



ALARM MANAGEMENT | PROCESS SAFETY ANALYZER

PRODUCT INFORMATION NOTE

The Process Safety Analyzer module is an advanced software that automates tracking, analysis and reporting on the operation of shutdown systems and safety elements, to promptly detect issues and helps to enhance process safety.

Introduction

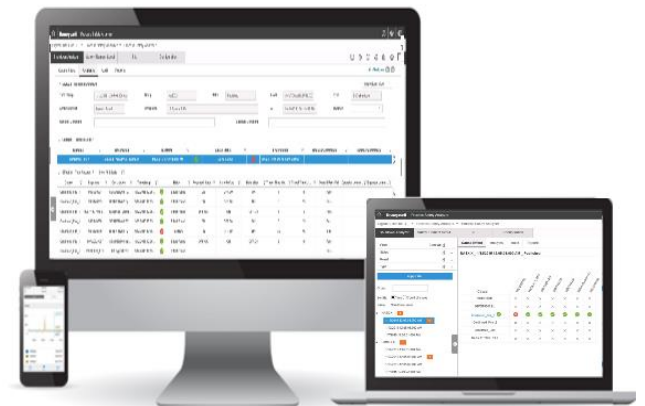
Despite the application of a wide variety of safeguarding measures, accidents in the process industries continue to occur, costing billions of dollars annually not to mention loss of life, environmental & reputation impact. Plant owners/operators must find ways to better understand the safety status of their assets and then act appropriately.

Honeywell Forge Alarm Management | Process Safety Analyzer (Process Safety Analyzer or PSA) is an advanced software that automates tracking, analysis and reporting on the operation of shutdown systems and safety elements, assisting users with the prompt detection of issues and helping to enhance process safety.

The PSA solution can help industrial organizations demonstrate both internally and to external entities that continuous validation is performed to essential process safety components. PSA can also assist in the prompt detection of issues for faster action when necessary and capture reports to help show proper operation.

Process Safety Analyzer helps customers to:

- Automate, track, and validate the condition and operation of safety components to enable operations teams to identify and resolve process safety risks on a shift or daily basis
- Improve compliance with regulations and standards like IEC 61511 with reduced effort
- Detect safety-critical equipment due for test or in need of repair
- Keep supporting data and reports for post-event analysis



Honeywell's Process Safety Analyzer automates the process of validating shutdown systems and safety elements to help improve process safety.

- *Complete Shutdown Cause and Effect Analysis*
- *Final Element Performance Analysis*
- *SIL Analytics for Demand Rate Assessments*
- *Flexible Deployment - Fully On-Premise Model as well as a complete managed SaaS Offering*
- *Part of Honeywell's comprehensive Process Safety Suite to automate complete safety lifecycle management*

PSA includes three main modules:

- **Shutdown Analyzer** for validating shutdown and control systems
- **Safety Element Scout** for validating safety elements and safe operations
- **SIL Reports** for supporting SIL analysis

PSA Shutdown Analyzer

The Shutdown Analyzer (SDA) module automatically detects, verifies and documents that shutdown systems have performed as expected.

SDA detects shutdowns automatically and enables a cause and effect analysis at any time. It considers control overrides and checks for expected effects and their timing.

Cause	99EH1109-A01-01-001	99PA002-007	99E20V0026	99B5V0004	PASX.X.X_EFF	99B5V0005	99E20V0026
99H550001	X	X	X	X	X	X	X
99PST0001.LL	X	X	X	X	X	X	X
Confirmed_Fire_1	✓	✓	✓	✓	✓	✓	✗
Confirmed_Fire_2	X	X	X	X	X	X	X
Confirmed_Gas	X	X	X	X	X	X	X

For captured shutdowns inspect details of causes, expected and timely detected effects, and more.

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PSA Safety Element Scout

The Safety Element Scout (SES) module tracks and validates proper operation of safety elements and the execution of safety operations.

Safety operations are continuously monitored, recorded, and checked to help validate they are occurring as expected; for example, travel time to safe state checked vs. the maximum nominal travel time.

Shutdown Analyzer

· Increased safety, via continuous and effective validation of shutdown systems and prompt detection of issues

· Reduced downtime, reducing planned shutdowns and using unplanned shutdowns for ESD/PSD validation

· Reduced time and effort for shutdown system audits

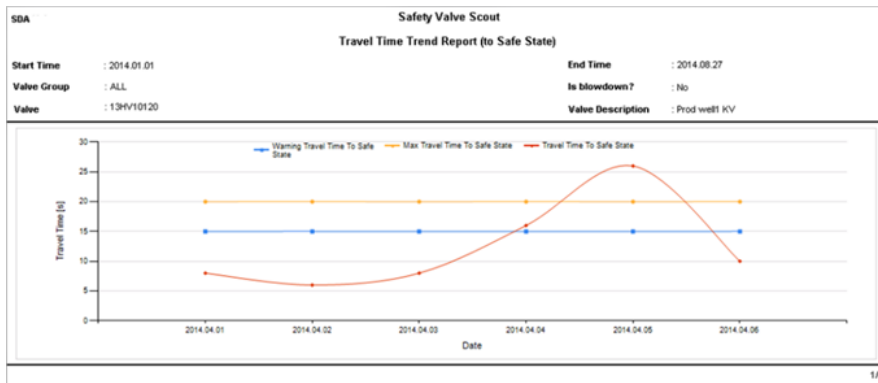
· Reduced extra personnel onsite for system validation, reducing risk exposure and transportation costs

· Historical validated record of shutdown systems operation for auditing with causes

Time Stamp	Safety Element	Safety Operation	Group	In To Safe State	Description	Operation Status	Travel Time (msec)	Max Travel Time (msec)	Has Comment
1/14/2015 9:00:00	96XSV0007	PCS Open	Process	<input type="checkbox"/>	SBS15BV01 Ty...	OK	4800.00	30000.00	<input type="checkbox"/>
1/14/2015 1:05:11	96XSV0007	PSD Close	Process	<input checked="" type="checkbox"/>	SBS15BV01 Ty...	OK	11000.00	15000.00	<input type="checkbox"/>
1/13/2015 12:05:11	96XSV0002	Return to Normal	FireGas	<input type="checkbox"/>	SBS3MA (Delq...	OK	1000.00	45000.00	<input type="checkbox"/>
1/13/2015 12:05:11	99PAB01A	Return to Normal	FireGas	<input type="checkbox"/>	SBE (SM) typ...	OK	1600.00	45000.00	<input type="checkbox"/>
1/13/2015 12:05:11	96XSV0006	PCS Open	Process	<input type="checkbox"/>	SBS15BV01 PS...	OK	8800.00	30000.00	<input type="checkbox"/>
1/13/2015 12:05:11	96XSV0001	Return to Normal	FireGas	<input type="checkbox"/>	SBS15BV (Shut...	OK	1800.00	45000.00	<input type="checkbox"/>
1/13/2015 12:05:11	96GMV0001	Return to Normal	FireGas	<input type="checkbox"/>	SBF typical (F...	OK	1800.00	45000.00	<input type="checkbox"/>
1/13/2015 12:05:11	96XSV0005	PCS Close	Shutdown	<input checked="" type="checkbox"/>	SBS25BV02 Ty...	OK	8000.00	30000.00	<input type="checkbox"/>
1/12/2015 12:05:11	96XSV0007	PSD Close (Interf.)	Process	<input checked="" type="checkbox"/>	SBS15BV01 Ty...	Response Missing		15000.00	<input type="checkbox"/>
1/12/2015 12:05:11	96XSV0006	PSD Close	Process	<input checked="" type="checkbox"/>	SBS15BV01 PS...	OK	6600.00	15000.00	<input type="checkbox"/>
1/12/2015 12:05:11	96XSV0005	ESD Oper (Interf.)	Shutdown	<input checked="" type="checkbox"/>	SBS25BV02 Ty...	OK	7800.00	15000.00	<input type="checkbox"/>
1/12/2015 12:05:11	96EH100-A01.0	To Safe State (E...	Safety	<input checked="" type="checkbox"/>	SBS18B Typica...	OK	2000.00	20000.00	<input type="checkbox"/>
1/12/2015 12:05:11	96PA002-Q07	To Safe State (E...	Safety	<input checked="" type="checkbox"/>	SBS15BE01 typ...	OK	7600.00	20000.00	<input type="checkbox"/>
1/12/2015 12:05:11	96XSV0009	ESD Close (Interf.)	Safety	<input checked="" type="checkbox"/>	SBS25BV01 Ty...	Stew	47000.00	15000.00	<input type="checkbox"/>

All operations from final elements are captured and validated with details including calculated vs. expected travel time.

SES online views allow visualization of valve operations history and filtering based on several criteria



Preconfigured reports are available including Trend of travel time

PSA SIL Reports

The SIL Reports (SIL) module generates KPIs and reports to analyze safety critical equipment and help determine the need for testing or corrective actions.

The demand on safety instrumented functions and their performance is continuously checked to calculate KPIs are used on reports.

SIL online views include:

- Demand View to check and edit initiators
- Failure Rate View to inspect calculated failure rate for categories of final elements, view/edit estimations of failure rate and risk reduction

Safety Element Scout

- Increased safety by promptly detecting failed operations and easily identifying elements requiring testing/maintenance
- Reduced downtime required for validation, reducing planned shutdowns and using unplanned operations
- Reduced time and effort for validation, reduced extra personnel onsite, transportation costs and risk exposure
- Historical validated record of safety operations

SIL Reports

- Increased safety, quickly identifying items requiring testing or maintenance
- Reduced downtime/deferrals, identifying SIF with high demand above limits and failure rates to take preventative actions
- Reduced time and effort for validation
- Historical record of SIL KPIs and reports for auditing and post-event analysis

PSA as a Managed Service Offering

For customers aiming to minimize on-prem systems and consolidate alarm management systems across multiple sites, Process Safety Analyzer is also offered as a cloud hosted solution and thereby providing the same proven benefits through Software as a Service (SaaS) offering.

SaaS Deployment model enables:

- Faster deployment times with reduced deployment complexity
- Remote access from any location by certified users
- Increased ease of Scalability – reduce complexity in enterprise deployment - connecting multiple sites into a centralized host
- Reduced hardware footprint on sites
- Reduced maintenance costs (resource and hardware)
- Pricing model flexibility – funded through OPEX

Integration with Process Safety Suite (PSS) Offering

Process Safety Analyzer is intimately integrated with Honeywell's Process Safety Suite (PSS) offering (<https://hwll.co/ProcessSafetySuite>); a comprehensive solution that fully automates the process safety lifecycle, helping to reduce errors, lower costs, continuously monitor operations for hazardous conditions, and provide safety alerts in a timely fashion. ISA/IEC-61511 compliance is made easy and displayed in an easy-to-understand format.

The system compares important datasets—Hazard and Operability Studies (HAZOP), Layers of Protection Analysis (LOPA) and Safety Integrity Levels (SILs)—along with information from plant historians and Computerized Maintenance Management Systems (CMMS) and analyzes what should happen versus what does happen, looking for any gaps over the full process safety lifecycle.

- *Safety Workbench* consolidates all the Process Safety Suite tools, synchronizes the information for seamless transfer and revision control, and represents the single source of truth for process and functional safety data.
- Honeywell Forge Operations Safety Advisor (OSA) provides an easy-to-understand picture of your process safety risk as it stands today with visibility at site, division and enterprise level. Forge OSA collects information from your process Operations and Maintenance, then compares them with the risk analyses in your HAZOP and LOPAs to show how your plant is operating by comparing it with the ideal “Digital Twin for Safety” as laid out by your risk assessment teams.

For More Information

To learn more about Honeywell's Alarm Management Solutions, visit <https://hwll.co/alarmanagement>, or contact your Honeywell Account Manager.

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Benefit Summary

Improved Safety

- *Continuous validation, Early identification of issues*
- *Better awareness*

Improved Uptime

- *Faster restarts after unplanned shutdowns*
- *Reduced trips (unplanned, planned for validation)*

Compliance and auditability

- *Full HISTORY, post-mortem analysis*
- *Reports to internal & external stakeholders*

Efficient work processes

- *Automated Validation/Reporting, Exception based testing*
- *Better cooperation*

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This offering connects to and relies upon customer's equipment and infrastructure. It is the customer's sole responsibility to ensure such equipment and infrastructure are properly maintained and to confirm findings from the offering regarding that equipment and infrastructure.

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