

ePAS ASSURANCE & COMPLIANCE

Five Ways ePAS Supports EHS and Digital Permitting



PROMETHEUS GROUP

INTRODUCTION

Prometheus Group’s ePAS gives organizations the reassurance that comes from having an integrated safe system of work (ISSOW). Health and safety best practices are baked right into the solution. It’s also fully configurable to all relevant regulations and your own procedures. Like all solutions from Prometheus Group, ePAS offers seamless integration with your EAM, ERP, or CMMS.

This document looks at how ePAS can support your organization’s environmental health and safety efforts with risk management, shared knowledge, compliance, data quality, and mobility.

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Risk Management

Low quality risk assessments are the root cause of many workplace incidents. A key objective of a truly safe system of work must be to improve the quality of risk assessments. Training and standard practices help with this, but they are often not enough to bridge the gap.

Success in this area relies on having an accurate Hazard Identification Risk Assessment (HIRA) methodology in place. An effective and efficient HIRA must include cross-referencing and periodic review of assessments.



The ePAS HIRA function achieves three primary objectives:

- Improves the quality of risk assessments and accompanying data
- Develops a consistent framework for each assessment
- Increases the assessment completion rate

The Task HIRA breaks a job down into discrete steps, with each step receiving its own risk assessment. The Task HIRA is an integral part of the permit request process under ePAS. Teams are provided with knowledge of the full scope of work. This includes an assessment of the initial risk along with the residual risk if certain hazards are not addressed and mitigated.

The Task HIRA function is sufficient for most jobs, but ePAS also includes a Formal Risk Assessment (FRA) tool. The tool includes additional features used to accurately assess high risk and specialist jobs. An FRA template is also supported.

How the ePAS Task HIRA Works

The ePAS Task HIRA was designed to sustain and reinforce EHS best practice. The process includes numerous safeguards that reduce human error and ensure your risk assessments are always accurate and up to date.



Work Categories

You can pre-define and control a list of work categories specific to your site or operation. Your organization can configure the work categories to mandate specific competency and authorization requirements at a Permit Issuer, Permit Holder or Work Party Member level. Work categories can also be defined to drive dynamic permit reporting sections. This ensures that critical information, such as radiation levels, won't be missed.



Automatic Hazards

Hazards are automatically added to the Task HIRA for each work category selected. This lowers the probability of hazards being missed. Hazards can also be removed if they're irrelevant to that step. All removed hazards are displayed with a strikethrough, alerting the reviewing to evaluate the reasons for its removal.



Customization & Control

Hazards can be configured to reflect new situations, and ePAS allows for the addition of custom controls if a standard control is not available or relevant. You can also set up locked hazards and controls that can only be removed by users your organization selects. This is ideal for critical/fatal hazards and controls. The solution also includes controls that enforce the attachment of supporting information from SDSs, Rescue Plans, SWIs, Lift Studies and more.



Dynamic Authorizations

Any work category, hazard, or control can be configured to trigger a dynamic authorization in the resulting permit (such as working on a radiation source requiring authorization by the Radiation Safety Officer). This ensures the appropriate authorized person is involved in any specialized or high-risk work. The solution also gives you the ability to assign responsibility for each hazard. This ensures compliance with JSEA and regulatory requirements.



Faster & More Thorough Assessments

A library of predefined task steps enables standard jobs to be setup, with all relevant work categories, hazards, and controls automatically reused. These predefined task steps are also updated when new hazards or controls are added to the HIRA master data. In the case of standard routine jobs, users can simply copy predefined task HIRAs and add them to the new jobs. Participants involved in preparing the Task HIRA can also be recorded for reference and contact if needed. Each of these features increases efficiency and safety. Task HIRA Templates are also available in the solution. These include a complete list of task steps, including a HIRA.



Case study: Oil & Gas



*Permit-related incidents
fell from **60%** to **20%**
after implementing the
ePAS solution.*

One of Australia's largest publicly traded oil and gas exploration and production companies knew they needed to revamp their permitting system. The company is one of the world's leading producers of liquefied natural gas. Several thousand people are employed by the company at its offshore and onshore production facilities.

The company had depended on a paper-based permit-to-work system to manage safety, but each facility used a different system and there was no central governance to standardize these processes. Management saw a clear need to replace the inconsistent paper permit systems and to introduce a common set of business rules to govern work management and identify risk.

The company selected Prometheus ePAS as its integrated safe system of work. After implementation, the company identified 1.5 times more hazards than previously, with an additional identification of four times more hazard controls. Permit-related incidents fell from 60 percent of incidents to less than 20 percent.



Knowledge Sharing

It's been said that every mistake is an opportunity to learn an important lesson. This may be true for individuals, but organizations often can't make the same claim. Those lessons were often painful to learn. To their credit, most organizations try to make sure the pain isn't wasted. The techniques used include published notices, emails, procedural and form updates, refresher training, etc. Unfortunately, these methods are rarely effective.

This is why ePAS captures and shares knowledge directly, without relying on traditional methods. At its most basic, knowledge is shared by system login and user messages that alert workers to potential hazards. The knowledge sharing capabilities of ePAS go much deeper than this, however. Specific features include:

1. HIRA Master Data can be updated to include the results of investigations that have identified missing hazards or controls.

Result: These hazards and controls are available the next time a user selects that type of work. They don't have to remember the results of the investigation, because it's been added to the HIRA Master Data.

2. Lessons learned can be recorded against any permit or certificate in ePAS, and this information will be tied to the relevant asset.

Result: Any lessons associated with an asset are automatically displayed when a user selects that asset for work. An individual may still make mistakes, but the team won't make the same mistake twice.

3. Listings of specific hazards related to locations, such as asbestos, low visibility, etc., are often maintained in registers that may or may not be checked when preparing a permit. ePAS eliminates this by directly associating hazards with assets.

Result: Hazards associated with the asset are automatically added to the Permit Request. This ensures all asset hazards are managed in the Task HIRA.

4. The results of incident investigations are often lost or forgotten, and the knowledge rarely retained. ePAS Incident Bulletins can be registered and associated with a relevant Work Category in the Task HIRA.

Result: All ePAS Incident Bulletins are automatically added to the Permit Request. In addition, the user must acknowledge the Incident Bulletin. This means it cannot be ignored or missed.





Case study:
**Water
Desalination**



A desalination plant, comprising 29 buildings producing 150 billion liters of water per year, employs more than 50 full-time maintenance staff plus contractors. The desalination plant also includes two underground tunnels located 15 meters below the seabed, each measuring more than a kilometer long and featuring intake and outlet structures more than 20 meters below the sea's surface. It also includes an 84km two-way water transfer pipeline that provides desalinated water or catchment supplies to local communities as required.

At first, the operations and maintenance teams relied on a basic paper permitting system. Although the system worked, it was not efficient. "Because of the scale and complexity of the plant and the large amount of routine maintenance required, it was difficult to keep track of things. There was continual writing of permits using duplicate books and lots of filing and archiving," said a plant operator. "With paper-based systems things can go missing and we needed to be accountable for auditing. We knew there had to be a better way but weren't sure what that was."

The desalination plant implemented Prometheus ePAS to standardize hazard identification and risk assessment procedures across the workforce. The team has done away with handwritten tags, can modify permits quickly and easily, and the audit trail is clear, complete, and comprehensive. They can keep better track of scopes of work, trace where forms go, make sure permits are not missed, and manage isolation points.





Compliance

Compliance under paper-based permit systems is totally dependent on personnel knowing the procedures and rules, and then following them in a diligent and consistent manner. This process is highly prone to human error.

ePAS ensures compliance and provides assurance that the safe work procedures are being consistently executed through Workflows, System Roles, Competencies, and Approvals.

Workflows

Every ePAS object — such as a request or permit or certificate — has a unique workflow. These workflows reflect the steps in the related safe

work procedures. ePAS rigorously enforces the sequence of these workflow steps. Users can't skip or miss steps, regardless of their roles or system permissions. Any return to an earlier step, such as the Planning State, will require the same forward steps to be executed to revalidate any changes.

Each state change in the workflow automatically applies validation rules. The solution will not let the workflow proceed until each step has been completed. These include:

- All mandatory fields completed
- Any date validations applied
- Required documents attached and designated as the correct type

- All mandatory authorizations are completed including any relevant subject matter expert or other authorizations
- Proposed permit holder holds the required competencies
- Required certificates are linked and in the right state
- Display of any asset/isolation cross reference occurrences (shared plant or isolation conflicts)
- User authorizing the state change has the correct role/competency
- Checks and displays any hazard conflicts with other permits



Roles

All users must have at least one ePAS Role. Depending on their responsibilities, they may have several. A user's role controls which actions they can perform in the system. A user must have an ePAS login and at least one Role to be able to perform any action. This ensures only authorized personnel can perform key actions in the safe work system. These ePAS Roles control:

- What objects they can edit and progress through the workflow states
- What areas of the plant they are permitted to work in and authorize work in
- Which approvals they can perform
- Which specific functionality they can access, for example managing user profiles

Approvals

The ePAS Approval model is highly effective and flexible, ensuring that only personnel with the correct credentials can authorize and approve any ePAS Object. Specific restrictions/requirements include:

- User must hold the exact named role required for the approval including their role being for the same Responsibility Group (plant area)

- Must hold the correct competency if the approval has a competency configured
- Cannot perform the approval if the user performed the previous step, preventing users from approving their own work and potentially skipping safety steps
- Comments must be entered if rejecting an approval step
- Order of approvals can be forced (where multiple approvals are required at the same point in the workflow) to ensure the correct order of authority is obtained

Approvals can be fixed or dynamic. Fixed approvals are always required in the workflow. Dynamic approvals are variable. These can include:

- Risk rating pushes up approval to senior managers as risk increases
- Work category/hazard/control requires subject matter expert authorization
- Critical plant item selected management or senior person authorization
- Disconnection required to ensure reconnection of motors
- Method of proving isolation, etc.



Competencies

A key requirement for most sites is ensuring people have the correct competencies for the work. ePAS supports competency validation which can be applied to:

- Any approval
- An isolation action
- A permit issue action
- A permit holder
- Work party members signing on electronically
- Movement between workflow state transitions

Competency can be defined in several ways. Work Category is the most common. For example, a permit holder for a permit for confined space must hold the correct CSE authorization to accept the permit. The same rule can be applied to Work Party Members.

Confined space work is one of the highest risk activities at many sites. Any ePAS asset can be designated a Confined Space Plant Item. This designation triggers automated responses including:

- Inclusion in the Confined Space Register
- Default requirement for the Work Category “Working in Confined Space” in the Task HIRA

- Invokes Permit Holder Competency check for CSE if configured

Isolations

The ePAS isolations workflow and support functions are comprehensive and the result of many years of evolving best practice. The Isolation Certificate types can require that an appropriate person (role/competency) confirms that the isolations are implemented and that a separate person performs Tag verification which is the removal and scanning of a tag stub. The workflow also drives the second check of isolation planning whereby the person that planned the isolations cannot approve the isolation plan.



The same process is supported in the Prometheus Mobile App.

Critical plant safety systems require special attention and may even be a notifiable event to insurers. The ePAS Safety System Inhibit Certificate is specifically designed to support these scenarios and accommodate equipment overrides. This certificate ensures these isolations and overrides are not forgotten and are tightly managed.

The solution also supports your Switching Programs, with all necessary isolations integrated directly into the program.

Investigations and Audits

Incident investigations can be problematic in paper-based permit systems. ePAS automatically retains a detailed historical record of every request, permit and certificate including automated actions and user actions. These entries include the

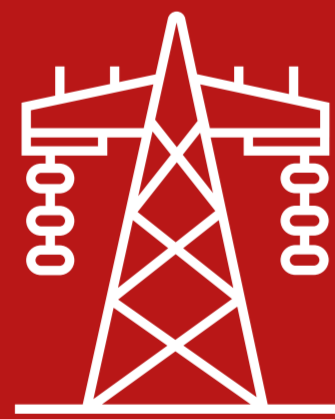
users, date, time, and action details. These records are ideal for investigating incidents, as the timeline and parties involved are known and indisputable. This visible and verifiable history acts as an incentive to follow the approved process.

Quality safe work systems are supported by regular random audits of permits to monitor compliance. The ePAS Audit Form supports this process with configurable sections and questions. All results are recorded for compliance reporting.



Case study:

Power Generation



More than **815 hours**

saved in overtime after implementing ePAS solution.

A coal-fired power station located in the state of Victoria uses four turbine generators to provide a total capacity of 1,480 megawatts. As a result of past incidents and injuries, the company determined that an electronic permit to work system was required to provide a better, safer way of managing plant access. Improved safety was the primary goal of selecting an ePTW solution, however, improved efficiency and savings were also important.

The company achieved its intended safety improvements through the implementation. The company has recorded a decrease in the number of injuries and near misses due to permit system/rules failures, while permit breaches have been captured through the system's auditing processes. The company has also achieved efficiency gains in areas such as planning, isolation planning and cross referencing, permit writing, tag writing, isolation point verification, application of business rules, and permit approvals.

These efficiency gains have translated to true dollar savings. In a single, major 42-day outage, the organization saved more than 815 hours in overtime as a direct result of implementing the solution.





Data Quality/Consistency

The data quality of paper permitting is plagued by sloppy handwriting and inconsistencies from one person to the next. ePAS has several standard functions that reduce errors, improving quality and consistency.

ePAS Plant Hierarchy

The master data source for maintainable assets and isolations, including all switches and earth points. Each item possesses a unique identification in the Plant Hierarchy. ePAS cross references these unique IDs to show shared items and potential conflicts.

The Plant Hierarchy can be seamlessly integrated with the organization’s existing asset management system. This further ensures consistency of asset names and structure.

Templates and Fields

Pre-designed and approved templates give you a huge productivity boost. They can be quickly and easily reused throughout ePAS, including in the Task HIRA, Isolation Certificates, Confined Space, etc. This delivers a high level of consistency and allows optimization of isolation plans.

Many of the ePAS fields are populated by selecting from drop down lists maintained by authorized users. These fields significantly reduce errors and operator effort, making the data much more consistent.

Organizations can designate certain fields as mandatory during implementation. This means minimum requirements will always be met and ensures the next person in the workflow has all the required data. Human error is minimized by setting validation rules. Input that falls outside of the specified range is automatically rejected, further ensuring data quality.



Terminology

Consistent terminology is one of the great strengths of an electronic permitting process. However, the value of this is questionable if every user at your organization is forced to deal with unfamiliar terms.

ePAS does not have this limitation. All terminology in ePAS is configurable by authorized users. Relying on familiar terms increases user adoption and helps make the system even easier to use. The greatest value, though, lies in the boost to data quality.

Using familiar, organization-led terminology means fewer mistakes are made and personal variations in common terms are eliminated.

Mobility

An electronic safe system of work has advantages, even if the only electronic parts are the process itself. The system of checks and balances built into ePAS would increase safety and introduce efficiencies even if the result were paper printouts. However, ePAS is not limited to this. The solution integrates with the Prometheus Mobile Platform for even higher value.

The solution can be used in either online or offline mode, ensuring workers can access vital health and safety information while in the field. Mobility means field staff can easily carry all needed permits, isolation procedures, task lists, risk assessments, etc., in their pockets. It also eliminates long lines at the permit hut (or the printer).

Removing that bottleneck may seem like a minor gain, but don't discount it. The minutes spent waiting in line translate directly to potential wrench time. That additional wrench time can have a positive impact on safety. Rushing simply leads to more errors, even among highly skilled professionals.

Mobility further empowers all the other advantages of ePAS. Risk management is aided because staff can more easily access the information they need. In addition, mobility greatly reduces the lag time between discovery of a new hazard and its entry in the system.

Sharing that new knowledge becomes much simpler when an organization leverages mobility.



Paper notices and bulletins are easily missed. This is especially true if you receive many during a week and only a few apply to you. Mobility gives you the power to make sure that all stakeholders see exactly what they need to ensure safe work.

Mobility enforces process compliance in ways impossible for a paper system. You can't skip a single step no matter how hard you try. The system will not let you proceed in anything but the correct manner.

Data quality is invariably improved by mobility, especially since ePAS has built-in rules to make sure this happens. An electronic process that uses paper at any point in the chain will inevitably see a reduction in data quality.

Transferring paper notes and inspection results into the system increases the chance of errors. Sloppy handwriting isn't the only culprit here. Data entry is tedious and it's easy for craftspeople to find something more pressing to do. This time lag increases the risk that errors will be introduced and may also result in dangerous situations going unrecorded for longer than necessary. Yes, the time lag may only be a day or two, but a fatal incident can occur in seconds.

Conclusion

ePAS supports your health and safety efforts with proven tools. Managing risk becomes much simpler and more effective when all relevant knowledge is shared with all users. Data quality

rules ensure that the knowledge is accurate and up to date, while also enforcing compliance. The integrated mobility of ePAS increases the value of all these tools, as users can always access and update information as needed.

The emphasis of EHS is always worker protection and this is central to the design and implementation of ePAS. We believe that a thorough and safe system of work is its own reward. However, there are also incredible efficiency boosts to be gained from implementing ePAS. Please see *The Calculated Benefits of Electronic Permit to Work Systems* for a detailed breakdown of efficiency increases and cost reductions.

Learn how to power up your EHS and permitting.

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