

Cost effective risk reduction of flammable storage



ABB helps reduce risks to meet regulatory requirements and find cost savings.

Since 1992, employers have been required to conduct a risk assessment of the workplace. Companies handling flammable and potentially polluting chemicals need to demonstrate that all practicable measures are in place to prevent and protect against serious incidents.

The storage facilities at the client's site are subject to a petroleum licence as they store paraxylene, cyclohexane and gasoline.

As with an increasing number of other chemical companies handling flammable and potentially polluting chemicals, the client was asked by the local factory inspector to demonstrate that all reasonably practicable measures were in place to prevent and protect against a serious incident.

The plant management team wanted to have a clearer view of where the main risks were on site, and to be able to prioritise improvements. ABB Engineering Services was asked to conduct a risk assessment of the hydrogen liquor off-plant storage area.



Benefits

- ABB's assessment ensured the client met all the requirements of the UK Regulations and demonstrated how the risk of incidents could be most effectively minimised
- The ABB team produced an appropriate and cost-effective improvement programme - highlighting that some planned improvements were inappropriate. They also gave a clear indication of what improvements were needed urgently; the remainder were then prioritised. This improvement programme produced significant cost savings over the existing planned improvements
- ABB's assessment methods allowed the information we needed to be gathered without the lengthy involvement of plant personnel

Solution

ABB's assessment covered the operational and mechanical integrity of the plant equipment such as tanks, associated pipework and pumps and took into account inventory transfers to and from the storage area. The assessment needed to focus on the main areas of concern and the most cost effective improvement measures practicable for the client.

Spillages were identified as having the potential to cause environmental incidents (river and ground pollution) and fire. ABB's extensive experience in conducting similar studies was used to develop a benchmark for incident criteria. Different levels of severity for each type of incident were defined and a tolerable frequency was benchmarked. The assessment then enabled the company to demonstrate how the risks could be reduced to levels as low as is reasonably practicable ('ALARP').

ABB's rapid spillage assessment software was used to predict the frequency of potentially contributing events to each incident category. Plant and operational data formed the basis of the input to the computer based model which was then used to assess generic means of loss of containment considering operational failures / errors as well as failures of equipment integrity. The magnitude of spillages / leaks were also estimated so that they could be categorised according to the potential for severity.

The results were then risk-ranked to focus on the main areas of concern and on the most cost effective improvement measures practicable.

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