplanned events

The risk analysis provides a clear understanding of how events could, if not managed, develop into serious problems. The organisation has the opportunity to plan for these "nightmare" scenarios and ensure that competency requirements of personnel to respond to such scenarios are captured.

the competency of individuals that provides the foundation for inherent risk management

One of the more difficult challenges for organisations is to decide on how rigid their systems for managing risk should be. This will be influenced by the type of risks faced by the business and the culture of the organisation and the industry it operates in. Simplistically, for routine activities with high levels of maturity (i.e. changes are slow), operating procedures can be relatively prescriptive.

However, the tendency is for additional procedures or instructions to be added which, over time can result in bureaucratic systems. For non-routine or unplanned events, experience may be limited and there are dangers associated with introducing overly prescriptive controls which may not be adequate to deal with such events. In these circumstances, there is benefit in relying on competent people to manage the situation within a set of guidelines.

DID YOU KNOW?

Did you know that 2.8 million accidents in the home every year in the UK require Accident and Emergency treatment?

Can you believe that:

- Trousers cause an estimated 4,700 injuries each year
- 2 in every 100 people nationwide per annum are harmed in some way by vegetables
- Tea cosies cause about 40 injuries in a year
- An estimated 450 visits to A&E are associated with animal collars

As part of its responsibility for promoting home safety, the DTI is offering grants of up to £50k each to non-profit organisations during 2003/4 for practical home accident prevention initiatives.

To find out more, visit www.dti.gov.uk/homesafety.

The benefits of competency

For organisations with a strong focus on competency there is a major benefit that is often not clearly recognised. Competent organisations are well equipped to deal with both routine and non-routine events which, if not managed properly, could escalate to become much more serious with significant detrimental impacts on the business.

In today's highly competitive environment, where there is a constant pressure for businesses to become leaner, much of the traditional in-built redundancy and replication has been removed. Whilst this improves short-term business performance, the resistance to unplanned events can be compromised. By investing in their people, and focusing on the competency to carry out both routine and non-routine tasks, companies can build in considerable resilience to the risks they face and thus better prevent, deal with and recover from adversity.

Just as human error (lack of competence) is a major contributor to accidents, so too is human ingenuity (competence) a major contributor to loss prevention.

If you would like to discuss this further, contact Alan Hoy.

Although the concept of Competency is widely used, it is a complex topic to define.

At individual level, Competency can be thought of as a combination of knowledge, skills and experience and is developed and maintained through training and personal development. While formal qualifications may be pre-requisite for many posts, competency can diminish (e.g. refresher training not carried out) and fluctuate (e.g. tiredness) with time.

Organisational Competency can be thought of as the ability to identify and maintain the required competency of individuals and effectively manage these individuals to collectively achieve the organisation's business objectives.



PIPE DREAM

Working with Mitsui Babcock Technology Limited, Risktec Solutions has been addressing the ongoing initiative by the UK Health and Safety Executive (HSE) Offshore Safety Directorate to reduce the number of hydrocarbon leaks from offshore production platforms.



The HSE has a target for the offshore industry to reduce the occurrence of all leaks to 50% of the 1999/2000 number by 2004.

Mitsui Babcock and Risktec have developed a risk-based methodology for systematic, yet cost-effective, assessment to help resolve this problem. The approach has already been applied to eleven installations - 10 offshore platforms and 1 onshore plant - but is applicable to any platform.

To find out more contact Rob Steer at Risktec.

TRAINING FOR AN EMERGENCY



Risktec is assisting the UK rail industry in implementing a digital radio system which, in the event of an emergency, enables direct voice communication between train drivers and controlling signallers. The system is based upon a GSM-R digital system and is largely implemented using Commercially available Off The Shelf (COTS) equipment.

Drawing upon earlier safety assurance work, Risktec has produced and presented training courses for the system users, including train/freight operating company representatives, drivers

and signalling staff. The underlying philosophy has been to integrate the requirements of the supporting safety assessment, thereby assuring safe operation.

Currently, 120 users have successfully completed the training course, enabling them to take swift and precise action in the event of an emergency. Following the favourable outcome of this first stage, it is likely that the system will be rolled out to the entire rail network.

For further information contact Ian Woodward at Risktec.

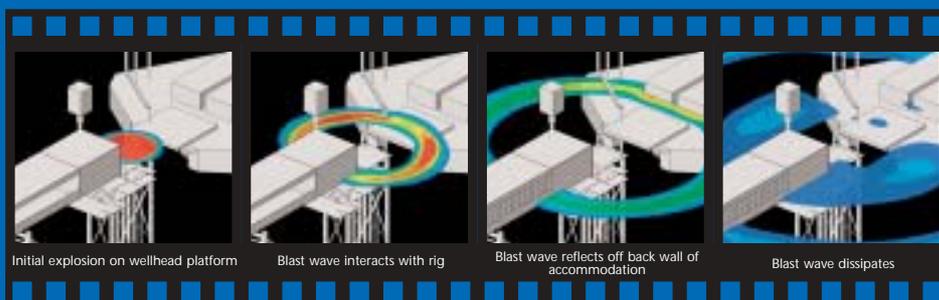
ASSESSING OFFSHORE EXPLOSIONS

During major maintenance periods, offshore platforms are usually shut down to remove the major explosion risk to the workers. In association with MMI Engineering Limited, Risktec has developed a practical and cost-effective approach to assessing and mitigating explosions, enabling continued production.

Often, a separate, dedicated flotel or drilling rig might provide additional accommodation next to the production platform. The hazards associated with this accommodation facility are usually negligible, since there would be no hazardous activities undertaken onboard. However, the accommodation may still be threatened by fire and explosion accidents originating on the production platform.

With highly targeted use of the new CFD code CEBAM, Risktec is able to advise clients how best to position and orient the accommodation facility to optimise personnel protection, and evacuation, escape and rescue arrangements, without affecting production.

For further information contact Andy Harding at Risktec.



UNDERTAKING A COST EFFECTIVE PSA

For many industries, the consequences of an accident are relatively low and can be assessed using simple, deterministic rules. An example is the general office environment. However, such an approach would not be suitable for more complex facilities where the potential consequences of an accident are high, for example, nuclear power stations, oil refineries and railways.



For many low risk/low consequence facilities or operations, a simple, deterministic Risk Matrix is likely to prove adequate (see RISKworld issue 1).

This type of approach does have its limitations, especially for complex facilities involving, for example, a high degree of redundancy and diversity within the design. In these circumstances, a comprehensive risk model of the facility can be developed using a number

of accepted methods, including:

- Event trees - a graphical representation of a logic model that identifies and quantifies the effectiveness of the operator and safety systems to prevent unacceptable consequences (e.g. loss of life) that would otherwise occur following an initial event (see figure 1).

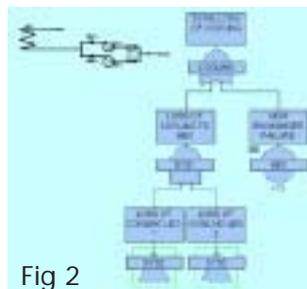


Fig 2

- Fault trees - a graphical representation of a logic model that identifies and quantifies combinations of failures that may result in a pre-defined, unwanted "top event" (see figure 2).

Risk Modelling

These two complementary approaches can be used separately or, if the stakeholders' objectives so require, as part of an integrated and detailed model of a facility. In both instances, the interactions between normally operating systems, the operator, safety systems and emergency procedures must be captured to ensure that the resulting model represents a true reflection of the facility.

In either case, the development of such a comprehensive risk model can be expensive and will involve significant effort from the stakeholders' own organisations to ensure that the model does

adequately embody the actual design and real operating practices.

The Benefits

A PSA can, if developed appropriately, be used to immense benefit, e.g.

- Demonstrating that the risks associated with normal, abnormal and fault conditions comply with the relevant safety criteria and are tolerable
- Identifying, ranking and correcting weaknesses within the design and operation at all stages in the life cycle
- Comparing the relative merits of potential modifications or improvements and in supporting the demonstration that the risks are ALARP
 - Aiding in the development of test, repair and maintenance strategies that balance the cost with the safety benefit
 - Assisting the operator in the detailed planning of influential activities
 - Identifying the optimum strategy to minimise risk following an equipment fault - for example, by supporting the concept of a real-time "risk monitor"

The skill in developing a cost-effective PSA is not in the construction of the risk models but in the process by which the real needs of the stakeholders are identified and matched against the tools and data available, and the level of modelling.

Contact Steve Hendrie for further information

In these instances, the risk can be quantified using a number of standard techniques described

as Probabilistic Safety Assessment (PSA), Probabilistic Risk Analysis (PRA) or Quantitative Risk Assessment (QRA).

Requirements Capture

PSA (or PRA or QRA) is usually justified where there is:

- Major personnel or environmental hazard potential, or
- Significant economic implications, or
- A variety of risk trade-off decisions that need to be made

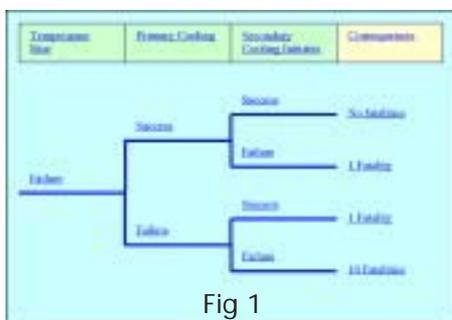
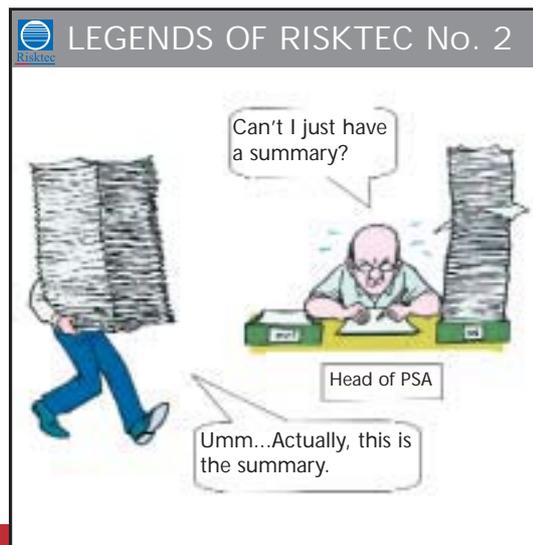


Fig 1

In these cases, the issue is not one of whether, but rather how, one should quantify the risk. Inadequate thought before commissioning a PSA can lead to an assessment that involves significant expense, late delivery and a failure to address the real risks. The key to providing a cost-effective and timely PSA is to have a clear understanding of:

- The risk criteria against which the results of the PSA are to be compared
- The level and depth of required risk assessment, which should be commensurate with the complexity and the perceived level of risk of the facility/operation.



WHEN IS ALARP ALARP?

Risktec personnel have long been involved in the debate across industries on the subject of what it means to demonstrate that risks are "As Low As Reasonably Practicable" or ALARP. Clarification of the UK Health and Safety Executive's (HSE) generic position on this issue appears in "Reducing Risk, Protecting People" (or R2P2 as it is often referred to), together with the three ALARP guides published on its web site www.hse.gov.uk



However, industry-specific guidance has led to some confusion and, when taken out of context, appears contradictory. In practice, the ALARP principle is consistently applied and only the method of demonstration is different, as the following example illustrates.

ALARP must still be demonstrated even if there is compliance with standards or best practice

ALARP principle in European railways

The UK rail industry recently implemented the Inter-Operability Directive for the Trans European Networks. As part of this process the HSE advised that a network system can be considered "Broadly Acceptable" and hence the associated risk is ALARP if it is shown to be compliant with the relevant Technical Specifications of Interoperability (TSI).

The straight-forward implication of this HSE guidance would appear to be that compliance with the TSIs is sufficient to demonstrate that risks are ALARP. But that seemingly contradicts the HSE generic advice that states ALARP must still be demonstrated, even if there is compliance with standards or best practice.

In fact, there is no contradiction, just a pre-approval of a specific application. In this case, as an industry as a whole, it has been determined that the operation of a railway line fully compliant with TSIs will result

in risks that are broadly acceptable and hence ALARP.

So a system fully compliant with the TSIs is always ALARP? No, not always.

For example, take a TSIs compliant communication system to support the operation of TSIs compliant rolling stock on a compliant network.



For operation on an existing line with level crossings, which is not allowed under the TSIs, such a system has not automatically been demonstrated to be broadly acceptable, and associated risks would have to be demonstrated to be ALARP.

Still confused? For further discussions or debate, contact Greg Davidson.

The current interpretation of the ALARP principle in UK law is encapsulated by the findings of the Court of Appeal in the case of Edwards v. the National Coal Board, in particular:

"Reasonably practicable is a narrower term than physically possible and seems to me to imply that a computation must be made by the owner in which the quantum of risk is placed on one scale and the sacrifice involved in the measures necessary for averting the risk (whether in money, time or trouble) is placed in the other and that if it be shown that there is a gross disproportion between them - the risk being insignificant in relation to the sacrifice - the defendants discharge the onus on them."

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