



# Integrity Operating Windows

Operational Sustainability, LLC® (OS) offers insight into operating conditions along with a fundamental understanding of damage mechanisms required to maintain your inspection program via the **Integrity Operating Windows (IOW) Module** from OESuite™. Companies need to establish process variables to control their processes, including a subset of operating limits (in this case called operating windows) that address the controls necessary on all process variables that might affect the integrity or reliability of the process unit. Integrity Operating Windows (IOWs) are those preset limits on process variables that need to be established and implemented in order to prevent potential breaches of containment that might occur as a result of not controlling the process sufficiently to avoid unexpected or unplanned deterioration or damage to pressure equipment. Operation outside the IOW limits could result in accelerated damage from one or more of the numerous damage mechanisms covered in API RP 571, including general or localized corrosion, mechanical or metallurgical damage, high temperature corrosion, and environmentally assisted cracking.

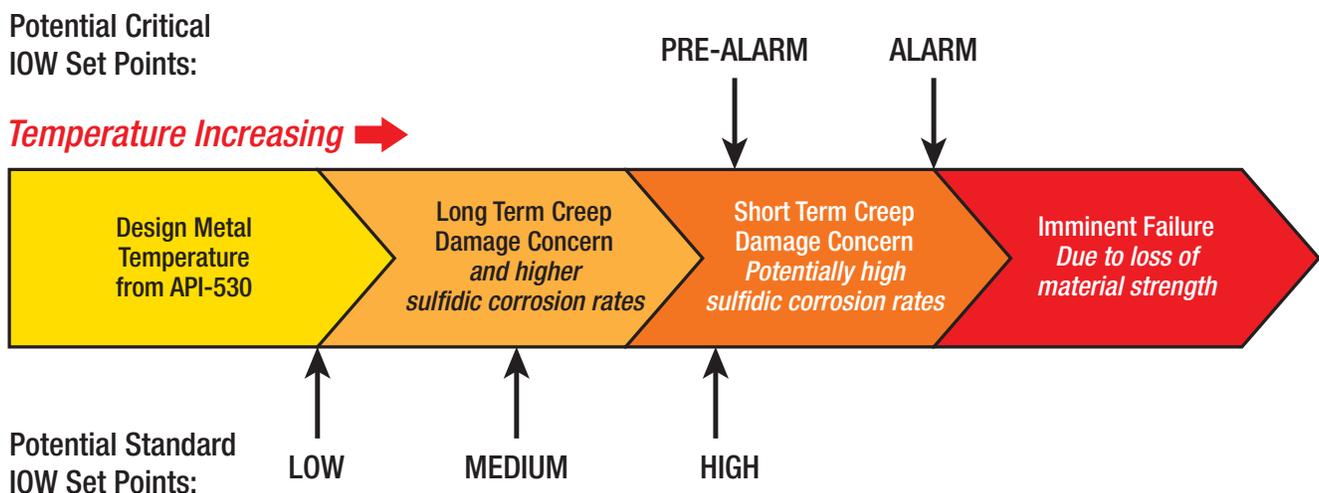


Figure 1 – Example of Critical and Standard IOW Limits

A healthy, properly structured inspection program, whether a standard condition-based or a more advanced risk-based inspection program, depends on IOWs being implemented to avoid exceedances. Inspection programs are not generally designed to look for unanticipated impacts of processes that are not adequately controlled. Inspection programs generally assume that the next inspection interval (calculated based on prior damage rates from past operating experience) should be scheduled on the basis of what is already known and predictable about equipment degradation from previous inspections. Without effective process control based on a robust and complete list of IOWs, inspections might need to be scheduled on a more frequent time-based interval to look for anything that might potentially occur from that lack of process control.

By moving beyond traditional risk-based inspection programs, operators are able to extend inspection intervals without compromising equipment integrity. The OESuite **Integrity Operating Windows** solution integrates with your Distributed Control System (DCS), data historian, or Supervisory Control and Data Acquisition (SCADA) system. Our solution empowers staff to tie to the DCS / Programmable Logic Controller (PLC) to develop operating envelopes and limits to track changes to your equipment condition in real-time.



## Integrity Operating Windows (IOWs)

In addition, our system allows you to trigger email notifications, action items, incidents, and work requests based upon exceedances and incidents. Users can take immediate action to avoid shutdown or equipment damage or incidents. Procedures can be automatically tied to Integrity Operating Windows to empower the field operator with an asset condition to ensure they act upon the appropriate information as conditions change. As consequences of deviation occur, operators are empowered to take corrective action. Without this level of integration, operators lack the ability to access information on asset condition along with the proper procedural steps. Typically, operators take action based upon what they *remember* as they rarely have access to procedures in the field—leading to potential risk. OESuite enables *real-time* information dashboards for **risk-informed decision making on the fly**.

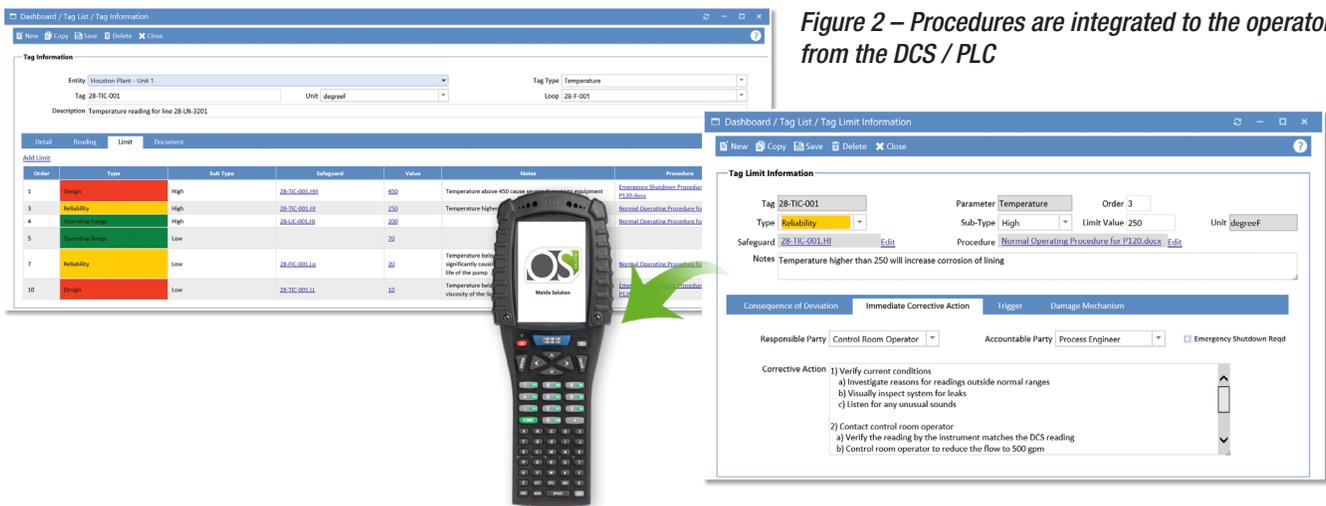


Figure 2 – Procedures are integrated to the operator from the DCS / PLC

As integrity deviations occur, the OESuite platform gives you the opportunity to determine the effects of sustained exceedances on operating pressures and temperatures. The **IOW Module** is integrated with the **Risk-Based Inspection Module** to take advantage of our robust library of damage mechanisms. In the event of changes to the physical hardware or the process being introduced, our solution automatically documents MOCs. Management of Change (MOC) is critical in the prevention of process safety incidents related to pressure equipment failures and leaks as well as other process safety issues.

Our IOW solution leverages API RP 584 to ensure that feedstock variability and process upsets are factored in. The systemic effect of prolonged integrity deviations can be analyzed using our powerful reporting engine. In addition, our automatic email notifications give operators the opportunity to correct consequences of deviation before they cause permanent damage to your equipment.

### Extended OESuite™ Modules



PHA / Risk Management



Work Management / CMMS / EAM



Inspection Management / Mechanical Integrity



Risk-Based Inspection (RBI)



Management of Change



Document Management / Redlining



Incident / Event Management



Asset Health



Asset Analysis (CCD, Lifecycle Cost, Criticality)

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