

Dyno Nobel Enhances Risk Management With Comprehensive Software

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OPERATIONAL EXCELLENCE

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This report is one in a series of case studies which explore the adoption of industrial risk management technologies at prominent industrial firms. Dyno Nobel is a large commercial explosives firm with 32 manufacturing facilities spread across three continents. Although there has always been a strong safety culture at Dyno Nobel, health and safety advisors and operations managers wanted to further improve the visibility of their critical control verifications while also benefitting from eliminating administrative workload related to the logistics of safety critical documentation. Since implementing their new risk management software from VelocityEHS, Dyno Nobel has enjoyed a reduction in injury rate, increased efficiency and strengthened their safety culture and behaviours.

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ORGANIZATIONS MENTIONED

Dyno Nobel, Microsoft, VelocityEHS

Dyno Nobel Replaces Microsoft Excel With Risk Management Software

This report is one in a series of case studies which explore the adoption of operational excellence technologies at prominent industrial firms. Dyno Nobel is a large commercial explosives firm with 32 manufacturing facilities spread across three continents. The manufacturing of explosives is safe providing that critical controls are in place and effective. The ammonium-nitrate explosion in Beirut in August 2020 is an extreme example of negligent explosives handling, resulting in 200 fatalities and 6,500 injuries. Although there has always been a strong safety culture at Dyno Nobel, health and safety advisors and operations managers wanted to further improve the visibility of their critical control verifications (CCVs) to ensure that any major accident hazards and catastrophic events do not occur.

Dyno Nobel Needed A Solution To Improve Visibility And Standardize Their Risk Management Processes

Employing over 3,770 personnel, the explosives manufacturing giant Dyno Nobel found their risk management processes were inconsistent and opaque. The CCVs were completed in Microsoft Excel spreadsheets on-site and then emailed centrally to be aggregated with over 120 other documented files per month. Whilst they have always carried out risk identification and analysis at sites using bowties, HAZOPs and LOPAs, it was decided that risk management software would be implemented to:

- **Improve firm-wide visibility of the critical controls in place for risks.**

Generic spreadsheet software may suffice for a small business with a few sites. However, the logistical challenge of collecting and aggregating large volumes of CCVs for a business the size of Dyno Nobel proved to be a time-consuming activity leaving health and safety as well as operations managers almost no scope for value-adding analysis. Additionally, while Dyno Nobel had a local focus on managing risks and controls, it wanted to establish a global system to standardize and define critical controls and risks so that everyone across the firm from the board-level to site managers have better visibility.

- **Proactively mitigate risks.**

Unfortunately, most safety measures are implemented in response to an incident – a common theme throughout health and safety. Wanting to better protect their on-site personnel, health and safety managers at Dyno Nobel decided to adopt a proactive safety culture. Using Excel to undertake risk analysis and verify the controls meant that key insights were slow to be implemented. Thus, the ability for managers to know the near real-time status of their critical controls was identified as integral to improving worker safety.

- **Establish a common vernacular around risks and controls.**

Due to the global nature of Dyno Nobel's business, the risk analysis documentation and CCVs were originally completed in three different languages: English, French and Spanish. Even when translated, which incurred additional cost and delays to process, the terminology used throughout the sites was inconsistent. Each site had its own risk register with many bowties, which further added to the inconsistency. The subjectivity associated with the variation in terminology contributed to an already blurry view of the critical controls. For that reason, Dyno Nobel also identified stricter standardization as a target for improving its risk management process.

Dyno Nobel Implements Risk Management Software For Integrated Risk Analysis And Critical Control Verification

Dyno Nobel's legacy risk analysis and management processes were cumbersome and fragmented, making it difficult for executives to collect, let alone analyse the documentation. This struggle led the explosives manufacturer to implement risk management software from VelocityEHS, who emerged as a market leader for chemical management in the Verdantix Green Quadrant benchmark of EHS software vendors (see [Verdantix Green Quadrant EHS Software 2019](#)). The VelocityEHS Risk Management solution improved the way Dyno Nobel managed risk by:

- **Standardizing bowties for all risk assessments and analysis of all fatality level risk.**
Historically, sites assessed their own risks resulting in a legacy data set that did not benefit from the learnings shared across other sites. Bowties offered a way to standardize how risks were understood and the roles played in causal prevention or consequential mitigation, but it was clear that over time, these too would diverge making learnings harder to integrate. Working with VelocityEHS, Dyno Nobel implemented a master bowtie framework allowing for standardized bowties to be adapted by sites, while receiving automated updates as they were published.
- **Integrating risk analysis and CCVs onto one platform.**
When a CCV or risk analysis is completed or edited it is uploaded to the cloud for relevant personnel to view instantaneously. This simplicity removes the need for version control and email chains chasing site managers for documentation. In addition to data collection, the new software integrates the risk analysis with the critical control verifications. For example, in a bowtie model, an expired CCV that degrades a barrier's effectiveness would change colour to red or amber and increase line thickness connecting the loss of containment event.
- **Promoting employee accessibility and feedback.**
VelocityEHS Risk Management solution has a user friendly and intuitive interface to help engage even the most tech-averse users. This feature plays a key role in the minimal training required for proficient use. The mobile app enables teams to record their CCVs as and when they are performed; and if there is no internet connection available, the information captured is updated when a connection is re-established. Mobile applications are highly sought-after in many operational excellence projects. In the 2019 Verdantix survey of 284 operations and maintenance managers, 73% described mobile apps to be either 'very significant' or 'significant' to their firm's operational excellence initiatives (see [Verdantix Operational Excellence Survey 2019: Budgets, Priorities & Tech Preferences](#)). These ease-of-use features allow workers to place more focus on the safety-critical tasks at hand; and, due to the quicker turnaround, managers on-site have better risk awareness and clear understanding of implemented risk mitigation strategies as they are able to see the risk analysis.

Dyno Nobel Boosts Efficiency, Safety And Employee Engagement With Risk Management Software

VelocityEHS Risk Management enables Dyno Nobel to automatically update site bowties, collect and collate CCV data and compare performance across all sites through a cloud-based application that supports mobile and offline use. After switching to the new risk management software, health and safety advisors and operations managers at Dyno Nobel have experienced:

- **Increased employee efficiency.**

While safety is always the first priority, Dyno Nobel has seen significant improvements in efficiency with the implementation of Risk Management from VelocityEHS. Dyno Nobel's Employee Lost Day Injury Rate fell from 75 in August 2019 to 58 in September 2020. This 23% reduction year-on-year has resulted in 17 extra employee workdays. Perhaps more impressive is the qualitative year-on-year improvements experienced by automating the collection and management of all site CCVs, which is now handled by the risk management software, saving valuable employee time. With Excel to manage this process, an employee was spending on average 10 hours per month aggregating data. This has decreased to just two hours a month with the employee now able to focus solely on insights generation. VelocityEHS Risk Management has also increased management transparency and ability for the leadership team to identify systemic issues and come up with business-wide solutions.

- **Reduced work-related injury rates.**

Dyno Nobel has found that implementing the risk management software it has experienced a decrease in various incident frequency key performance indicators (KPIs). Their Total Recordable Injury Frequency Rate has fallen from 0.9 in 2019, to 0.42 in 2020 – a 53% decrease year on year, while the Significant Event Frequency Rate reduced by 39% over a two-year period. While the implementation of Risk Management from VelocityEHS is not the sole reason for the year-on-year improvements in safety KPIs, it has contributed greatly to the overall health and safety improvements made by Dyno Nobel in recent years.

- **Proactive safety culture and elevated employee engagement.**

Implementation of the new risk management software from VelocityEHS has helped in fostering a proactive safety culture within Dyno Nobel. When a change to a common bowtie is suggested because of a risk assessment, such as an additional safety check, and the alteration is approved globally, automatically notifying all sites of the change and adapting the subsequent CCVs appropriately. Upon next log in, site-managers will be taken through a software wizard to check applicability of this change to their bowties and implementing it where appropriate.



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