

Bitumen tank filling systems

The Refined Bitumen Association (RBA) provides strict safety guidelines to ensure the safe storage of bitumen and prevent the risk of hot bitumen being spilt in the filling process, protecting both the safety of staff on site and the surrounding environment.

The RBA recommends that storage tanks are fitted with a continuous measuring system, a high level alarm (HLA) and an independent secondary device for a high high level alarm (HHLA).

Most storage tanks are supplied with insufficient or no level controls and due to the harsh nature of bitumen the accuracy of these product readings are generally poor.

To meet the RBA requirements and ensure the safety of the operator when filling a bitumen tank, AMS-IAC recommends the use of two independent systems; one for the current contents reading including a localised, audible high level alarm (HLA), and the other a separate level switch for the high high level (HHLA) alarm with a localised audible alarm panel.

The levels set out in the RBA guidelines for the HLA and HHLA position levels are:

- HLA: Activate alarm when available tank capacity is less than 10%
- HHLA: Activate alarm when available tank capacity has only 7.5% remaining

It is important the a storage tanks actual working capacity (AWC) and safe working capacity (SCW) are calculated at taken into consideration when calculating measurement instrument level readings and alarm levels.

Recommendations

Continuous level and HLA system

Controls: Guided Wave Radar (GWR) and Local Alarm Panel

We recommend using a guided wave radar also known as time domain reflectometry (TDR) as the sensor will give a signal for both the continuous readout and the HLA.

A GWR has been chosen because the technology is not affected by bitumen build up on the probe and its performance is not affected by changes in the product viscosity, temperature or pressure.

Preventing Liquid Bitumen Spillages



The GWR can be programmed to give an output signal relative to the tank contents level and an alarm output when the tank capacity has only 10% remaining.

The sensor should be provided with a localised control panel with a display to show the current level of bitumen within the tank and an optional additional display to show the operator ullage levels when filling. Inside the panel should be either a hardwired relay logic system or a programmable logic controller (PLC) to activate a beacon and sounder for the HLA, as well as localised LED's/lamps to show current alarm status with alarm mute and test buttons.

HHLA System

Controls: Capacitance Probe and Local Alarm Panel

In line with the RBA guidelines, the High High Level Alarm system should be a completely independent system. We recommend a capacitance probe not only for its cost benefits, being a switch only, but also to increase safety by using an alternative technology to the GWR.

For clarity when filling we would recommend a separate HHLA panel, with basic alarm, sounder and mute functions. However where space or other constraints exist these functions can be built into the alarm panel used for the HLA system.

Dependent on budgets and site preferences additional features can be added to the control panels including safety locks, display protections, heating etc

AMS-IAC Solutions:

AMS-IAC manufacture and service instrumentation and control solutions for environmental and safety applications. We supply and install complete filling control systems with measurement equipment and alarm panels, or we can provide assistance to update existing systems with additional measurement products or alarm panels.

AMS-IAC can calculate actual working capacity (AWC) and safe working capacity (SWC) of storage tanks via a **free site survey**.

For guided wave radars and capacitance probes we generally supply our own brand or Vega products, however we can use others brands where site standards or preferences dictate.

Level Transmitters



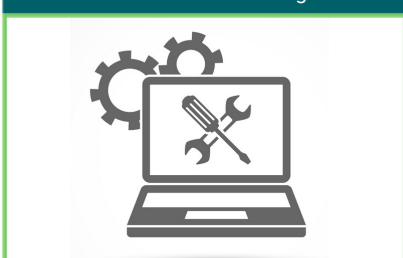
Level Switches



Alarm Panels



Installation & Commissioning



Site Servicing

