NEW FUEL TANK INSTALLATION

Alterations and improvements to existing petroleum forecourt and retail premises

at:

66, Savile Road
Dewsbury
WF12 9PJ

for:

AF Enterprises Ltd

date:

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ARCHITECTURE + DESIGN PARTNERSHIP

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General Overview

The application site currently consists of a petroleum filling station with retail building. Planning permission is sought for alterations and improvements to the existing forecourt, including the removal of old fuel tanks and pipelines, to be replaced with new tanks and pipelines, incorporating latest technology leak detection and vapour recovery systems.

Detailed description of proposed fuel infra structure installation

Upon completion of the tank replacement project the environmental infrastructure of the site will be considerably improved. The following industry standard components are installed as part of the works:

Safe Excavation Works

The new tanks require a large excavation, due to their size. Prior to excavation the perimeter of the tank farm is steel sheet piled to the full depth of the required pit (approx. 3.8m). Excavation then takes place within the piled area, horizontal struts are installed between the piles, to maintain stability of the piled ground throughout the whole operations of excavation, concrete base installation and tank installation. The tanks are strapped down to the concrete base to prevent floatation, before the excavation is back-filled with pea gravel.

Double Skin Leak Tight Tanks

The new tanks will be manufactured in accordance to BS EN 12285-1:2003 Workshop fabricated steel tanks - Horizontal cylindrical single & double skin tanks for the underground storage of flammable and non-flammable water polluting liquids and be issued with a Certificate of Conformity by the manufacturer.

The principle behind installing double skin steel tanks is to provide added protection in the event the primary inner tank containing the fuel fails. The double skin also allows the installation of monitoring systems to be installed which can indicate a failure in the inner or outer skin. APEA (Association for Petroleum and Explosives Administration – Petroleum Licensing Council) recommends that double skin tanks are used on all new installations.

The interstitial space between the two steel skins is approximately 8mm and is filled with a non-harmful and non-corrosive liquid (mono glycol), a probe is then fitted within a header tank inside the tank chamber and both are wired back to an on-site gauge sensor alarm unit, located in the sales building.

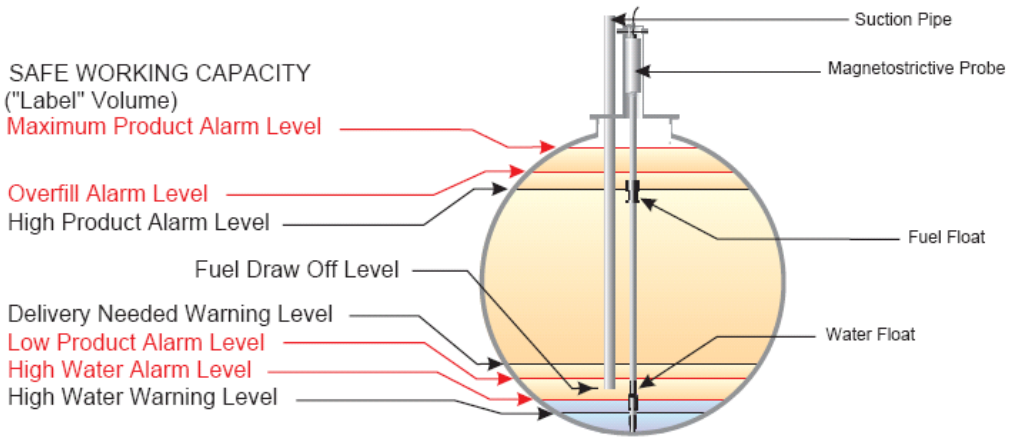
Leak Tight Chambers

Leak tight chambers are fitted to new tank lids to prevent the ingress of surface water or groundwater entering the manhole chamber.

The above photo shows a typical example of Double Skin Steel tanks being installed, with an outer protective coating and fitted with leak tight tank chambers

Tank gauge wet stock reconciliation system

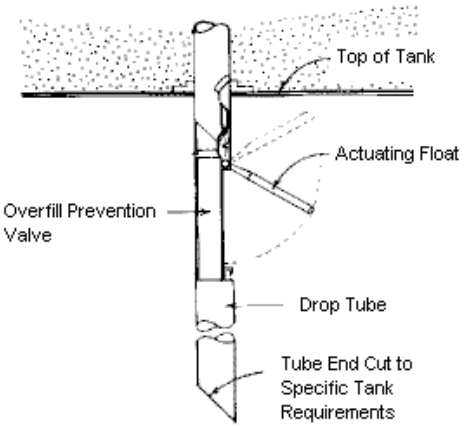
This comprises of a sensitive probe installed in every tank compartment, which is wired back to the tank gauge unit within the sales building. This allows the site operator to monitor wet stock continuously.



The above diagram shows the in tank warning and alarm levels monitored by the tank gauge system

Overfill Prevention

Overfill prevention devices will be fitted to all tanks in accordance with the Design, Construction, Modification, Maintenance and Decommissioning of Filling Stations 3rd Edition and EN 13616 Overfill prevention devices for static tanks for liquid petroleum fuels to prevent the pumps of the road tanker delivering more product than the vessel has capacity to hold. The devices fitted will be designed to shut off automatically to prevent the amount of fuel delivered being beyond its maximum working capacity. Once the tank reaches 97% of its capacity the tank gauge alarm sounds to alert the road tanker delivery driver to stop delivering before the automatic shut off is activated.



The above diagram shows a typical Overfill Protection Installation System

Suction Fuel Line Pipework

All new suction feed lines laid will use UPP secondary containment twin wall pipe. This consists of a co-axial pipe sleeve co-extruded over UPP lined primary pipe manufactured from a High Density Polyethylene (i.e. plastic non corrosive) outer and a “fuel proof” Polyamide (nylon) inner, which displays high resistance to absorption and permeation of hydrocarbon fuels to ensure containment of both hydrocarbon liquid and vapour in transfer. There is an uninterrupted interstitial space between the primary and secondary pipe which allows for continuous leak detection of both primary and secondary pipe which is connected to a monitoring system where if there is a breach or fault on the system the entire fuel system gets suspended until the fault or breach is detected, repaired or replaced therefore is reliably robust and fail safe.

All pipework and fittings used will be constructed of new materials and be resistant to external corrosion or environmental degradation and comply with the IP (Institute of Petroleum) *Performance specification for underground pipework systems at petrol filling stations*, and EN 14125 *pipework for underground installation at petrol filling stations (excluding GRP)*.

Pipework will be installed at a depth between 450 to 750mm below ground and will therefore not be placed in ground water. As previously mentioned the pipework material is non-corrosive and the interstitial space in the pipework is continually monitored. It is not viable to offer additional tertiary containment on the fuel pipework system as it has the potential to interfere with or prevent maintenance access to the pipework sensors monitoring the interstitial space on the pipework. It is therefore considered this pipework system presents the best system available in the industry which offers the best solution to mitigate risk to ground / ground water.