



RETAIL SITES PROGRAMME MANAGEMENT

Since 2012 Artelia International has been working together with their contractors to develop a solution to tank renovations that will lower the down-time for retailers, lower the costs for our clients and most importantly eliminate the health & safety risks associated with manned tank entry.

The background

Back in 2012 one of our clients experienced problems with renovated diesel and petrol tanks failing mandatory standard yearly tests.

Artelia International started to investigate solutions and discovered that one of their contractors were already manufacturing a potential solution, but at the time it was not suited to the requirements of our client and their underground storage tanks. From this point Artelia and their contractor started the joint development of the liner system for petrol and diesel tanks.

The challenges

One of the main challenges of implementing the contractors existing liner system was that it involved manned tank entry, which for safety reasons was against our clients policies. Therefore a new solution of fitting the lining without entering the tank would have to be found.

At the same time the contractor's current solution, used for other applications, was only suitable for diesel products as petrol is more aggressive to the materials used in their existing liner. Alongside this, legal requirements for petrol tanks state that a conductive layer is required to avoid the build-up of static electricity.

The solutions

The development of the new liner system has been carried out over the last couple of years where suitable sites have been identified.

The challenge of installing the liner inside the tank without manned tank entry has been achieved with the use of an inflatable mattress. This has been designed to be inserted in to the existing storage tank and then inflated to roll over any obstacles within the tank, such as reinforcement rings, to ensure the lining completely fills the space. By inflating the mattress it is positioned inside the tank in the same manner which used to be done by manned entry.

The second challenge regarding static electricity was solved by working with the contractor and their supply chain to add a conductive material into the lining bringing the solution in line with regulations.

The build-up

The solution works by a vacuum being applied between the liner and the internal steel tank wall, which holds the liner into position. The thin void between these two provides an interstitial space, which is constantly monitored with industry standard monitoring systems.

The monitoring system will alert the client if a change in vacuum pressure is detected as a result of a leak in either the steel tank or the liner, at which point immediate action can be taken to avoid any loss of product to ground. To make sure the system remains correctly configured, it also contains a small pump which can be used to make minor adjustments. This ensures the interstitial space remains at the expect pressure of vacuum removing any external factors which could affect the pressure. The whole system, including the pipework monitoring and applying the vacuum to the lining, along with the fill pipework exits the tank at the existing manhole as industry standards, with an expansion ring installed to keep the tank sealed and pressure within the vacuum retained.

The benefits

This innovative solution has clear Health & Safety benefits because not only does it remove the need for manned tank entry, but also reduces exposure hours, with time to install a liner being as low as 2 days, compared to the significant time to remove and replace existing tanks. It also has great financial benefits as it is cheaper than replacing a tank and can elongate the life of a tank farm.