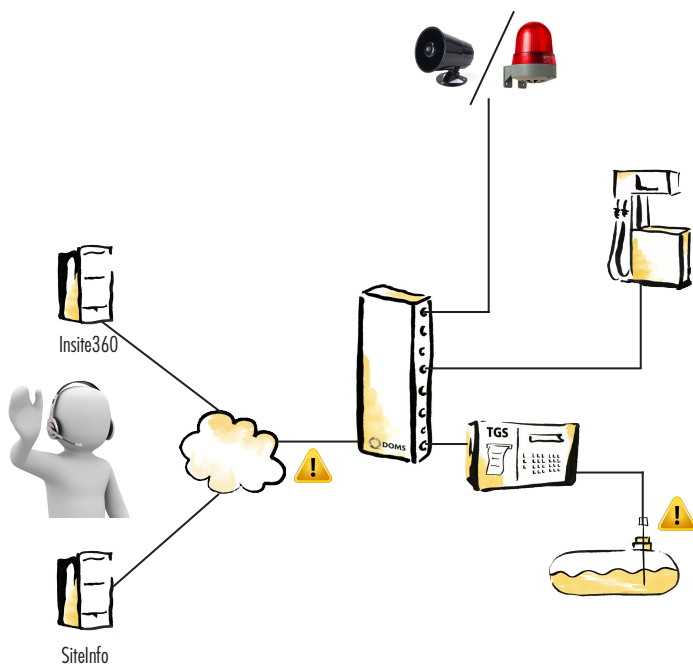


PSS 5000 Forecourt Controller

Feature Description — Sudden Loss Detection

Benefits

- > Detects decreases in fuel stocks that cannot be accounted for via an authorized fuel sales process.
- > Provides alarms both as local hardware outputs and as events sent to a central application.
- > Easy to implement.
- > Cost-effective solution.
- > Works on both manned and unmanned sites.



Features

- > Real-time algorithm for fast detection.
- > Works on both silent and busy sites.
- > Works with manifolded tanks.
- > Automatically detects standard fuel deliveries.
- > Uses existing forecourt dispenser and tank gauge installations.
- > Works with both SiteInfo and Insite360.

Description

Functionality

Sudden Loss (SL) is defined as a large amount of fuel that disappears from a tank over a relatively short period of time and where the quantity cannot be traced as being removed via the dispensers controlled by the PSS 5000 Forecourt Controller. Such a disappearance can indicate that the fuel has been stolen. This solution enables an alarm to be triggered as soon as such a situation arises.

System

To implement this kind of detection, it is necessary to have installed a PSS 5000 Forecourt Controller (with a CPB505-2, or a CPB509 or later) that communicates with the Automatic Tank Gauge (ATG) and the dispensers that provide metered fuelling data. By comparing the changes in wet stock volumes provided by the ATG and the authorized fuel sales provided by the dispensers, it is possible to

see if the wet stock movements are legitimate or not. The system is designed to handle the turbulent wet stock movements that occur at the beginning of a delivery, thus preventing false alarms each time a delivery occurs.

Local Alarms

By including a Digital I/O module in the PSS 5000, the sudden loss events can be transmitted out to external devices, such as lights or alarms using either pulse outputs or a level change output. Once detected, the same module is able to receive an alarm acknowledgment and thus turn off the alarm.

Central Alarm Handling

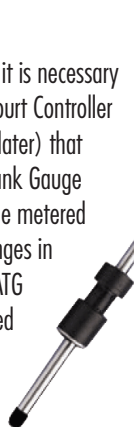
When Sudden Loss events have been triggered, the system is capable of communicating the information out to other systems.

The Doms Host Protocol, which uses XML files, provides input to Head Office Data Management systems, such as SiteInfo, where remote alarm monitoring is occurring. Or, when used in conjunction with a Data Logger, the events can be sent to the global cloud services present in Insite360.

Forecourt Device Limitations

Some dispenser types do not provide fuelling data, which is required for the detection algorithm.

A few tank gauge protocols do not provide product height, which is required by Insite360. For more details, see the relevant Interface Notes for the dispenser and tank gauge protocols on <http://downloadcenter.doms.com>.



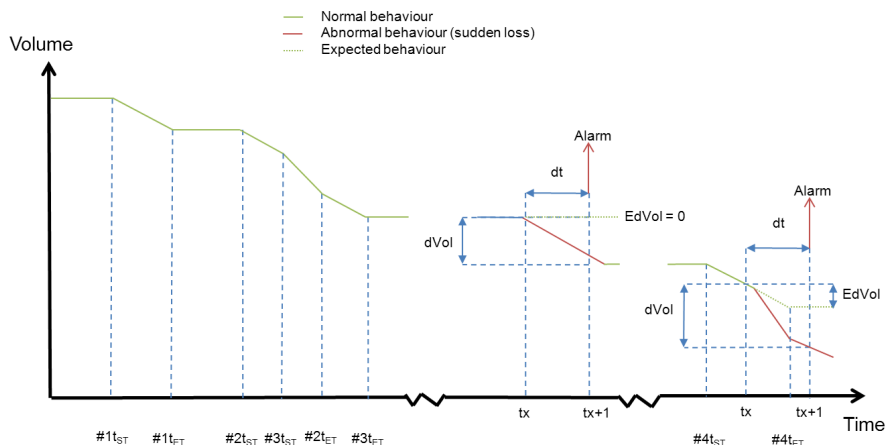
Instantaneous Alarms

When both the ATG and dispensers are capable of supplying wet stock data, the PSS 5000 can register the wet stock discrepancy and trigger an alarm within minutes.

Versatile

Because the PSS 5000 supports over 100 device protocols, it is able to communicate with the majority of tank gauge systems and dispensers installed on the forecourt and, therefore, is able to use the measured volumetric data from these devices.

Sudden Loss Calculation Method



#nt_{TS} : time of Trans number n Start
#nt_{TE} : time of Trans number n End
tx : time of sample x

$(dVol - EdVol) / dt = \text{Volume Loss per Minute (VLM)}$
If $VLM \geq VLM_{\text{Alarm}} \rightarrow \text{Set Alarm}$