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IDC INDUSTRY INSIGHTS WHITE PAPER ABSTRACT

Enterprise Risk Management: An Operational Action Plan

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Adapted from *Enterprise Risk Management: Keeping People, Assets, and the Environment Safe*, by Bob Parker, Jill Feblowitz, Kimberly Knickle; IDC #II215101

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Operational risk management is a rising priority for companies in asset-intensive industry segments. Disparate and disconnected efforts in safety, environmental compliance, and asset utilization at the individual facility are converging to provide better enterprisewide control and management accountability. Companies that make substantial efforts today will not only improve risk mitigation, but also create an enduring competitive advantage.

Current operating realities expose companies to intensified regulatory oversight and public scrutiny. Also, losses from preventable adverse events continue to occur, with some industry segments exceeding $100 million per year. As the challenges of operational risk intensify, companies are increasingly seeking novel approaches to address the necessary behavioral changes, process transformations, and technology integration.

Specific recommendations found in this White Paper Abstract include:

- *Evaluate the business case at a high level.*
- *Determine organization operational readiness.*
- *Determine organizational risk management maturity and identify gaps.*
- *Form a program office to manage overall investment.*
- *Make asset visibility a priority.*
- *Share best practices across the organization.*

These activities form the basis for elevating operational risk management as a business priority. Done effectively, the effort can not only lower the costs of regulatory compliance and adverse events, but also increase the return on capital employed.

Operating Realities Drive Focus on Compliance and Operational Risk

No industries are more regulated than those in the asset-intensive category. In addition to complying with the same financial and trade regulations as other businesses, companies in this industry operate in perilous work environments including dangerous materials with potentially harsh environmental impact. While the industry segments generally take responsible practices seriously, government intervention is an operating reality. As a result, risks and operational impact are measured in the

billions of dollars for firms in these segments, including fines, penalties, lawsuits, loss of life, loss of assets, damage to the environment, and damage to reputation.

Despite corporate responsibility and oversight, losses from preventable causes continue to occur and, unfortunately, grab headlines. Losses in the refining industry exceeded $60 million and topped $80 million in the chemical industry; gas plants broke the $100 million mark last year. Adding the costs of adverse events to the cost of compliance yields a compelling business case for investments to reduce overall costs. The need to create structure around sustainability goals that reduce operational risk adds an element of pressure for improving visibility of assets, processes, and employee safety.

In fact, in the past year or so, focus on corporate responsibility has reached a new high. There are a number of events and developments that have contributed to this focus. For process industries, the Texas City refinery accident in 2005 was a wake-up call for worker safety and, to a lesser degree, the environment. The movement toward greater operational efficiency has fueled growth and interest in sustainability, including reductions in carbon emissions and greater visibility of energy usage. From the plant floor to the board room, there is increased attention to accountability and how policy or process failures and lack of corporate transparency may lead to greater operational risk for the process industry.

Arriving at a Comprehensive Approach to Operational Risk

Information plays a key role in reducing operational risk at the mine, manufacturing plant, refinery, pipeline, or oil well. Operators, maintenance personnel, plant performance engineers, environmental personnel, and plant managers need access to information to help them monitor, measure, and manage asset safety and performance.

Personnel need to have access to the data necessary to do their jobs and the tools to analyze that data. But it is not just individual access to the same information. Workers need to be able to collaborate using a consistent set of data. Information shared among similar plants can be used to establish best practices, improve process safety and, more importantly, improve plant performance. Plus information must be able to flow based on workflow or approval process to ensure that, at a very basic level, a compliance task has been completed.

Information technology plays a critical role in managing asset safety and compliance. Ways that Industry Insights believes information technology can play a role in greater process safety include:

- **Visibility of performance against goals.** Information technology can provide role-based access to performance goals and measurement of progress against goals to employees at all levels. From a management perspective, visibility into leading and lagging indicators can provide a company guidance to its next actions. A corporate rollup that is based on verifiable information is the ultimate goal; drill-down capabilities for performance assessment are the ideal. While having corporate executives looking over one's shoulder may not be immediately appealing, ultimately, providing this level of visibility broadens accountability. For example, if managers at the highest level of the organization are aware of potentially catastrophic situations involving assets, they can marshal the resources to remedy the situation. An integrated enterprise system can provide this capability.

- **An "as is" and "in context" view of the asset.** In many cases, there are specific procedures for handling each asset. The "as is" condition may include the most recent inspections for mechanical integrity, most recent tests, or sensor data on equipment condition (temperature, vibration, etc.). It could also include important indicators such as mean time between failures or throughput of the asset. The "in context" views the asset as part of the process — criticality to the process, order in the process, and so forth.

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- **Development of best-practice approaches.** Asset-intensive industries can take a look at historic operations, especially "near misses," to outline potential weakness and use these to tighten process control and/or work processes. This requires extract, transport, and load (ETL) capabilities; data historians; and advanced analytics applied to the data to perform root cause or other types of analysis to determine what could have gone wrong and recommend new work practices or revised processes. Line-of-business dashboards linked to common KPI metrics could be used to drive behavior change and performance.

- **Visibility of best work practices.** Having new work processes is one thing, communicating them to the appropriate staff is quite another. eLearning is certainly one way to disseminate information. Other approaches involve alerting employees to new work practices linked to the asset via asset management applications that are used on a day-to-day basis. The optimal approach is to have near real-time data available on a mobile device to a worker in the plant so that worker can observe the same trend data being viewed in the control room and compare asset history and visuals to help determine whether there is only an instrumentation fault, or whether there is a potential problem.

- **Workflow to guarantee adherence.** Having appropriate approval processes in place is another important recommendation. Automating workflow will ensure that proper review is done before a work project can be authorized. In addition, archiving work flow will make it easier to establish audit ability that the task was accomplished within the appropriate guidelines.

- **Management of change.** Management-of-change (MOC) programs are a major challenge for plants in terms of time, resources, and risks of fines, lawsuits, or shutdowns if initiatives fail. Automation of the content and processes for MOC helps companies reduce the administrative burden, minimize risk, and reduce costs.

- **Alerting capabilities.** Good practices begin with good design of a plant or mining operation. However, most high-performing assets in the world are brownfield, which is why it is important to operate plants within design limits. Safety information systems (SIS), paired with process control systems, already monitor the process and identify alarm conditions. However, there is a need for additional information and analysis to manage the large quantity of alarms to detect which pose the greatest risk of catastrophic results.

Of course, functionality related to keeping people safe, keeping the environment safe, and keeping assets safe is essential. This functionality is contained in software applications or application modules that support a variety of areas, such as:

- **Personal safety.** Work permitting, lock out/tag out

- **Environmental safety.** Compliance tracking, emissions levels, permit exceedances notifications

- **Asset safety.** Asset presafety start-up review (PSSR), detailed job plans, condition-based maintenance analytics

Recommendations

Moving toward best-in-class performance in operational risk management requires a programmatic, deliberate approach that combines the necessary people, process, and technology elements to achieve success.

People — Organizing for Network Optimization

The multinational business model is losing effectiveness, and companies are moving to more of a globally integrated approach that establishes common management approaches across regions and facilities. Organizing for high-performing assets will follow this trend. Instead of isolated facilities and siloed functional responsibilities, companies will want to identify expertise, standardize approaches, and share knowledge. Companies must realize, however, that there is a tremendous challenge in changing behavior deeply rooted in the old models. The key is to recognize that both executive management policy making and plant-level process execution must change synchronously and toward the same overall goal.

This will equate to operational risk management responsibility organized networkwide with the ability to monitor a wired set of assets and take corrective action when necessary. Think of the new organization as a mission control or network operating center approach rather than a proximity (people at the facility) approach although the centralization may be virtual rather than a single physical location. Similarly, metrics and accountability will span the network of assets.

Process — Using Common, Accepted Approaches

Another part of being a globally integrated company will be the establishment of common processes across the company. Companies shouldn't spend their time on defining the process, but on making them perform consistently. Using a well established standard industry process definition will be the starting point.

The execution processes will be standard, but a set of processes — the decision processes — are ripe for reengineering. Everything from deciding on new asset investment to tuning the performance of specific machine should be reviewed. The reengineering of decision processes must keep the full context of asset management maturity in mind and make sure strategic decisions are linked to tactical decisions and those decisions to operational determinations.

Technology — Acquire Data, Standardize Processes, Speed Decisions

Technology can play a substantial role in moving a company up to become more mature in terms of asset management. The people and process changes must be fully understood and on their way to the appropriate changes before technology investment is started. Manufacturing Insights sees four key areas of investment in technology to support the efforts:

- **M2M technology.** The use of sensors, actuators, identification, and location technologies create an asset network that can provide the necessary data for monitoring assets without human intervention. This investment provides individual asset visibility.
- **Process platform.** An enterprise asset management application provides industry-accepted processes, enabling companies to focus on making the operational processes more consistent. This investment provides location-level asset visibility.
- **Operational intelligence.** The ability to look across all of a company's assets to assess performance on a retrospective (what happened), perspective (what is happening), and predictive (what will happen) basis will come from investment in data warehousing, analytics, and business intelligence. This investment provides networkwide asset visibility.
- **Integration.** The value investing in the three technology areas above is magnified if they are well integrated to each other. This not only makes reporting more consistent but removes the latency that comes with manual integration.

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A good starting place when investing in asset visibility is at the process platform level. This investment will facilitate the necessary changes in people and process as well as create the centerpiece of the technology investment. Modern integration capabilities will be critical so that M2M-based data can feed the processes and, in turn, the processes can feed the decision environment built from the operational intelligence investments.

Actions to Consider

We offer specific guidance for companies that would like to get started on an asset visibility initiative. In more detail:

- **Executive sponsorship and governance.** Grass-roots implementations and plant-only focused initiatives improve business process efficiency, but they cannot drive overall corporate impact. Successful projects implemented by market leaders were sponsored by executive leadership — ensuring visibility to program progress, performance improvements, and reducing organizational barriers as they were identified.
- **Evaluate the business case at a high level.** Assess your company's ROA performance relative to industry peers. What are the implications of greater risk control and lower costs from the existing portfolio of investments? From this point, a firm can determine the levels of investment in new asset management capability that can be justified.
- **Determine organization's operational readiness.** Is the organization, from top to bottom, ready to embrace the change, commitment and focus necessary to implement a safety and compliance approach? Application solutions, technology, and business and operational processes need to be examined to determine the changes that need to be made to ensure success. Best-practice examples from industry should be used to present a clear path forward.
- **Determine organizational risk management maturity and identify gaps.** This exercise will assist in understanding the specific capabilities that must be delivered to improve performance. Pay close attention to deficiencies in performance monitoring — it is likely that reporting is late, incomplete, and inaccurate.
- **Develop an 18-month to 3-year plan and prioritize the business and operational processes.** This selection may change over time, but it will serve as a baseline road map that can be changed as needs evolve and direction becomes more focused.
- **Form a program office to manage overall investment.** With an understanding of the overall goals and existing gaps, progress will come from not only a single project but a series of related investments that will individually produce benefits, but collectively move the company toward world-class performance.
- **Make asset visibility a priority.** Creating transparency to operating conditions should be an early investment as it can be leveraged by all of the subsequent transformative activity. Technology tools should include the four key areas discussed in this report but should pivot on a process platform that is proven in enterprise asset management and can be easily extended to connect to individual assets and enterprisewide operational intelligence.
- **Share best practices across the organization.** Many best-practice examples for improving operations exist across the corporation, and they need to be leveraged and shared to make the transition to common business processes easier and faster. This also contributes to culture change and creating "one team" globally to focus on achieving operational goals while ensuring compliance and reducing risks.

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