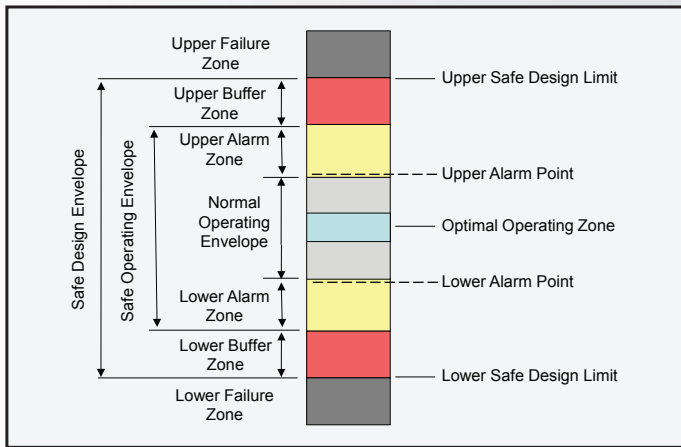




inBound displays a plant's current state relative to the safe operating limits to improve safety and compliance.



Key Benefits:

- Aggregates, validates, and displays safe operating limits in real-time
- Presents safe operating limits in context within control system displays
- Provides visibility into operational and safety risks
- Allows operators to instantly determine a plant's current state relative to its safe operating limits
- Provides visibility into violations of safe operating limits
- Delivers notifications based on limit exceedances

The Challenge

Plant personnel commonly lack clear visibility into boundaries that are designed to ensure compliance with production and safe operating limits. These limits are typically maintained in different databases and automation systems and managed by different organizations within a plant. This makes it difficult to easily understand the operating boundaries of a facility. Maintaining accurate change management across multiple databases and keeping systems up-to-date and synchronized is a challenge within most organizations. Inadvertent mistakes when updating boundary settings, especially for dynamically changing safe operating limits, can lead to undesirable consequences, including failure of protection layers and shutdowns.

These operational and safety boundaries include:

- Process alarms
- Safety instrumented trip points
- Mechanical design limits
- Environmental excursion limits
- Normal operating zones
- Safe operating envelopes

The PAS Solution

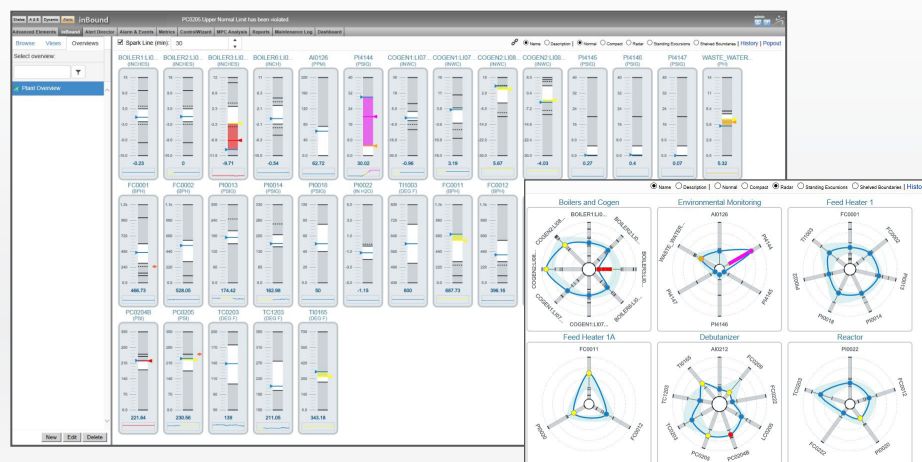
inBound is a module of PAS' market-leading PlantState Suite™ alarm management software that aggregates, validates, and displays physical, design, and safe operating limits. These values may be manually entered, calculated, or imported from other applications and databases to provide maximum flexibility.

inBound provides engineers with the capability to develop a boundary hierarchy, which allows the application to automatically detect and report deviations such as an alarm setting that is higher than a safety instrumented system trip point. This capability provides additional assurance that modifications to configuration parameters such as alarm limits and instrument ranges remain within the safe operating envelope of the plant. The figure to the left is an example of a boundary hierarchy.

inBound displays both the safe operating limits and the current operating state graphically for improved pattern recognition. This allows operators to quickly and unambiguously determine the plant's current state relative to its operational boundaries to allow for preemptive corrective actions. Compatible versions of these objects are available for most of the major automation systems.



Oil & Gas Refining
 Metals & Mining Chemicals
 Pulp & Paper Power



Example of an inBound Display

Safe Operating Limits Presented in Context

In the radial display above, Operations staff can choose a context to setup a quick visual synopsis of the current state of the process; for instance, Environmental Performance of the plant, Operational status of equipment like Feed Heater, Reactor, etc. The light-blue band represents the region where the process is within defined boundaries. Points shown in color represent the excursions outside the defined boundaries. The excursions are depicted in different colors depending on the severity like, metallurgical limits, exceedance of maximum allowable working pressures or temperatures, environmental limits, or operating in a non-optimal zone.

The Faceplate display above, shows current boundary and excursion information in greater detail. Note the small horizontal bars on the faceplates. These indicate safe operating limits that are stationary for fixed limits and moveable for variable ones.

Integration

inBound integrates with the PSS Documentation & Rationalization, State-Based and Shelving modules to ensure consistency between alarm limits and boundary limits. This helps to validate potential modifications proposed to the limits during an MOC process.

Monitor Dynamic Environmental Constraints

inBound provides the capability to record excursion events when a process value crosses over a defined boundary limit based on the current operational state of the process or the equipment. This greatly expands the available sources of information to allow for further detailed exposure of process performance against optimal boundaries, environmental boundaries, and safe operating/safe design limits.

Economic Opportunities

When an excursion is detected, inBound captures the excursion category, duration, peak, and cost to help prioritize and identify opportunities to improve the plant's economic performance. The cost calculation is configurable to reflect current economic drivers of the operating facility.

For information on how to purchase inBound, please email sales@pas.com.

About PAS

PAS is the leading global solution provider of ICS cybersecurity, process safety, and asset reliability in the energy, power, and process industries.

Our comprehensive portfolio includes solutions for industrial control system cybersecurity, automation asset management, and operations management which includes alarm management, IPL assurance, high performance HMI, boundary management and control loop performance management.

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