PSS 5000 Forecourt Controller

Feature Description — Vapour Recovery Monitoring with the PSS 5000

Benefits

- Supports different VRM architectures
- Local audible and visual alarms possible on retrofitted devices
- VRM status and alarms available to POS/BOS software
- Enables remote monitoring using existing PSS connectivity
- Configurable early warning alarm triggers
- Low cost implementation; PSS application already supports VRM
- Historical data available

When automatic monitoring of the vapour recovery system is required on a service station, the monitoring system must adhere to a set of Vapour Recovery Monitoring (VRM) rules. The monitoring system must be able to detect malfunctions in the recovery system, indicate these to the users via alarm signals and, when necessary, initiate the necessary control to stop fuel being dispensed if the malfunction persists.
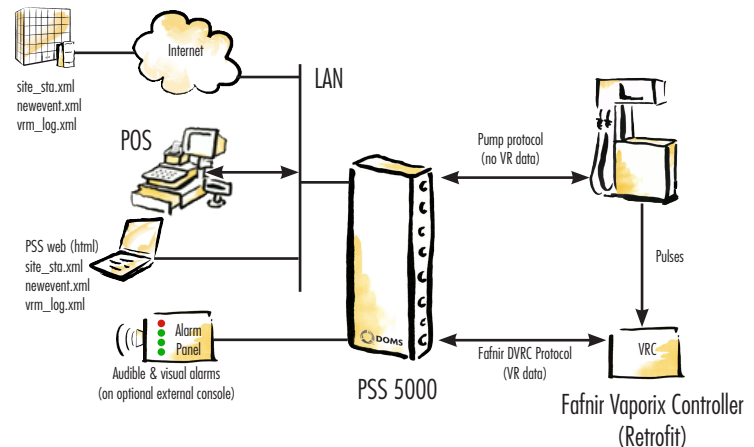
In some systems, VRM is handled by a Vapour Recovery Controller (VRC) that is integrated in the dispenser. Others have an external controller, which may have been retrofitted. But regardless of how the VRC is installed, the PSS 5000 is ready to use the data provided by the controller.

By breaking down the installations in to 3 different basic types, we can explain what the PSS 5000 does and how it supports VRM[1] in the different scenarios:

1. VRM[1] controlled by the PSS 5000 (retrofitted VRC)
2. VRM[1] controlled by dispenser protocol with integrated VRC
3. VRM[1] controlled by VRC (retrofitted VRC)

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[1] VRM rules comply with German "BImSch V" rules

Scenario 1: VRM Controlled by PSS 5000

site_sta.xml
newevent.xml
vrm_log.xml

Internet

LAN

POS

Pump protocol
(no VR data)

PSS web (html)
site_sta.xml
newevent.xml
vrm_log.xml

Pulses

Alarm Panel

Audible & visual alarms
(on optional external console)

PSS 5000

Fafnir DVRC Protocol
(VR data)

VRC

Fafnir Vaporix Controller
(Retrofit)

In this scenario, the communication protocol between the PSS 5000 and the dispenser does not support vapour recovery error data. However, the VRC is connected directly to the PSS 5000 and communicates with a protocol that supports vapour recovery data.

The VRC is configured using Doms POS installation parameters, which are used to assign the VRC to the fuelling point(s). The VRM rules are hosted by the PSS 5000 and are configurable using the installation parameters. This makes it possible to adapt the VRM rules to something other than those stated here. The PSS 5000 controls what happens when the VRM[1] rules are violated and is able to trigger alarms and, if necessary, block the dispenser from subsequent fuellings.

To meet the requirement for local audio/visual alarms, the PSS 5000 is fitted with a Digital I/O module (DSB451). This connects the PSS 5000 to an external alarm panel, which provides both audible and visual alarms. There is also a button to cancel active alarms.

In addition to this, the PSS 5000 is able to provide site status, event status and advanced VRM log data in the form of xml files, which can be viewed locally or remotely using an Internet browser.

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Scenario 2: VRM Controlled via Dispenser Protocol

In this scenario, the dispenser is fitted with an integrated Vapour Recovery Controller. The communication protocol between the PSS 5000 and the dispenser supports a limited amount of vapour recovery error data.
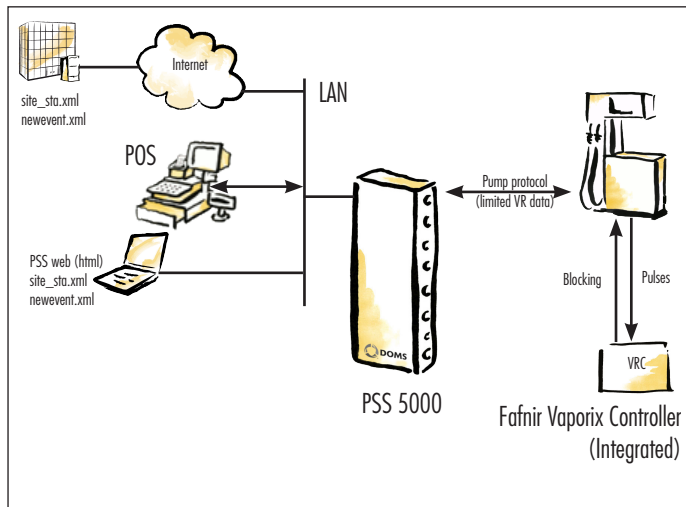
It is the integrated VRC that hosts the VRM[1] rules and controls all this functionality. The VRC registers any malfunctions in the vapour recovery system, triggers and elicits the necessary alarms and is responsible for blocking the fuel being dispensed so long as the VRM rule violations are not rectified.

The limited vapour recovery data transmitted between the dispenser/VRC and the PSS 5000 via the pump protocol contains the following data:
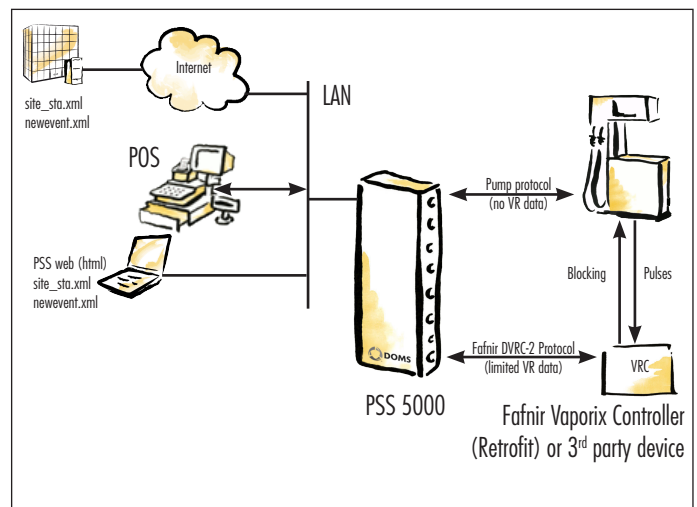
> **Alarm/Warning** events are triggered when deviations from the VRM rules are detected. Where possible, these events can show the time period remaining before the dispenser is blocked and no longer available for fuelling.
> **Errors** that indicate the dispenser has been blocked or the error condition is fatal.

Vapour recovery data can be sent from the PSS 5000 as xml files. This data can be displayed both locally and remotely using an Internet browser and/or incorporated in a Head Office System.

Note: In this scenario there is no opportunity to configure the VRM rules from the PSS 5000.

Scenario 3: VRM[1] Controlled via VRC

In this scenario, the communication protocol between the PSS 5000 and the dispenser does not support vapour recovery error data. However, the VRC, which has been retrofitted and hosts the VRM rules, is connected to the PSS 5000 and communicates with a protocol that supports limited vapour recovery data.

The VRC is configured using the Doms POS installation parameters. These are used to assign the VRC to the fuelling point(s), and it is the VRC that blocks the dispenser when the VRM[1] rules are violated.

The limited vapour recovery data accessed between the VRC and the PSS 5000 via the Fafnir DVRC-2 protocol contains the following data:

> **Alarm/Warning** events are triggered when deviations from the VRM rules are detected. Where possible, these events can show the time period remaining before the dispenser is blocked and no longer available for fuelling.
> **Errors** that indicate the dispenser has been blocked or the error condition is fatal.

The data can be sent from the PSS 5000 as xml files, which can be displayed both locally and remotely using an Internet browser and/or incorporated in a Head Office System.