



Effectively Manage Changes using Process Safety Enterprise®

An ioMosaic White Paper

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Overview

Process Safety Enterprise® (PSE), a cloud-based platform, contains Management of Change (MOC), ensuring compliance with OSHA's PSM standard. This white paper details the key features of PSE, including:

- Document Control System: Easily stores and retrieves documents
- Intelligent Form Builder: Creates customizable forms
- Action Tracking System: Manages all tasks related to MOC
- Reporting and Dashboard/KPI: Provides real-time insights into activities
- MOC Workflow: Guides users through evaluating and managing the hazards of the change, securing the required approvals, conducting a Pre-Startup Safety Review, and training impacted personnel before the change is implemented.

A case study highlights how PSE and the MOC workflow could have helped to prevent this disaster by managing MOC more effectively.

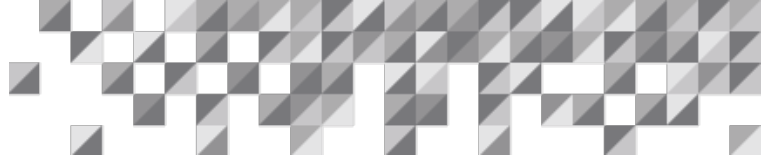
Introduction

Management of Change (MOC) is crucial to the Occupational Health and Safety Administration (OSHA) Process Safety Management (PSM) 29 CFR 1910.119 standard. This element manages change and the associated hazards in the covered process.

Businesses often encounter challenges in managing change as it encompasses a broad scope, including changes made to raw materials, process technologies, equipment, procedures, or changes impacting the overall organization. Managing these changes demands considerable time and resources. Overlooking the various changes and the potential hazards can introduce risks to the safety of employees, plant assets, the community, and the environment. Moreover, an accident could lead to production interruptions.

An effective MOC process should include the technical basis for the change, the safety and health impacts of the change, a description of the change, and the identification of temporary changes. Additional requirements include identifying changes to Process Safety Information and Operating Procedures and ensuring training has been provided before the change is implemented.

Changes to raw materials, buildings and structures, and the organization and personnel should also be reviewed in an MOC process. For instance, changes to raw materials can impact safety and quality. If not managed properly, a change in composition, contaminants, or materials could result



in a serious incident. Facility siting issues may arise when modifications are made to buildings and structures,

Relocating or establishing raw material or final product storage may also introduce an unintended effect on the surrounding area.

An effective Management of Organizational Change (MOOC) system should also address personnel changes to ensure critical safety roles are executed. Vital tasks cannot be forgotten, like submitting regulatory permit updates. Figure 4 shows how the Process Safety Enterprise® (PSE) MOOC process can effectively address the reassignment of functions and responsibilities brought about by workforce changes. Adding this MOOC workflow elevates a facility's safety even further.

Effective MOC systems help companies identify and mitigate risks, avoid accidents and incidents, and stay compliant with the PSM requirements of the 29 CFR 1910.119 standard.

For businesses serious about implementing a comprehensive PSM compliance system, ioMosaic offers the Process Safety Enterprise® (PSE) (Figure 1). PSE is a cloud-based platform enabling easy ongoing management of process safety data, helping businesses achieve compliance, manage risk, and remain competitive. Unlike any other system available in the market today, PSE is a centralized web-based application that integrates all PSM elements and workflows, making it THE ultimate solution for managing MOC processes effectively. This white paper delves into the key aspects of the MOC workflow and how it benefits companies seeking to improve and elevate their systems to manage the change process while mitigating potential hazards.

To help you better understand the requirements of the PSM standard, we recommend a [PSM Essentials](#) eLearning course like the one offered by Process Safety Learning®.

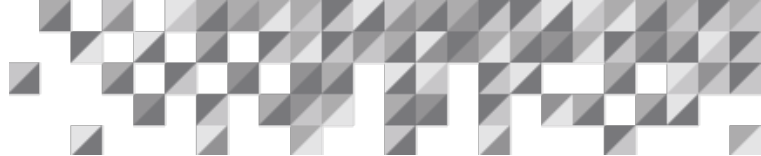
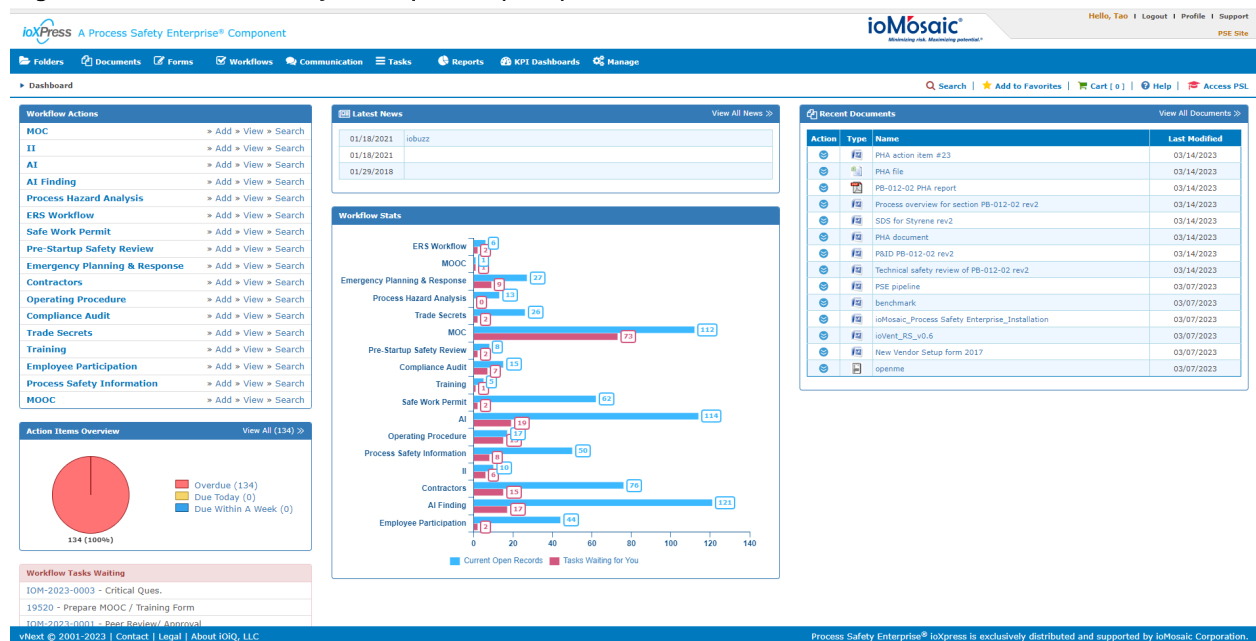


Figure 1. Process Safety Enterprise® (PSE)



Source: ioMosaic Corporation – PSE

Document Control System

The document control system of PSE's platform is a key component facilitating easy access to all critical process safety data. Users can add documents using a simple drag-and-drop (Figure 2) feature. This action quickly organizes documents into folders for easy retrieval. Its advanced search function indexes all documents with full text, allowing users to find necessary information quickly. An embedded document viewer feature not only enhances accessibility but also bolsters security measures. By granting users view-only permissions, they can view documents as images, preventing unauthorized downloads and eliminating the need to log into their computers for access. This document control component is an effective tool for managing various types of data, including but not limited to engineering data, process safety information (PSI), procedures, records, pictures, videos, animation, and reports. This component further ensures that all stakeholders have easy access to vital information related to the MOC process stored in a centralized location.

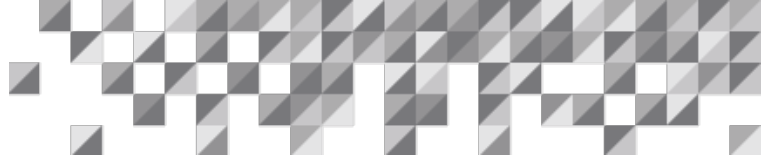
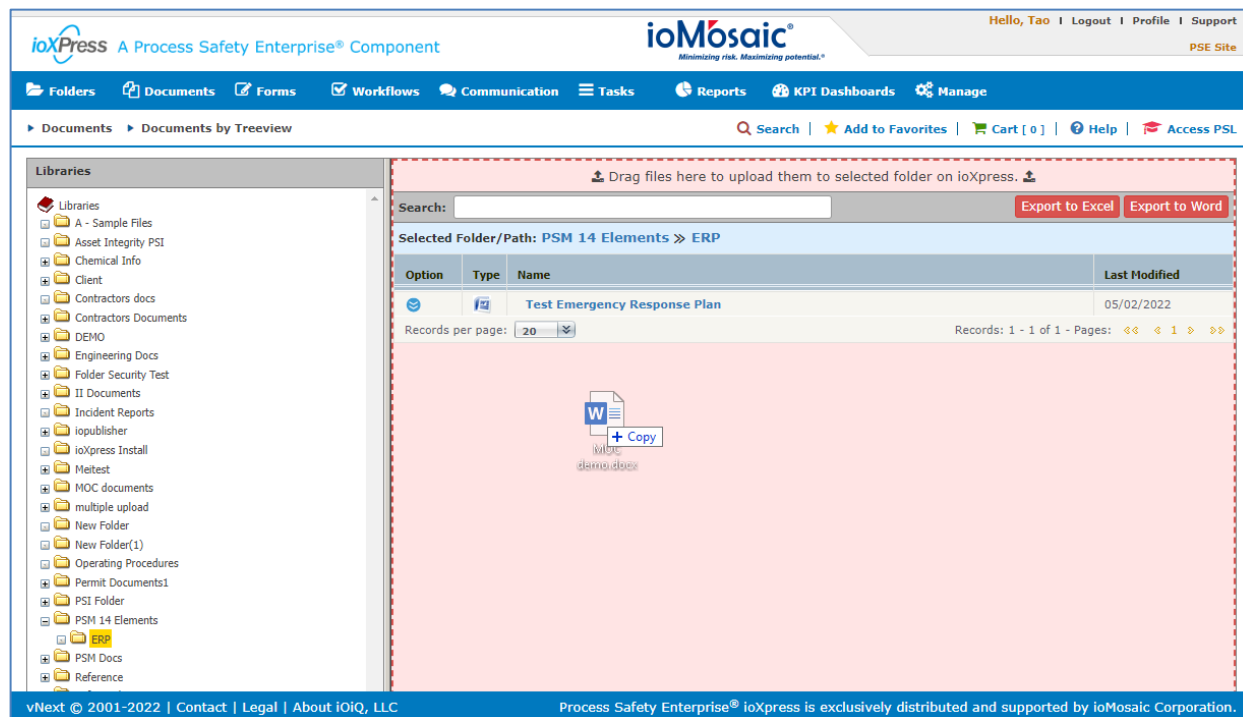


Figure 2. Drag and drop feature to add document(s)



Source: ioMosaic Corporation – PSE

Intelligent Form Builder

PSE also includes an intelligent form builder for efficient data capture and linking to documents in a central digital library. This dynamic form builder enables users to create practical, customizable forms for capturing and managing information, such as engineering relief and vent sizing data.

The ability to customize MOC forms ensures that all necessary data is captured accurately and consistently. Moreover, this feature allows for easy export of data to an Excel format if needed, making data analysis and sharing even more seamless. Implementing a customizable form builder like the one in PSE streamlines an MOC process by capturing data accurately and efficiently.

Figure 3 shows an example of an equipment form that captures basic process data, sizing calculations, and final device specifications and links them to relevant documents when changes are made.



Figure 3. Example of Relief Device Equipment Form

General	Construction & Materials	Service Conditions	Damage Mechanism	Inspection Records	Inspection Company
Data History					
Unique ID	15357 <small>*Unique Identifier</small>				
*Company Name *	ABC				
*Plant *	Hard Resin Kettles	*Unit *	B and G		
Plant ID	444	Unit ID	333		
*Relief Valve Number *	PV-123	*Asset Number *	555		
Equipment Name	jacket pressure relief	*Equipment Type *	Relief Valve		
Equipment Description	Relief valve on R1 jacket				
Equipment Criticality	A - Very High				

Source: ioMosaic Corporation – PSE

MOC and MOOC Workflows

PSE is the only process safety platform integrating all of OSHA’s process safety management (PSM) elements using visual workflows in a single enterprise system. This workflow includes PSM’s 14 elements, action tracking modules, and document control. The Training workflow can be used to require and track training for MOC Coordinators. The MOC workflow allows you to identify and manage the hazards of changes within the covered process while documenting evaluations, approvals, and training.

The MOC workflow establishes steps for MOC initiation, review, approval, and closure. Temporary MOCs are managed to the established expiration date, and the workflow can be customized to be renewed, made permanent, or reverted to the normal process per your company’s policies. All PSE workflows are easily customized to meet the specific needs of any company.

PSE's MOC workflow module includes customizable checklists for the specific hazards of your process and the ability to link to relevant PSI. Approvals can be company-specific.

The final step of the workflow ensures that the PSSR and action items are complete, all operating procedures and PSI have been updated as needed, and that all impacted employees were trained on the change before it was implemented.

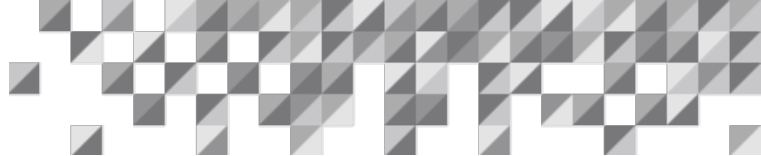
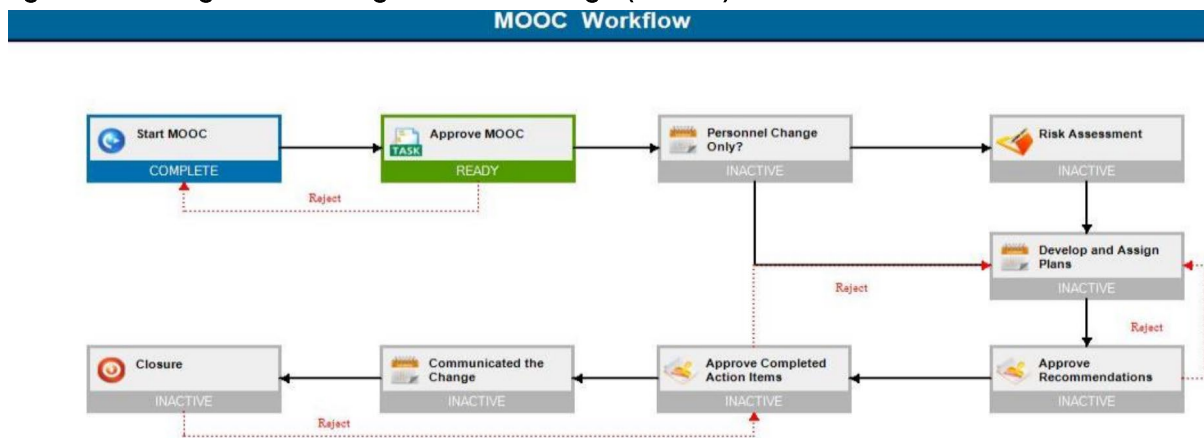


Figure 4 illustrates the Management of Organizational Change (MOOC) workflow steps. Completed steps are in blue, Inactive steps in light gray, Not applicable steps in dark gray, and Ready steps are in green. The workflow can only be closed once all required steps are completed.

The MOOC workflow within PSE ensures that organizational changes that can impact the covered process are evaluated and managed per the OSHA standards and guidelines.

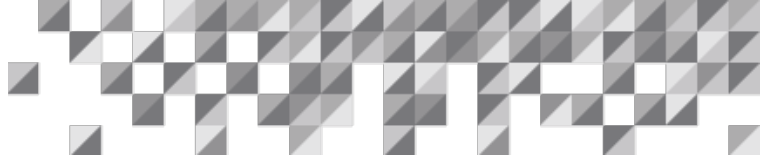
Figure 4. Management of Organization Change (MOOC) Workflow



Source: ioMosaic Corporation – PSE

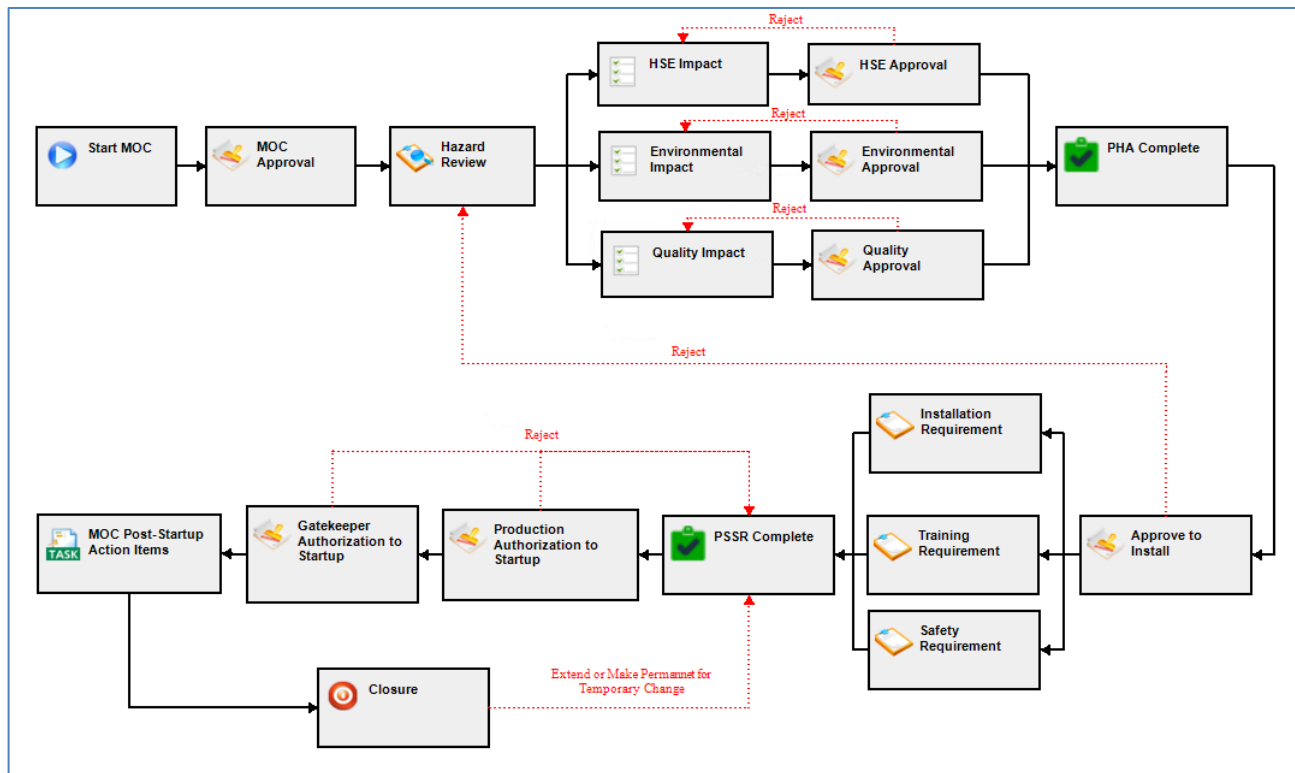
Figure 5 illustrates the MOC workflow steps for a single area MOC, and Figure 6 shows a workflow that covers multiple areas. Figure 7 depicts an overall MOC process that addresses temporary MOCs and critical interlock bypasses. The MOC workflow can be customized to meet the specific needs of any company.

The MOC workflow within PSE ensures that key steps are completed, including identifying the need for a change, evaluating the potential impact, obtaining approval, and implementing and verifying the change. The workflow ensures compliance with the OSHA standards and guidelines.



The following examples illustrate the flexibility of the MOC workflow.

Figure 5. Example 1 MOC Workflow (single)



Source: ioMosaic Corporation – PSE

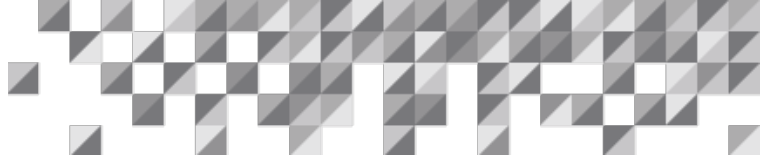
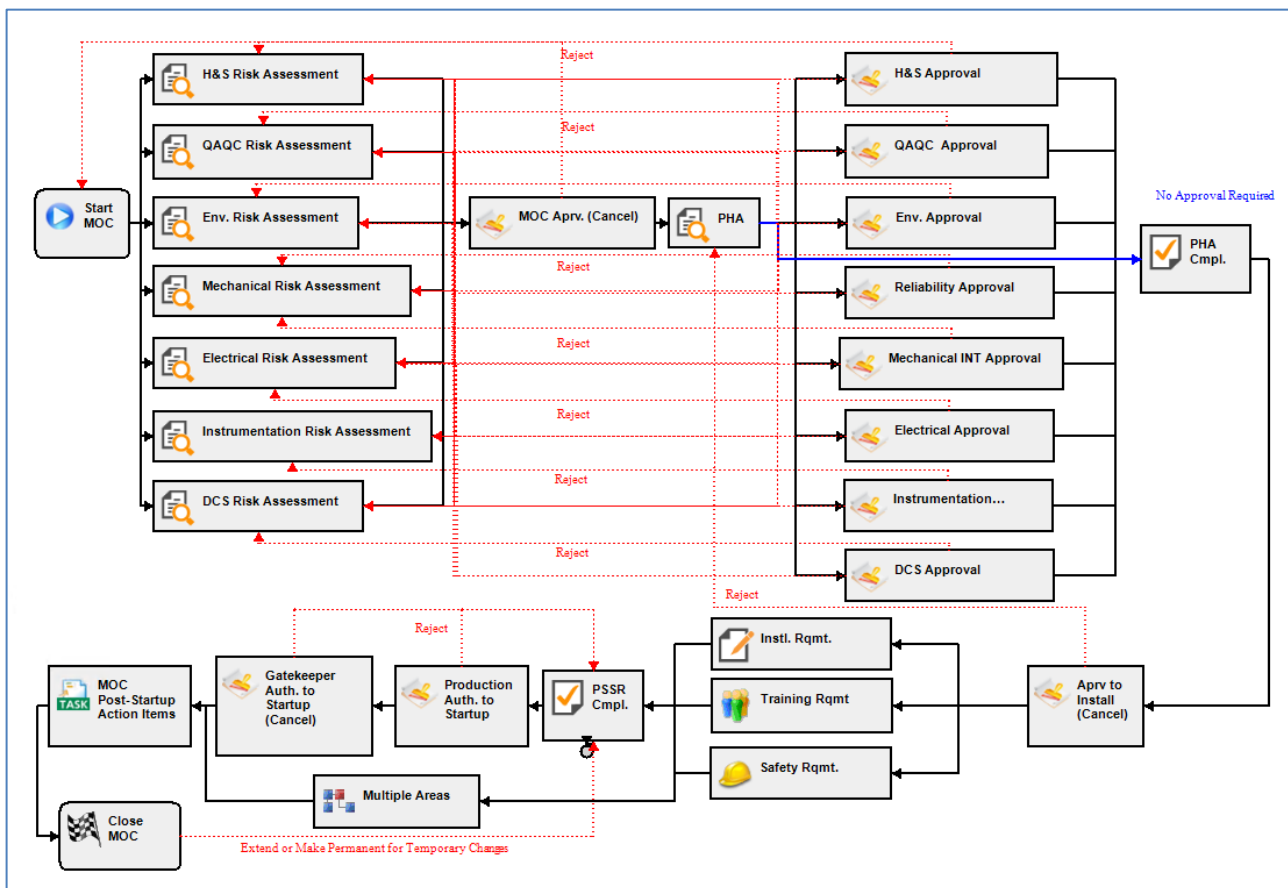


Figure 6. Example 2 MOC Workflow (multi)



Source: ioMosaic Corporation – PSE

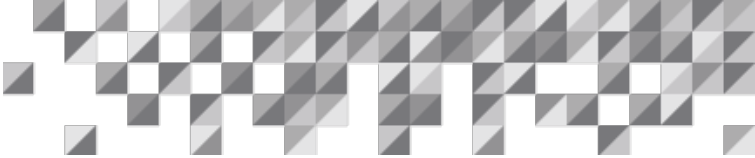
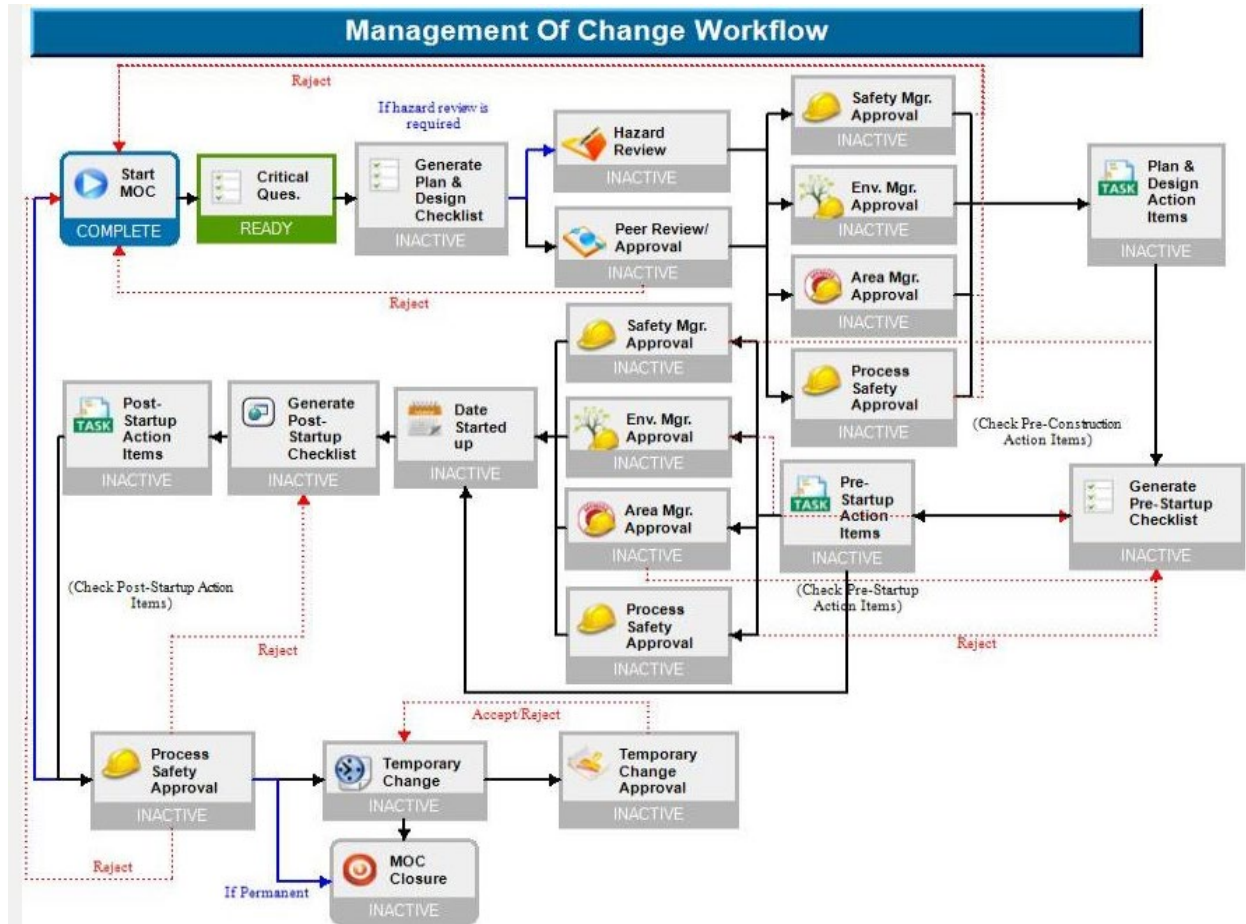


Figure 7 Example 3 MOC Workflow – Overall MOC Process



Source: ioMosaic Corporation – PSE

Action Tracking System

PSE features a comprehensive action item management system (Figure 8) that tracks all tasks related to each process safety management workflow, such as MOC checklist items. This feature ensures that all action items are managed within the platform, reducing or eliminating the risk of overlooked or forgotten tasks. An additional feature, the ‘Automatic Reminders’ enforces that all tasks are completed on time.

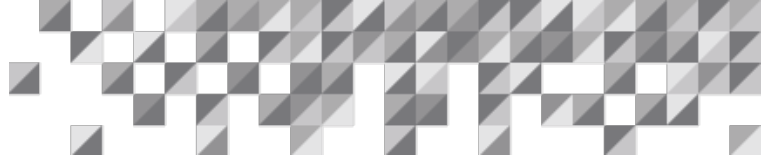
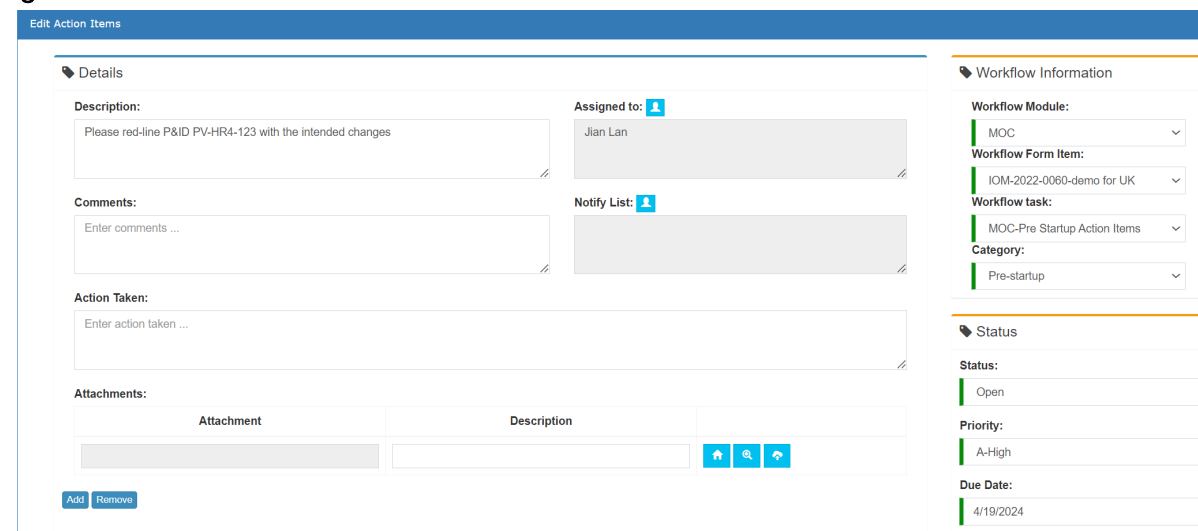


Figure 8. MOC Action item



The screenshot shows the 'Edit Action Items' interface. It is divided into several sections:

- Details:**
 - Description:** Please red-line P&ID PV-HR4-123 with the intended changes
 - Assigned to:** Jian Lan
 - Comments:** Enter comments ...
 - Notify List:** (Empty list)
 - Action Taken:** Enter action taken ...
 - Attachments:** A table with columns 'Attachment' and 'Description'. Below the table are 'Add' and 'Remove' buttons.
- Workflow Information:**
 - Workflow Module:** MOC
 - Workflow Form Item:** IOM-2022-0060-demo for UK
 - Workflow task:** MOC-Pre Startup Action Items
 - Category:** Pre-startup
- Status:**
 - Status:** Open
 - Priority:** A-High
 - Due Date:** 4/19/2024

Source: ioMosaic Corporation – PSE

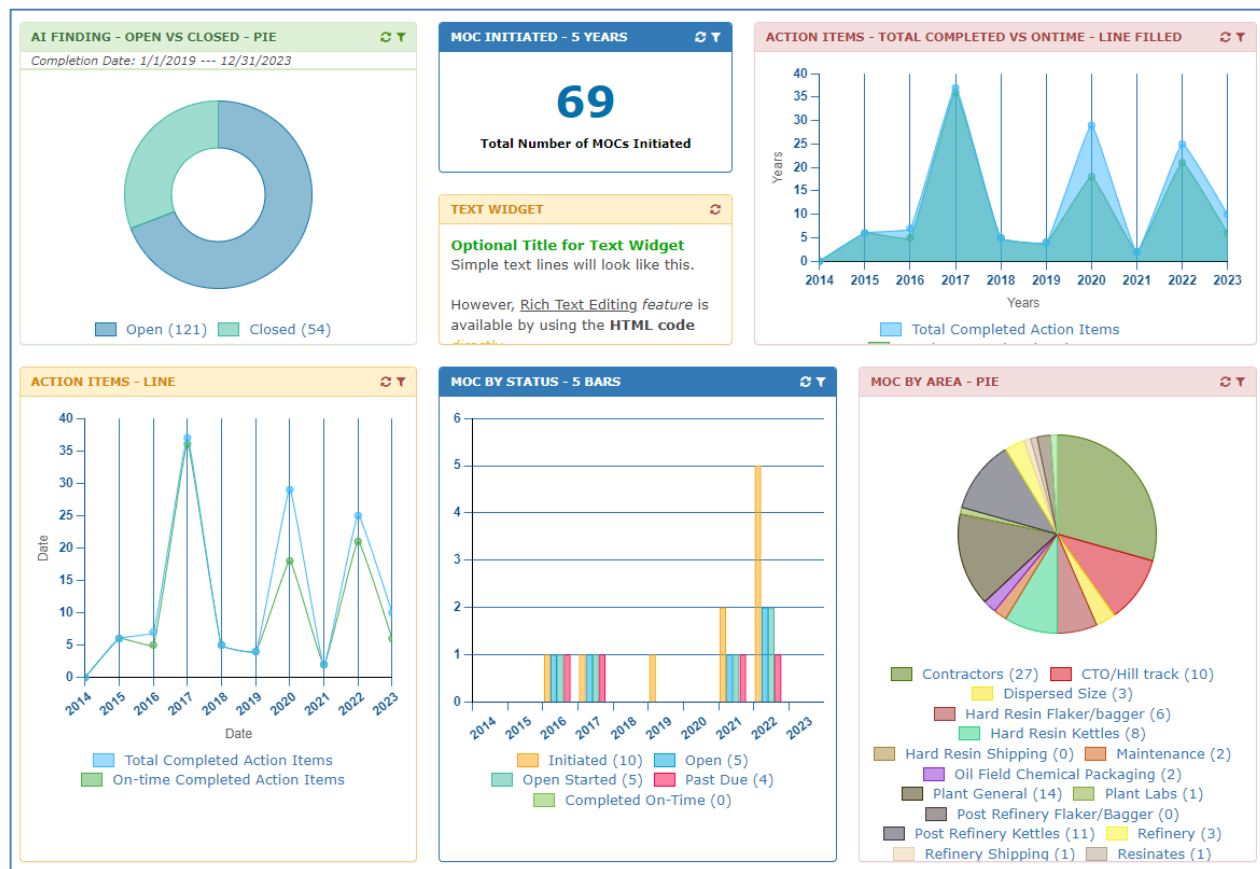
Reporting and Dashboard/KPI

An effective dashboard (Figure 9) is an invaluable ‘must have’ asset for any data-driven enterprise looking to increase performance and productivity. With well-designed dashboards featuring various widgets such as bar charts, pie charts, line charts, and tables, PSE provides a comprehensive overview of the PSM program from a single source. These dashboards allow business owners to make quick, informed decisions at a glance based on real-time data.

Moreover, the reporting and dashboard capabilities provide real-time visibility into MOC-related activities, allowing organizations to identify trends and areas of concern quickly. This capability enables timely corrective actions, reducing the risk of incidents and non-compliance. PSE's robust reporting and dashboard/KPIs are essential for optimizing operations and mitigating potential risks.



Figure 9. Dashboard/KPI



Source: ioMosaic Corporation – PSE

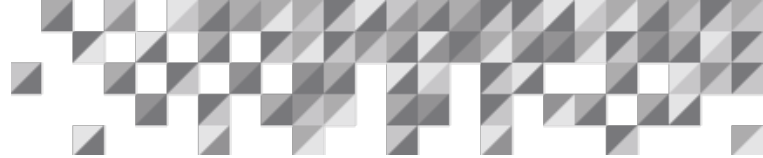
Case Study – Chemical Manufacturer Management of Change Documentation

The Challenge

An international chemical manufacturing company struggled to manually manage its Process Safety Information (PSI). Accurate PSI was needed for hazard evaluations within the worldwide MOC and Process Hazard Analysis (PHA) processes. They did not have one comprehensive system where qualified employees across the organization could store and access data.

After years of storing and maintaining paper trails of Management of Change (MOC) orders, the client faced the reality that nearly twenty percent of this paperwork was somehow lost or misplaced.

An electronic MOC program, tied to related workflows such as PSI and PHA, was needed to avoid these issues. Solely relying on individuals to execute the MOC paperwork and maintain the MOC



and PSI documentation can be prone to human error. Creating a documented program that relies on an electronic platform for creating and tracking the MOC documents, related data, and approvals can improve process safety oversight and employee and contractor safety. An electronic program can also reduce the risk of worker fatalities and injuries using appropriate hazard management.

Our Approach

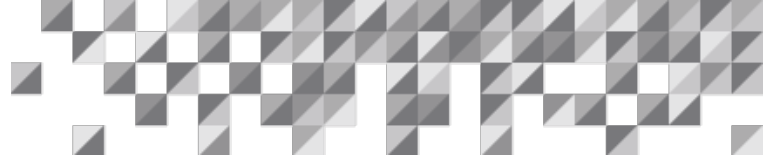
The Process Safety Enterprise® Management of Change Workflow is a cloud-based platform that provides a centralized database accessible and visible to all employees and contains a step-by-step guided workflow. This workflow could have minimized or eliminated the client's inability to keep accurate records of the MOC and related workflows and documentation.

Additionally, PSE can integrate multiple sites and various data into one uniform system (which would have further minimized the client's issues) by:

- Developing a unique ID system to differentiate facilities and areas
- Setting up single sign-on access for users to all facility sites
- Identifying and developing consistent data definitions and metrics
- Standardizing search queries to ensure data quality
- Devising site-specific and corporate reporting capabilities

Customizable workflows are available within PSE and can assist with creating unique MOC checklists and workflows that can be associated with related workflows, such as PSI and PHA.

PSE's built-in features, such as the automatic assignment of approvals, action item tracking, document linking, and email notifications, all contribute to ensuring the documentation and execution of MOC are properly captured, accessible, and visible to employees.



The Benefits

For companies serious about their process safety compliance and MOC process, PSE is a user-friendly platform with workflows for document control that is scalable and affordable.

The customized checklists and company-specific action items streamline evaluating and mitigating potential hazards. Documenting the hazard management steps, approvals, and training ensures that the OSHA requirements are met and vital data is accessible in the future.

Finally, the PSE workflows have metrics that track open workflows and the percentage of open or overdue workflows. The metrics are graphed with interactive data, allowing you to drill down to the specific data. Reports can also be generated to view the status of all workflows.

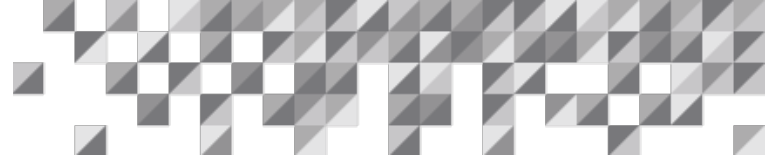
Conclusion

Managing MOC and MOOC effectively and consistently can be challenging; fortunately, Process Safety Enterprise® (PSE) provides an integrated solution that makes the process more efficient and effective. With its dynamic form builder, action tracking feature, and integrated workflows to standardize the process, companies reduce the risk of incidents and non-compliance.

PSE offers additional benefits, including enhanced collaboration, improved data management, and increased compliance with process safety regulations. With the reporting and dashboard capabilities, organizations can easily identify trends and potential areas of concern, gaining real-time visibility into all process safety-related activities. The automatic notification system sends reminders and alerts, ensuring items are addressed in a timely manner.

PSE's customizable workflow module ensures any changes to the process, equipment, personnel, or procedures do not adversely affect process safety reliability, the safety of the environment and personnel, or the company's reputation. The pre-built templates, customization options, and action-tracking features provide a consistent and efficient approach to managing successful MOC processes. The workflow enhances collaboration, improves data management, and increases compliance with process safety regulations. This process ensures that all necessary information is captured in one centrally located platform.

PSE is the only product of its kind in the market today that provides an all-inclusive process safety compliance platform that makes compliance easy.



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PSE [link](#) to PSE overview

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[Process Safety Enterprise® Asset Integrity Management Service \(AIMS\) and KPI Dashboard](#)