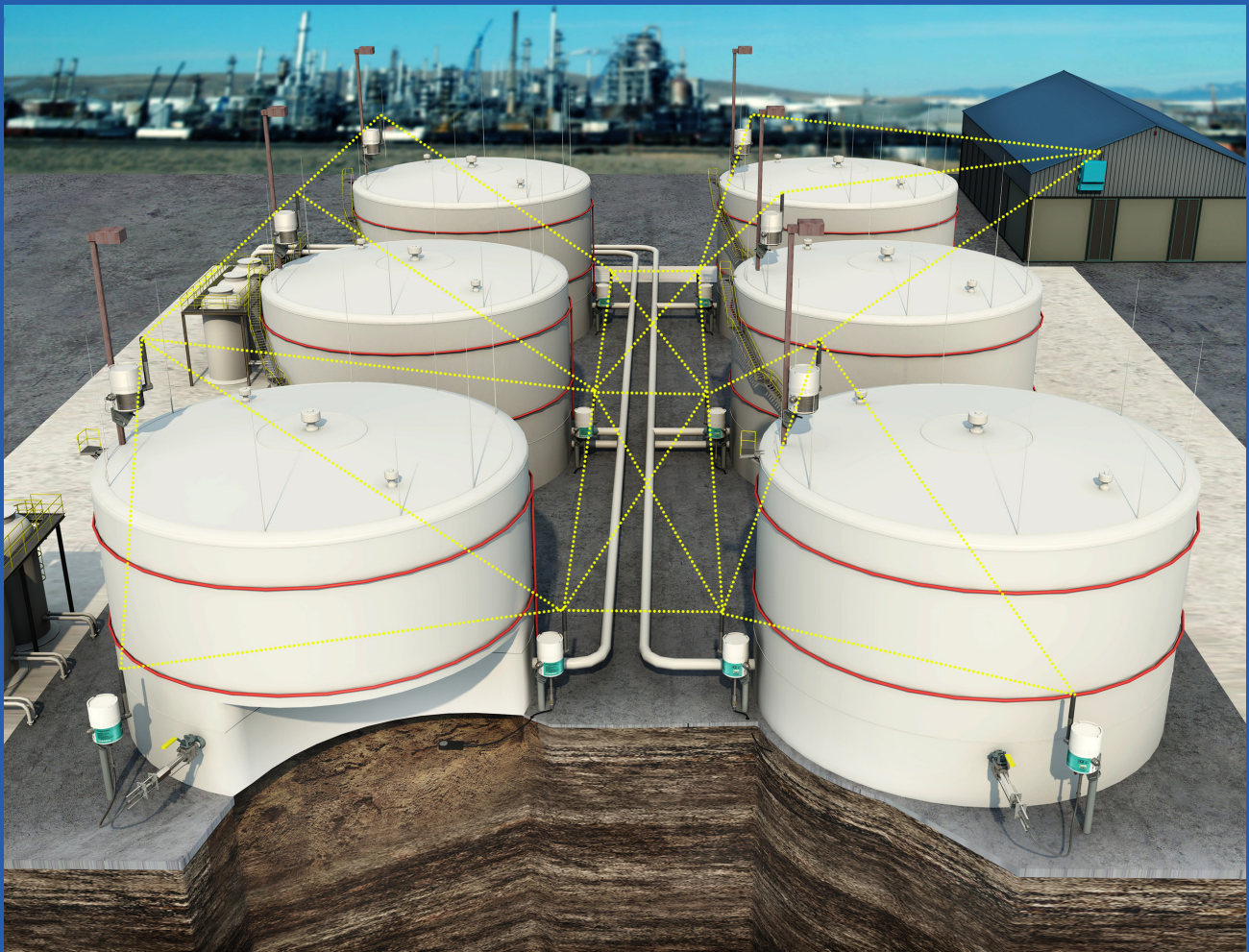


WIRELESS CORROSION MONITORING IN TANK FARMS

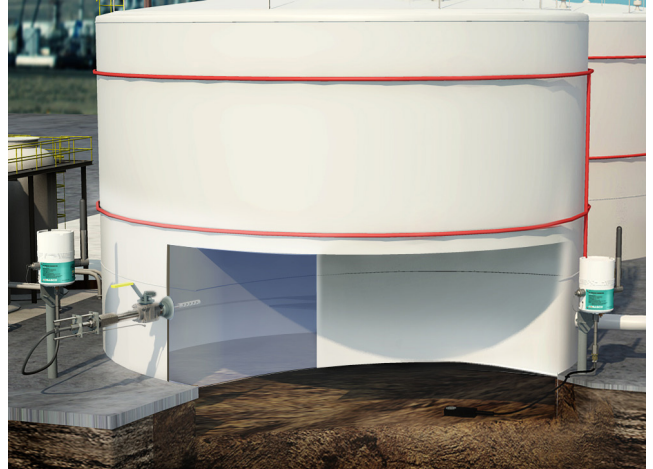


Application

Continuous online corrosion monitoring of tank farms

Background

Corrosion of oil/Fuel or Chemical Tanks presents a significant risk to both the environment and local communities. Tank farms are often located in suburban areas or near environmentally sensitive areas, where the effects of a leak can be devastating. Seepage of flammable liquids into watercourses produces potentially explosive vapours, leading to deadly fires.



Typically, storage tanks require monitoring for corrosion both internally, caused by corrosive water coalescing in the bottom of the tank, and externally, caused by contact with water bearing backfill materials resulting from water seeping under the tank floor.

It is normal practice to protect the internals of tanks by several different methods;

- A chemical treatment, either continuous injection of an inhibitor, or using slow release solid chemical, periodically dropped through the tank roof.
- The tank floor and the shell are coated with corrosion resistant epoxy resin paint. In case of small 'holidays' or localised damage, it is often further protected by a sacrificial cathodic protection system.

To mitigate external corrosion, there are several methods available;

- Mostly commonly, the underside of tank plates are protected by combination of epoxy coating and an impressed current cathodic protection system. The presence of a protective membrane can also provide additional corrosion protection.
- Other methods include corrosion inhibitor impregnated membranes and vapour dispersed inhibitor pumped under the membrane from below.

All of these methods require Corrosion Monitoring to evaluate whether they are working efficiently or if further measures are required to prevent or slow down corrosion attack on the structure of the tank.

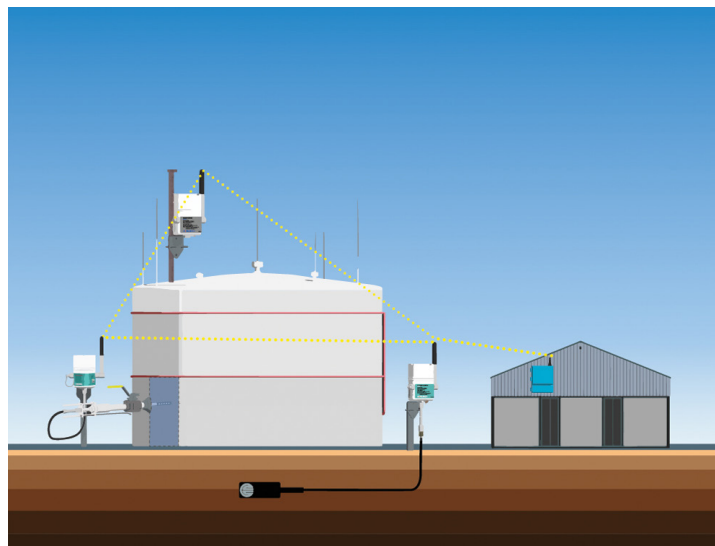
Challenges

- Older Tank Farms often have inadequate monitoring systems with no integrated data management, limiting data quality and access.
- Aging tanks require an increased focus on safety and environmental regulations
- Loss of produced fuel decreases profits

Solution

Historically, retractable ER probes are inserted into the lower part of the tank wall to provide monitoring internally and, for external monitoring, Cosasco's underground 620HD ER probes are installed under tank bottoms. These were read with a handheld device.

The new ER 300 Series Wireless Transmitter makes upgrading to a fully automated data collection system more affordable, without the costs of cabling. With WirelessHART7 and ISA 100 Wireless communication options, ER Wireless Transmitters can be easily integrated with existing process monitoring systems. The ER Wireless Transmitter connects to a 620HD and 3500 probes via a probe adapter. Metal loss measurements are transmitted back to a Gateway and onto a server with Cosasco Data Online software.



Internal and external corrosion monitoring probes connected to Cosasco ER Wireless Transmitters

Benefits

- Comprehensive monitoring and protection systems provide the best method of ensuring the integrity of storage tanks.
- Monitoring both internally and externally, encompasses the areas most at risk from corrosion.
- External corrosion monitoring provides information on the performance of the Impressed Current cathodic protection system.
- Internal monitoring provides information on the performance of chemical and sacrificial CP systems inside the tank.
- Wireless communication removes the need to visit the site to record the data, reducing travel time to remote areas and providing the most up-to-date corrosion data.
- Economic integration to existing or planned wireless systems, either HART7 or ISA 100 formats.