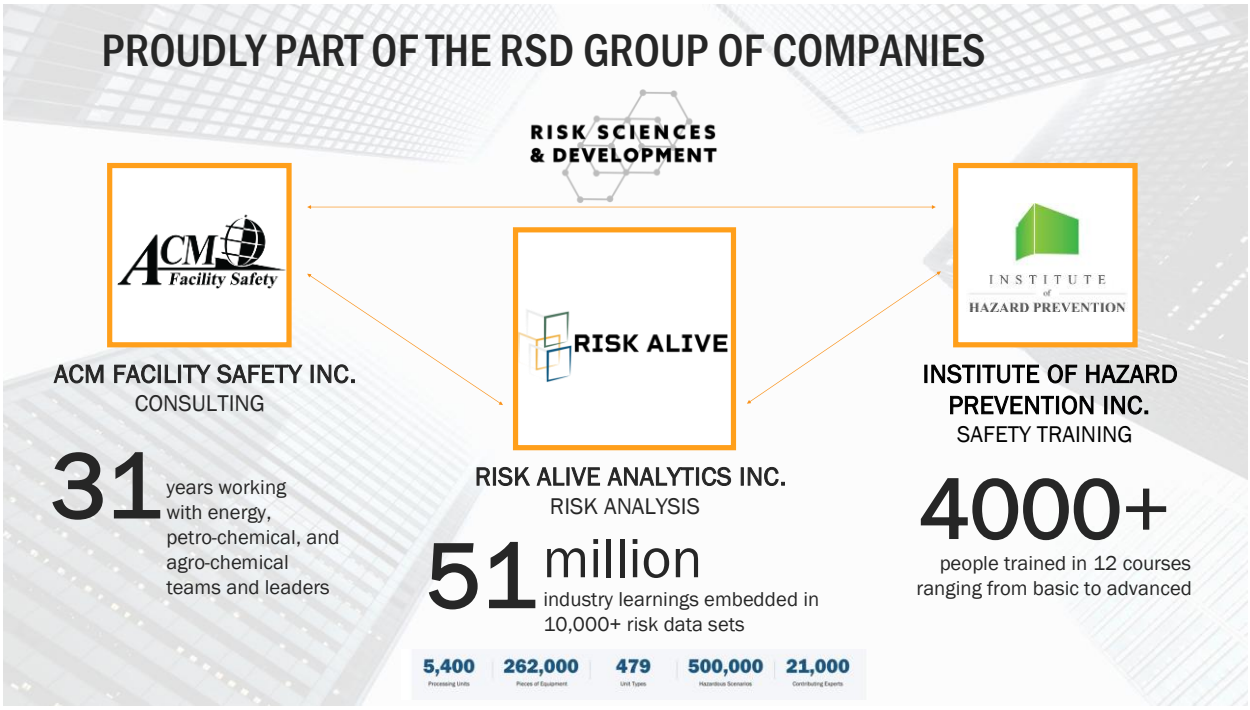
SMARTER DECISIONS
BACKED BY SCIENCE
SAFER
TOGETHER

Risk Alive® PHA Capabilities Overview

RISK ALIVE

RISK ALIVE COMPANY PROFILE



Risk Alive Team and Process Safety "Uber" Network: https://riskalive.com/meet-our-team

The Future of Risk Management

Risk Alive is Canada's largest independent provider of Hazard Analysis, Safeguard and Risk Assessment services. We help the world's largest operating and engineering companies improve facility uptime, manage process risk, and comply with international and local safety standards.

At RISK ALIVE we do M.O.R.E. for our clients; that means we work hard to Minimize Operating Risk Exposure, and help our clients create fewer unsafe days across the operations. We achieve this through providing PHA/HAZOP, SIL/LOPA, SRS, Contingency Planning Services AND training workshops in P&ID, PHA/HAZOP, SIL/LOPA, TÜV FS Eng. Certification, Safety Lifecycle Management, and Risk Analysis tools and methodologies.

Whether grassroots or upgrading project, RISK ALIVE is committed to offering clients cost effective and unbiased advice, using our unique combination of tools, methodologies and experienced specialists to deliver sustainable, value-enhancing solutions that incorporate global best practices.

RISK ALIVE prides itself on neutral, third-party unbiased workshop-oriented training sessions developed from the real life experiences of our instructors. Our instructors have lived and implemented all phases of the IEC 61511 Safety Lifecycle during their careers at some of the world's largest operating companies. Our training sessions are known for integrating the most up to date safety lifecycle information and top-notch instructors.

At Risk Alive we have proven, beyond a doubt, that PHA studies (HAZOP, HAZID, What-if, and SIL studies like LOPA) are much more valuable than most companies realize (or are able to access). The

report from a PHA details the full risk of a plant or a unit and contains the thinking of your most experienced operators and engineers from both a safety and an operability perspective. In the right format that data can be used to help enable risk-based decision making at all levels of a company from the board operator at the site up to the CEO. The challenge has always been how to process existing data into key, actionable learnings that can be shared quickly and easily.

With Risk Alive you will be embarking on a new journey in using your PHA data differently and bringing more people from different parts of your organization into the conversation. We look forward to supporting you and helping you to glean the knowledge captured in those worksheets and communicate it to all your various stakeholders.

EXECUTIVE SUMMARY

RISK ALIVE provides facilitation services for risk assessments in all stages of a facility lifecycle, from Hazard Identification in the design phase through to revalidation assessments during the facility operating life. Through both rigorous training and project experience with an extensive list of clients, RISK ALIVE consultants are experts in a wide range of risk assessments techniques. Further, all RISK ALIVE consultants have TÜV Rheinland Functional Safety certification in the area of Process Hazard Analysis and Risk Assessment.

At RISK ALIVE, we understand that a large portion of work towards improving safety at your facility occurs after the risk assessment is complete and includes a much larger group of stakeholders. Therefore, we guarantee session **Data Dumps within 24 hours** and **IFR reports within 10 business days** of session completion. Our facilitation teams also follow a specific documentation methodology which ensures that these reports, and their associated action items, are easily understood by those not present during the session. In addition, RISK ALIVE has developed a set of Analytics to ensure our clients can extract maximum value from their facilitated risk session and allocate their resources in the most efficient manner.

We do more than just risk assessment facilitation. We are your partner throughout the process to help simplify the complex risk data and give your team more clarity to know, understand and prioritize threats based on real insights and best practice expertise.

IMPACTING AI & DIGITAL TRANSFORMATION AND OPERATIONAL EXCELLENCE

From Compliance to Intelligence: Transforming Process Safety with AI-Powered Risk Analytics

The energy industry is under unprecedented pressure to deliver safer, cleaner, and more efficient operations while accelerating toward net-zero ambitions. Traditional approaches to Process Hazard

Analysis (PHA) and HAZOP studies often remain compliance-driven, time-consuming, and siloed, limiting their ability to actively support operational excellence and energy transition goals.

At **Risk Alive Analytics Inc.**, we have built one of the world's largest structured dataset of process safety learnings — spanning thousands of PHAs, safeguards, and recommendations across global energy facilities. Leveraging this unique data foundation, combined with AI-powered risk intelligence, we are transforming how companies approach process safety: from a **static, reactive activity** into a **dynamic, data-driven, and proactive system of intelligence**.

1. **AI-Powered PHA Facilitation and QA:** Our proprietary LivePHA™ platform pre-populates PHA and LOPA sessions with proven industry deviations, safeguards, and benchmark data. This approach reduces reliance on memory or subjective judgment, improves coverage of high-risk scenarios, and cuts workshop preparation and facilitation time by up to 30%. Automated QA and analytics further enhance consistency across sites, ensuring high-quality outputs.
2. **Digital Risk Intelligence Agents:** Risk Alive's AI Agents act as **real-time safety copilots**, providing engineers, operators, and managers with instant access to industry learnings and contextual guidance. These agents enable frontline decision-makers to ask, *"What should I know, right now, in this situation?"* and receive actionable, evidence-based insights. By embedding intelligence into daily operations, organizations can identify risks earlier, respond faster, and prevent costly incidents.
3. **Operational Excellence and Efficiency Gains:** Beyond safety, the integration of AI and risk intelligence delivers measurable business value. Clients report:
    - **30% reduction in PHA cycle time** through data pre-population and analytics.
    - **25% improvement in safeguard quality** by benchmarking against industry best practices.
    - **Millions saved annually** through avoided rework, startup delays, and incident costs.
4. **Supporting the Energy Transition:** As companies scale hydrogen, renewables, and low-carbon technologies, they face new hazards, knowledge gaps, and workforce challenges. Risk Alive provides a scalable way to transfer institutional knowledge, benchmark new processes against decades of industry data, and ensure emerging technologies are brought online safely, efficiently, and sustainably.

Relevance to the Industry Evolution

We directly align with your **AI & Digital Transformation**, **Operational Excellence**, and **Clean Fuels & Energy Transition**. By showcasing applied case studies and real-world results, Risk Alive demonstrates how digital risk intelligence is not just a compliance tool but a **strategic enabler of safer, more profitable, and more sustainable energy operations**.

Conclusion

Risk Alive's mission is clear: to create a world where risk is never a guessing game. By combining data, AI, and human expertise, we empower energy organizations to move beyond "checkbox safety" and unlock a future where every decision is powered by shared insight, measurable impact, and proactive safety culture.

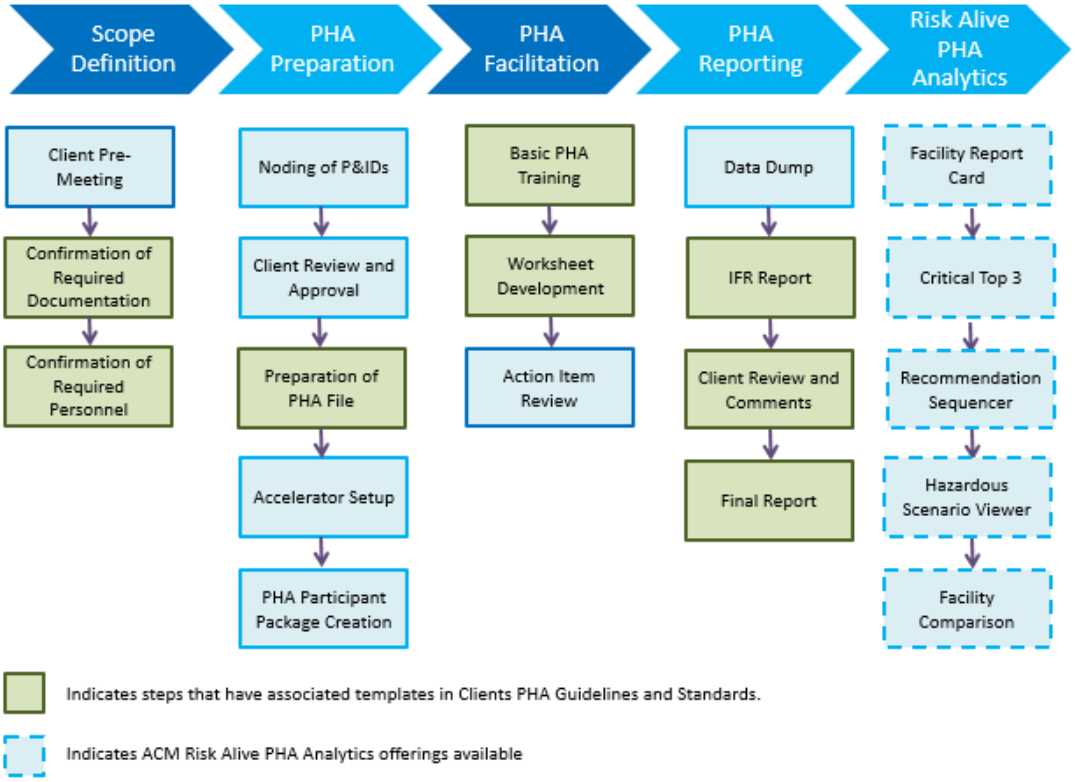
SUMMARY – RISK ALIVE FOR YOU

- Transforming Process Safety with AI-Powered Risk Analytics
- World's largest PHA dataset – thousands of studies, safeguards, and recommendations
- LivePHA™ platform: pre-population, QA, benchmarking, analytics
- Digital Risk Intelligence Agents: real-time, frontline decision support
- Operational Excellence: 30% faster PHAs, 25% stronger safeguards, millions saved
- Energy Transition: safer, more efficient scale-up of process and operational safety
- Aligned with Industry Evolution: AI & Digital Transformation, Operational Excellence, Clean Fuels

PHA FACILITATION EXPERIENCE

Risk Alive's 30+ years of experience facilitating over 6,000 risk studies means we have experience, insight and understanding required to ensure our risk assessment services are creating solutions specialized to your organization. This includes everything from ensuring a fast, complete session with accurate reporting to our dedication to providing exceptional customer service before, during and after a project. With RISK ALIVE you get much more than just a facilitation consultation team, you get an entire group of experts focused on giving you the greatest possible value for your organization.

PROCESS HAZARD ANALYSIS WORKFLOW DIAGRAM



Pre-Risk Study Session

- **Client Focused Attention** - Each Client is assigned a professional Key Account Manager responsible for learning and understanding their company, people and business.
- **Smooth Project Delivery** - As part of the scoping session an introduction is made to your project manager and lead facilitator (chairman) to ensure a smooth hand off from the sales cycle to project delivery.
- **Accurate Estimation** - All materials for study (P&IDs, PFDs) are reviewed by a team of experts to ensure an accurate estimation of the duration and cost of your risk study. This ensures that you are prepared for the time required and not surprised by overages when the study is not completed on time.
- **Efficient Project Management & Workload Capacity** - RISK ALIVE's Project Management team will work with you to schedule your project and manage pre-session deliverables. For large multi-unit projects, a dedicated resource will be provided to assist in coordination. RISK ALIVE's Project Management team will constantly examine the team's workload capacity to meet project deadlines.
- **Quality Control** – The assigned facilitator (chairman) from RISK ALIVE will ensure noded P&IDs are broken into logical pieces of equipment, will review the P&IDs in detail alongside with the scribe, and will work with you and your team to ensure all documentation are organized prior to session start.
- **Training Available** – If staff training is needed, or identified as an opportunity, RISK ALIVE works with the Institute of Hazard Prevention, which has a suite of competency building workshops that can help you prepare your team. This can include anything from learning how to read P&IDs and engineering drawings to learning PHA/HAZOP and SIL/LOPA methodology.

During Your Risk Study Session

- **In-Session Training** - At the beginning of each session your facilitator will deliver a short training session for your team. This will set the tone for the rest of the study and help each participant to understand the methodology and their accountabilities.

- **Expert Facilitation Teams** - You will have the benefit of a two person facilitation team with both a facilitator and a scribe. This will decrease the duration of your study dramatically as there is no delay in capturing all the important information and the facilitator is free to focus on moving the study forward.
    - Our facilitators are specifically trained on leading these sessions and have a great deal of expertise in managing the team and the process to ensure timely results. They also have an engineering background and industry experience which allows them to identify key areas for review and ensure the team considers all aspects of a risky scenario.

    - RISK ALIVE scribes are expert typists with an engineering background that allows them to understand and identify key points for capture.
- **Software Accelerator Tools** - While your facilitation team will be using a readily available software tool (PHA Pro) to facilitate your session, there are built in custom accelerators that we have developed through our experience to expedite data capture.

- **Contingency Planning** – During a risk study with RISK ALIVE, you can plan for contingencies should one of your safeguards fail during operation. These approved procedures take the guess work out of trouble shooting during operations.

Post Risk Study Session

- **Speedy Data Transfer & Hosting** - After your session is complete you will receive a data transfer of the study worksheets, recommendations and parking lot issues within 24 hours uploaded through our sister company Risk Alive Analytics' digital interface (see images below). This allows your team to commence work on the PHA actions and share critical risk information from the session without delay.

- **Formal Report Reviews** - You have the option of requesting a formal report review after your session where the facilitator will meet with your Project Manager, Senior Management and any other stakeholders to review the final report and recommendations. This can be valuable opportunity to offer more transparency and access to information for your team to lead the management of maintaining standards and meeting industry compliance.
    - **Quality Control –** Your scribe will be compiling an issued for review (IFR) report within 10 business days of session end, which gets thoroughly reviewed by your facilitator prior to sending the report off for your review and acceptance. A final report is then compiled after receiving comments from your team to close off the project.

    - During this session RISK ALIVE will review how your data can be used in proprietary software tools to make it easily accessible. RISK ALIVE works with Risk Alive Safety Analytics to provide access to leading-edge analytics technology being used by global leaders to gain specific, on-going and real-time learnings from organizational risk data.

- **Follow Up Consultation** – Once your study has been completed and reporting is underway you will receive follow up from your us to ensure your team has felt value from our project together and how we can plan the next step in your organization's continuous evolution of safety.

WHAT-IF METHODOLOGY OVERVIEW

A What-If Analysis uses a creative team brainstorming approach to the examination of a process or operation to identify potential hazards.

Summary of Method

- Hazardous consequences are identified for the "What-If" questions;
- Existing safeguards for the each of the scenarios are recorded;
- Qualitative severity and likelihood ratings are assigned from a corporate risk matrix in order to produce a "risk ranking" for each identified hazard which will aid in risk management decision-making;
- Recommendations for design and/or operational improvements may be made.

Questions are applied to existing P&IDs and process descriptions, for example:

a. "What if the raw material being introduced is the wrong concentration?"
b. "What if the operator forgot to close the valve?"

People Requirements

- Requires a leader who is independent from the project, who has been provided with facilitation training and has experience in the "What-If" technique. The leader may NOT simultaneously fill the role of another required team member;
- May require the use of a scribe depending on project and leader preference. The scribe may NOT simultaneously fill the role of another required team member;
- Performed by four to eight team members who should include personnel with adequate process, instrumentation/controls, operations, and maintenance expertise.
- Requires team members who are creative thinkers and are very knowledgeable and experienced in the subject process.

Limitations

- Results are highly dependent on the knowledge, experience and creativity of the team due to subjective element;
- Does not easily generate operability information;
- Does not identify when multiple failures may lead to a hazardous event;
- Does not identify relationships between systems;
- May not identify consequences outside the scope of the study.

HAZARD & OPERABILITY (HAZOP) METHODOLOGY OVERVIEW

The Hazard and Operability Study (HAZOP) method provides a means of systematically reviewing the design and operation of a system to identify potential hazards and/or operability problems by focusing on how a process may deviate from the design.

A HAZOP study is a structured and systematic examination of a planned or existing process or operation, in order to identify and evaluate problems that may represent risks to personnel or equipment, or prevent efficient operation. The HAZOP technique was initially developed to analyze chemical process systems, but has later been extended to other types of systems and also to complex operations and to software systems. A HAZOP is a qualitative technique based on guide-words and is carried out by a multi-disciplinary team (HAZOP team) during a set of meetings.

Summary of Method

- P&IDs are broken down into "nodes" which have common design intent;

- Each node is reviewed by applying a list of process “deviations” or departures from design intent in order to identify potential causes of the deviation;
- Consequences, including both hazards and operability issues, are brainstormed for every cause;
- Existing safeguards for the each of the cause/consequence scenarios are recorded;
- Qualitative severity and likelihood ratings are assigned from a corporate risk matrix in order to produce a “risk ranking” for each identified hazard which will aid in risk management decision-making;
- Recommendations for design and/or operational improvements may be made

People Requirements

- Requires a leader who is independent from the project, who has been provided with facilitation training and has experience in the “HAZOP” technique. The leader may NOT simultaneously fill the role of another required team member.
- May require the use of a scribe depending on project and leader preference. The scribe may NOT simultaneously fill the role of another required team member.
- Performed by four to eight team members who should include personnel with adequate process, instrumentation/controls, operations, and maintenance expertise.
- Requires team members who are knowledgeable and experienced in the subject process.

Limitations

- Does not identify when multiple failures may lead to a hazardous event.

Hazard Identification (HAZID)

A Hazard Identification Study or HAZID is a tool for hazard analysis, used early in a project as soon as process flow diagrams, draft heat and mass balances, and plot layouts are available. Existing site infrastructure, weather, and geotechnical data are also required, these being a source of external hazards.

The method is a design-enabling tool, acting to help organize the HSE deliverables in a project. The structured brainstorming technique typically involves designer and client personnel engineering disciplines, project management, commissioning and operations.

The main major findings and hazard ratings help to deliver HSE compliance, and form part of the project Risk Register required by many licensing authorities.

To understand what Hazard Identification involves, it is necessary to understand the nature of the HAZARD.

Common Cause Hazards:

- Nature – Floods, Earthquakes
- Technological – Computers, PLC’s, DCS, Controls
- Human Related – Not following procedures, not paying attention, using bad equipment, not using protection

Hazard Categories:

- Process
- Materials
- Site (Place, location)
- Environmental (Noise, vibration)
- Human Factors

Hazard Types:

- Biological (Harmful bacteria, virus, fungi, harmful molds).

- Chemical reactions (Violent exothermic, explosive, corrosive, etc.)
- Electrical (Electric Shock, ignition, heating/overheating, equipment explosion, flash arc)
- Explosives/explosions (Sudden release of energy)
- Ergonomics
- Flammability / Fire
- Heat / Temperature
- Mechanical
- Pressure
- Radiation
- Toxic
- Vibration / Noise
- Asphyxiate

Hazards may differ in nature depending on specific situations, i.e. during construction, operations, maintenance, decommissioning, etc.

Different hazard identification techniques may be used in order to systematically identify hazards according to the phase or nature of the project.

LAYER OF PROTECTION ANALYSIS (LOPA) METHODOLOGY OVERVIEW

Hazard and Operability Study (HAZOP) is a qualitative process hazard analysis technique for identifying hazard and operability issues with respect to a process. A Layer of Protection Analysis (LOPA) is a semi-quantitative tool that uses data from the HAZOP report to assess process risk and determine if additional risk reduction is required in order meet risk tolerance criteria. If additional risk reduction is required, the implementation of a Safety Instrument System (SIS) with specific Safety Instrumented Function (SIF) may be recommended. The LOPA allows the determination of the required Safety Integrity Level (SIL) of the SIF, based on the clients risk tolerance. The higher the safety integrity level, the lower the probability that the system would fail upon demand.

In order to simplify the LOPA process, RISK ALIVE uses an in-house, proprietary software tool called SafeGuard Profiler. Profiler has been refined over the years based on feedback from our clients and facilitation teams with the intent to make LOPA more understandable and allow for seamless integration with the next step of the safety lifecycle – SIL Verification. A key feature of the Profiler software is the ability to graphically represent all LOPA scenarios using a bowtie approach shown below:

The objective of the LOPA is to examine the safeguards for each hazardous event and to determine if any further risk reduction is required to meet the clients risk tolerance.

With the assistance of a LOPA team, some of whom were present for the HAZOP; all hazardous event scenarios were fully developed completing the LOPA study. The study evaluated all the scenarios to determine:

Risk Acceptability - Where Safeguards were inadequate, (where the mitigating frequency was greater than the clients defined Tolerable Frequency; the risk was deemed unacceptable).

SIL Rating - A measure of further Risk Reduction needed where Safeguards were inadequate (The SIL rating required when additional Safeguard is required.)

Potential Solutions – Proposed potential safeguard for further Risk Reduction needed to meet the defined target SIL rating.

LOPA is a semi-quantitative tool for analysis and assessing risk. In LOPA, the individual protection layers proposed or provided are analysed for their effectiveness. The combined risk reduction of the protection layers are then compared against risk tolerance criteria. The risk tolerance criteria are provided by the client.

LOPA is not a fully quantitative risk assessment approach, but is rather a method for assessing the value of protection layers for a well-defined accident scenario. LOPA allows the LOPA team to take a predefined scenario and estimate the risk of the scenario in a consistent and simplified manner. LOPA – a SIL determination method complements HAZOP – a Process Hazard Analysis. However, the quantitative results generated by a LOPA are not precise values of the risk of a scenario. The result is only as accurate as the assumptions and judgement of the Hazard Evaluation Team part.

REVOLUTIONIZE YOUR PHA PROCESS WITH RISK ALIVE'S RISK MANAGEMENT PLATFORM (THE NEXT EVOLUTION) – PHA SOFTWARE LivePHA™ AND RISK INTELLIGENCE DATA & Analytics

Why LivePHA™?

LivePHA™ is an interactive web-based facilitation tool packed with cutting-edge features like multi-user access and built-in validation and was created as a solution to the frustrations of expensive, single-user PHA tools and the inadequacies of Excel. It's there to help you:

- Save time with integrated Computer Vision tools for faster preparation.
- Collaborate effortlessly with easy sharing and distribution features.
- Leverage insights from anonymized Industry Data to improve decision-making.
- Prioritize actions smartly with intuitive dashboards and analytics.

LivePHA will check for 20 key validation errors, ensuring accuracy and compliance.

- ✅ Detect duplicate nodes, causes, and safeguards
- ✅ Validate risk rankings and safeguard effectiveness
- ✅ Ensure consistency across your entire HAZOP

Key Benefits of LivePHA

- Enable organization-wide access to risk information, empowering every individual within your organization to make informed decisions based on comprehensive insights.
- Allows you to keep your PHAs Evergreen and track changes through MOCs and Capital projects.
- Integrated Computer Vision tools to improve your PHA Prep efficiency with smart searchable P&IDs and auto-noding features. With LivePHA, you can update PHA insights and risk profiles as recommendations are completed.
- Enjoy multiple users to edit the same PHA session at once, allowing colleagues to collaborate in preparation for a PHA Session, quick review post PHA session and share most up to date PHA information.
- Upload any of your existing PHA's on to the Risk Alive platform to easily view, manage, and search through all your PHA data at once.
- Easily manage changes to you PHA data by tracking historical data, providing a detailed record of dates, times, changes made, and user information for reference.
- Highly affordable per user pricing than alternatives like PHA Pro or PHA Works.

Key Differentiating Features of LivePHA™ as compared to other PHA Tools

FEATURE	LEGACY PHA SOFTWARE	LIVEPHA BY RISK ALIVE
Platform	Desktop application.	Interactive, Web-based platform.
Functionality	- Facilitates various PHA methodologies, including HAZOP, What-If, and FMEA. - Provides features for documenting and managing PHA studies.	In addition to the functionalities of legacy PHA Software, LivePHA - Enables real-time collaboration with multi-user access. - Offers built-in validation to ensure quality and consistency. - Provides organization-wide access to risk information. - Allows for easy sharing of PHA data across teams and stakeholders. - Features a tree-view for intuitive navigation and editing. - Includes global search functionality for efficient data retrieval.
Data Management	Stores data locally on the user's system.	Maintains up-to-date PHA data throughout Management of Change (MOC) processes and project risk reviews.
Collaboration	Primarily designed for individual use; collaboration requires sharing files.	Designed for seamless collaboration with multi-user capabilities, allowing multiple users to access and work simultaneously without additional licensing fees.
Accessibility	Limited to the device where it's installed.	Accessible from any device with internet access, facilitating remote work and collaboration.

In summary, LivePHA offers a cloud-based solution emphasizing real-time collaboration, data accessibility, and continuous updates, making it ideal for organizations seeking a dynamic and collaborative approach to PHA management.

Usage Terms & Conditions

- **Individual User Licensing**

To ensure data consistency, security, accountability, and a seamless user experience, we do not offer a shared user licensing model. Our LivePHA licensing model is per user based and each registered user according to their email address is granted access (admin user or a read-only user) and must have a subscription in place to use the license.

- **Subscription Plan & Access**

With our annual subscription, the client will get complete access to our platform (LivePHA™ and Analytics) with all functionalities enabled along with onboarding assistance, technical support, two hours of training and self-service to upload files & documents on the platform. Every subscriber enjoys a complete, unrestricted experience, empowering your team with all available tools from day one.

- License Duration & Evaluation Period

We offer a minimum 30-day free evaluation period so you can explore the platform and ensure it aligns with your needs. Following this, the minimum subscription term is 12 months should you wish to continue to use the platform. Kindly note that license pauses or temporary suspensions are not supported. For instance, if a subscription is paused after 4 months and requested to resume after another 3 months, this falls outside our current policy.

RISK ALIVE ANALYTICS–THE FUTURE OF RISK MANAGEMENT

There are wide ranging activities carried out daily in your business that can be improved by leveraging risk intelligence supported by Risk Alive Analytics. Using your PHA data to support activities like alarm rationalization, planning preventative maintenance and the above listed activities will not only make things easier for the various functional groups described, but it will also optimize the allocation of resources to focus on things that make the greatest difference in your operations from a safety and operational stability perspective.

Using safety analytics, you can empower your team to lead the way - working smarter, safer, together.

Key Drivers:

1. Risk Reduction
   Use innovative approach (analytics, big data, machine learning) to be more aware of risks and reduce the likelihood of incidents thereby protecting your company and industry partners.

2. Maintain Integrity and Safety of Plant
   Use consistent evaluation of threats, risks and plant data to help maintain safety integrity of the plant. Reduce costs through efficiency in maintenance and operating costs.
3. Cost Optimization and Spend Efficiency
   Prioritize recommendation and safeguard spending related to those items which provide the most risk reduction. Optimize spare part management and maintenance for critical safeguards.

Benefits Summary of Risk Alive Analytics®

1. **Risk Reduction**: Use innovative approach (analytics, big data, machine learning) to be more aware of risks, decrease the likelihood of incidents, protecting assets and personnel.
2. **Maintain Plant Integrity and Safety**: Consistently evaluate threats, risks and plant data to maintain the integrity of the plant. Reduce costs through efficiency in maintenance and operating costs.
3. **Cost Optimization**: Prioritize spending on the most effective safeguards and recommendations that provide the most risk reduction. Optimize spare part management and maintenance for critical safeguards.
4. **Operational Efficiency**: Streamline maintenance and operational processes for better resource allocation.
5. **Data-Driven Decision Making**: Empower your team with insights for smarter, safer business decisions.
6. **Regulatory Compliance**: Prove due diligence to regulators with comprehensive risk management.

RISK ALIVE PHA ANALYTICS - OPTIONAL ADD ON

Risk Alive is a web-based PHA analytics service, delivered online, through a could based user platform. It can be applied to any PHA facilitation project or pre-existing report and visualizes your data to let you and your team communicate the most critical safeguards and optimize implementation of recommendations while measuring against industry benchmarks.

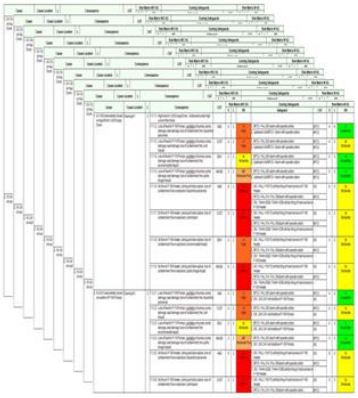
Why add Risk Alive to your risk management and digitization programs?
With Risk Alive Analytics, organizations like yours can reduce the likelihood of unsafe days and the impact to health and safety, assets, production and public reputation.

Using Risk Alive, your team will be able to

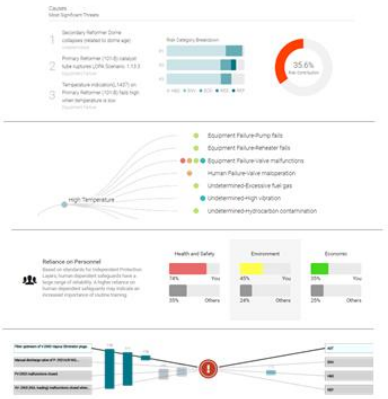
- Understand and communicate your top critical threats, safeguards and recommendations
- Visualize your hazardous scenarios before critical safeguards are taken out of service
- Optimize the sequence and assess the value of your recommendations to reduce cost & risk

- Compare your facility to others, break down business unit/ facility silos and learn from your collective corporate knowledge
- Retain risk intelligence as skilled workers leave the workforce
- Prove due diligence to regulators
- Evolve attitudes and behaviours, build a safety culture focused on managing risk in all activity, every day

Without Risk Alive
100s or 1,000s of pages of worksheets



With Risk Alive
Visualized learnings

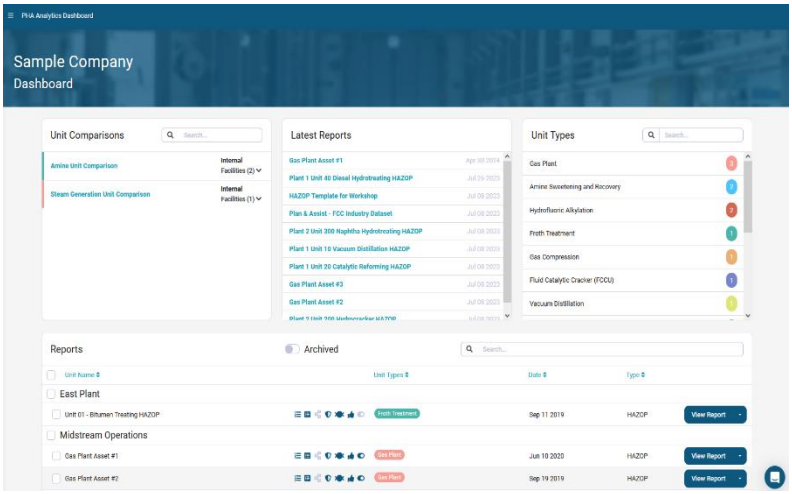


Risk Alive gives organizations the confidence to make smarter, informed risk management decisions quickly and easily using specific, continuous learnings from our global collective database.

Risk Alive PHA Analytics Modules

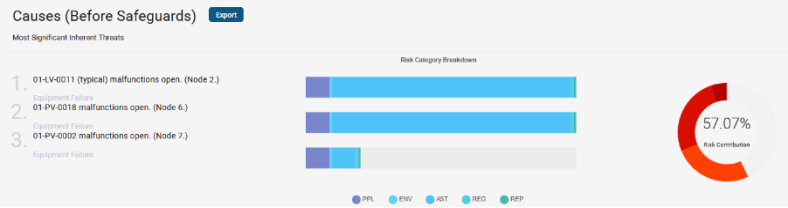
Customized Landing Page

Easy access to find your data and review the reports that are relevant for what you need.



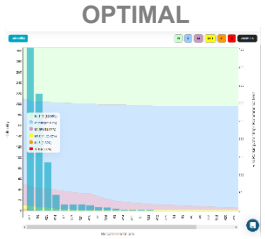
Critical Top 3

Communicate the most critical causes, safeguards and recommendations.



Recommendation Sequencer

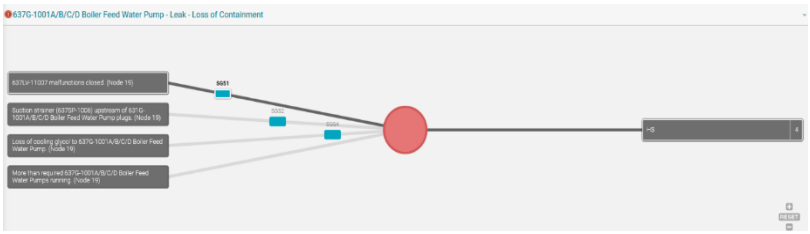
Optimize and potentially reduce spending on non-essential recommendations while identifying the most effective implementation sequence to reduce risks in your facility as fast as possible.



Use Case: After a moderate size HAZOP you have 45 recommendations to manage. Reviewing Recommendation Sequencer, you evaluate the optimal sequence of implementation to reduce risk the fastest. You also note that 8 recommendations show no risk reduction value at all. After further analysis you determine that 3 recommendations can be disregarded without compromising safety. You've made your facility safer, faster and saved your company tens of thousands of dollars for cost of equipment and time to engineer those solutions, never mind operating costs over time.

Hazardous Scenario Viewer

Put your PHA and risk information in front of the people who need it most in a format that is easy to understand. This is a searchable database of hazardous Scenario Bowties

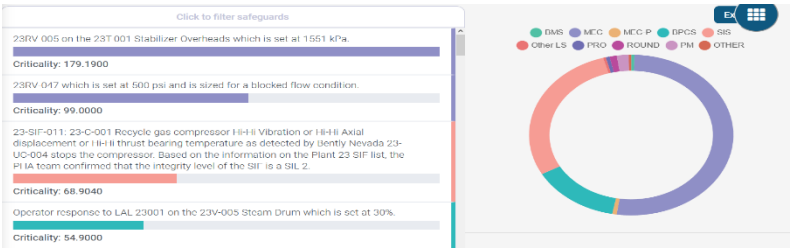


showing causes, safeguards/IPLs and consequences with click-through interaction.

Use case: You receive a request to put alarm TAH-1234 on ignore while work is going on in the area. You type '1234' into the Hazardous Scenario Viewer search tool to assess the criticality of that alarm and the system retrieves the bowties where it is used as a safeguard. It is noted that there are other safeguards present in each scenario. The other safeguards are flagged for increased attention, the request is approved, and work goes forward safely.

Safeguard Ranking

Build your safety critical equipment list automatically! Identify the most critical safeguards and prioritize for PM, critical spares, operator training and audits, to ensure your safeguards are functioning to keep you and your process safe.

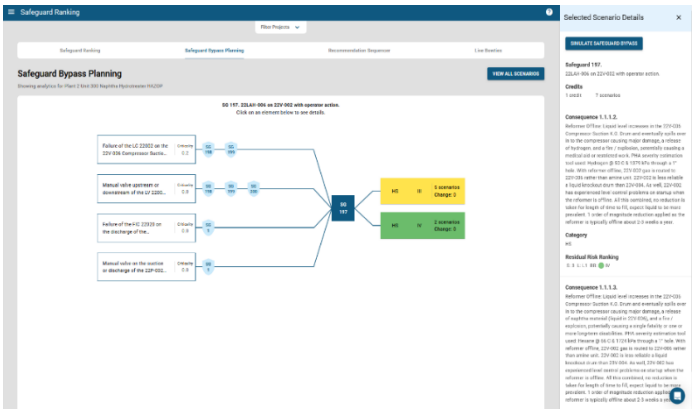


Use case: Your unit has 100 items on the safety critical equipment list, and you need to complete an audit. Safeguard Ranking shows the safeguards from most critical to least, from a risk reduction perspective, so you choose to audit the top 15 and 10 others among the remaining balance simplifying your audit and allowing you to focus your efforts where it will make the most difference.

You identify that PAH-2000 is set out of range and is not an effective safeguard, that alarm is 13th on the most critical list! The solution, put in a work order to recalibrate and identify it as well as the procedure (alarm with operator action) as subject matter for training in the next training cycle or toolbox talk.

Safeguard Bypass Planning

Utilize this module to assess the impact of each safeguard across your entire facility. This 'safeguard centric' bowtie approach allows you to automatically bypass/turn offline each safeguard individually and update the entire PHA data to reflect new realized risks across your unit.

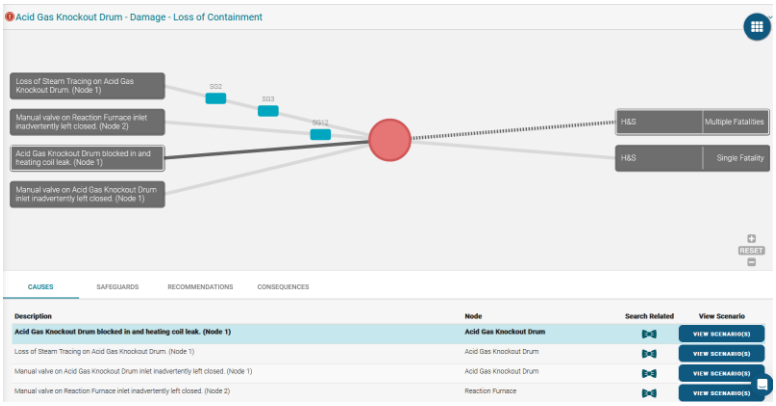


Use case: The one thing we can count on during site operations is that something will fail or will need to be maintained when you weren't planning on it. When it comes to unplanned safeguard maintenance or failure, a team needs to quickly come together and understand the impacts of no longer having this safeguard available for protection during the Management of Change or Critical Defeat process. Teams often rely on the one who has the most experience in the room when understanding risks and contingencies during safeguard bypassing, but what if that person isn't available, or has

retired? By using Safeguard Bypass Planning, the team can quickly have a visual and data to start their brainstorming process, and can even simulate the change of risk if the safeguard were to fail based on the PHA Data, where the most expertise was available all at once

PHA Critical Scenarios Industry Data

Leverage Industry data to obtain a list of single and multiple fatality scenarios analyzed for a specific process unit, along with root causes, impacted equipment, and independent protection layers applied. You will identify and address 'key' potential gaps for critical health and safety scenarios that relate to your process unit. With this insight you will drive a safer, more reliable and consistent approach across facilities and directly benefit from industry data within a PHA facilitation session.



Use case: You want to compare your PHA with others to make sure you analyzed all the potential critical health and safety threats and applied safeguards consistently with other similar processing units. In reviewing the PHA Critical Industry Scenarios, you note that your team missed several consequences that were in the identified by industry related to different pieces of equipment which led to single or multiple fatalities within the process unit.

Immediately during your HAZOP, you assess these scenarios in relation to your specific process unit with the team, compare your independent protection layers available with industry data. You identify a couple of these safeguards are extremely critical for the safety of your people in the plant and ensure to prioritize them for preventative maintenance as well as reliability testing and spare inventory.

Analytics Project Workflow