Part 1: A Blueprint for Building an OSHA-Compliant PSM Facility

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Large PSM-compliant facilities drive down risk by implementing and maintaining a centralized Process Safety Management (PSM) system based on the fourteen elements in OSHA's PSM standard.

PSM is an "early warning and risk avoidance system" designed to detect and eliminate hazards embedded in critical systems, infrastructure, equipment, operating procedures, or human error before they turn into catastrophic events (e.g., fire, explosion, release of toxic chemicals, injury, or death).

PSM is about continually monitoring and measuring leading/lagging indicators, and applying key performance indicators (KPIs) and aggregated Safety Performance Indicators (SPIs) to ensure the health and quality of the PSM system, especially when modifying or upgrading systems or updating processes and documentation. [1]

With a robust PSM system in place, for example, automated processing units are regularly monitored and documented for operational issues to prevent an incident from becoming a major event.

Smaller, non-PSM facilities; however, are not regulated by the same industry codes and standards as larger, PSM facilities due to the degree of risk associated with threshold amounts of highly hazardous chemicals.

In addition, compared to larger, PSM-compliant facilities, smaller facilities may not have the same level of capital, capacity, technologies, processes, systems, and organizational structure to build their own PSM system.

Often, these smaller, non-PSM facilities lack industry specific guidance documents, proper employee safety skills and training, and operating procedures on identifying hazards embedded in systems, infrastructure, and equipment.

As a result, these smaller non-PSM facilities reach out to industry experts with the technical expertise and knowledge of process safety management systems to help them define, identify the likelihood of, and mitigate their safety risks.

When transforming a non-PSM facility into a fully compliant PSM facility, industry consultants apply proven methodologies that work with their client's existing safety system and management processes to document, audit, implement best practices, and standardize PSM across multiple facilities.

Partnering with PSM consultants, non PSM facilities can build and manage a tailored PSM system that:

- Is fully integrated, centralized, customized, and auditable.
- Will meet their unique needs and requirements and comply with some, if not all, of OSHA's PSM elements.
- Will address their technologies, infrastructure, assets, systems, and management practices in a companywide PSM culture.

Benefits of a PSM System

Power of shared knowledge in a centralized repository (easy access to integrated safety information).

Reduced company risk/hazards, liability, insurance, and equipment replacement costs.

Reduced employee downtime.

Decreased employee expenses for worker's compensation.

Increased employee health, safety, security, and morale.

Increased productivity, profits, quality, and operational and equipment reliability.

Meets OSHA compliance – reduces scrutiny by government regulators.

Protects the environment, employee health, safety, and security, and surrounding communities.

Promotes operational excellence - maintains company reputation, ESG score, investor confidence, and stock price.

Minimizes risks and liability by identifying layer of protection gaps.

Instills a proactive approach to process safety management.

Is a cost effective and efficient methodology for identifying non-regulated facility needs.

Provides a sound foundation of attentiveness to issues in the event of future audits.

PSM Steps to OSHA Compliance

There are four steps that PSM consultants follow when bringing a non-PSM compliant facility into OSHA compliance:

Step 1: Identify Safety Gaps. Initial discussions with the client focus on the extent of their PSM knowledge and potential gaps in their current safety program. During these discussions, PSM consultants might ask questions like, "Is your facility OSHA regulated?" or "Has your site had any incidents in the past five years?" or "Does your company have a database of Process Safety Information (PSI)?"

Step 2: Provide Advice on OSHA Regulations. After identifying safety gaps in operations, consultants discuss OSHA's PSM protocols and processes and review a PSM Key Provisions checklist with the client, along with brief descriptions of each of the elements to determine the most relevant PSM elements that apply to their needs and requirements.

Step 3: Define a PSM Plan. When developing a PSM plan, PSM consultants conduct safety studies, and multiple analyses (i.e., Layers of Protection Analysis (LOPA) and engineering analysis based on OSHA's PSM Key Provisions elements to determine if there are gaps in layers of protection to protect the company from a possible event and identify action items.

In addition, consultants also conduct multiple PHA's to identify all risk and safety issues and to determine the problem, root causes, and consequences. This includes gathering PSIs to identify process nodes and recent facility changes to determine if the changes followed proper Management of Change (MOC) procedures.

Step 4: Execute the PSM Plan. In the "Execute" phase, the PSM team provides guidance on the PSM process to bring the client's facility into OSHA compliance.

Leading Indicators of a Successful PSM System in a Non-PSM Facility

Leading Indicator 1: A Company Change Management Mindset. The number one leading indicator of a successful PSM system is a company's approach to change management. A PSM system is only successful if a company has a strong change management mindset in place, both at the institutional level and at the individual level, as change management and safety are inextricably intertwined.

To manage changes when developing a PSM system process and system, a systematic procedure should be established and implemented. To do this properly, PSM experts structure the system to identify changes before they are implemented. If the planned change is a significant change, it needs to be carefully examined and managed.

It is also critical that a company address all operational and asset changes no matter how small. Too often there are so many detailed changes to document that some of the information falls through the cracks. Capturing change data down to the detailed level requires diligent documentation that will have long-term impacts five or ten years down the line. By conducting detailed data analysis and capturing the results in an auditable document, a company demonstrates that it has rigorously followed the right safety protocols.

By developing the habit of documenting all changes, large and small, across the spectrum of operations in a facility, a company ensures the safety of everyone working at the site and the safety of those living in surrounding communities. It reduces the stress of working in a hazardous environment and ensures that a company has the audible documents in one location for compliance purposes.

Leading Indicator 2: Easy Access to Documents in an Integrated, Centralized PSM System. Many PSM experts find that clients have the documented data, but not in the right location or in the right format or organizational structure. This becomes a problem in the case of emergencies or disaster recovery, where it becomes crucial that everyone can easily access the right documents when and where needed or during an audit.

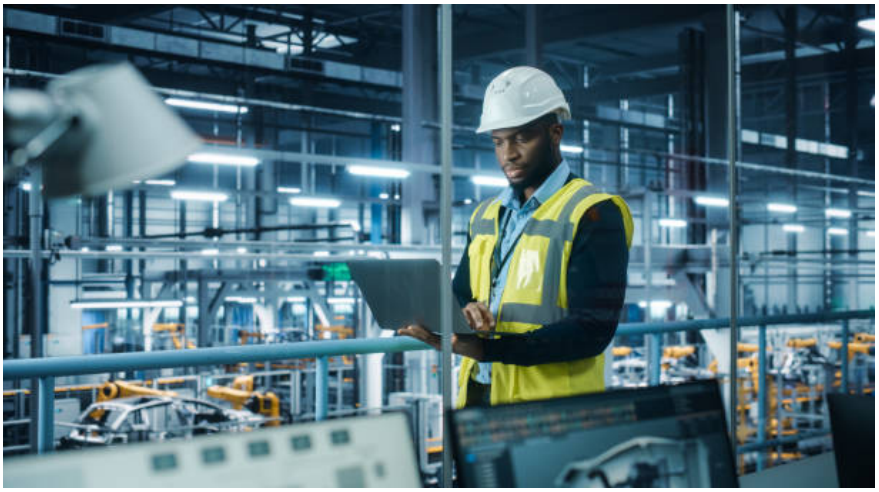
The first thing that PSM consultants do is to help companies consolidate, organize, and integrate the disparate documents in one place for easy access. This involves consolidating and categorizing the data, then prioritizing the most critical data first. Once the information is consolidated, organized, and prioritized, testing and validation is conducted to ensure a thoroughly vetted system prior to launch. PSM consultants then train their clients to continually update the information in the system to avoid having the data become obsolete and to communicate the changes across the company.

Leading Indicator 3: Employee and Leadership Engagement. Safety begins and ends with everyone, but leadership sets the stage for promoting it as the highest priority in the company. Leaders must model the behavior to send a strong and positive message across the enterprise for employee buy-in. The company culture sets the foundation for a successful PSM system rollout and long-term results.

Ingrained safety habits are formed through repetitive training and consistent messaging. The first step is to conduct training so that employees understand the new PSM system, the benefits of the new system, and when and how to use it through initial training. The next step is to make it mandatory that all employees attend regular refresher courses. The final step is consistent messaging where safety-related topics or updates are regularly communicated to all employees. Only then will the information become embedded as a mindset and behavior over time.

Summary

Safety is about mitigating risks involving infrastructure, equipment, systems, or hazardous materials to avoid catastrophic events. To ensure reliable and safe processes, facilities, and equipment, companies must have safeguards in place to continually reduce hazards in the workplace. PSM is the system and set of processes that ensures safety prevention and recovery in the event of an incident. It is the responsibility of every company to ensure that every employee and contractor go home safe every day.



No one likes to answer to the government or press if something goes wrong. The risks can damage a company's reputation and ESG score and drive-up insurance and liability costs. Successful companies are proactive in preventing safety issues from occurring. They don't want to be forced into a reactive situation.

Well-planned and methodical safety measures as well as emergency response and disaster recovery plans in a PSM system demonstrates a company's ability to immediately and most effectively mitigate events and potentially life-threatening situations. This increases employee, community, and stakeholder confidence in how the business is run.

Company representatives can also leverage safety regulations and their safety plans when holding forums with communities and stakeholders to demonstrate company transparency. This, in turn, builds trust. By using the safety plan to explain how safety procedures and regulations are integrated into their operations, they not only address community questions and concerns, but build and maintain solid stakeholder relationships.

REFERENCES

1 "Processing Safety Management: Going Beyond Functional Safety," Hydrocarbon Processing, Mar. 2013.

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