

HOMC APPLICATION NOTE-6

Corrosion Assessment Under Bundwall

Corrosion Assessment Under Pipe Bundwall (<1m)

Investigations from pipeline failures within Bundwall have indicated that Bundwall can lead to potentially unsafe conditions. These conditions include atmospheric and galvanic corrosion and longitudinal pipeline stresses due to carrier pipe flexure inside the Bundwall. The costs of gaining access to these pipe regions for inspection via conventional NDT methods can make it prohibitively expensive.



Challenges to Inspecting pipes crossing through Bundwall

The main challenge to such inspection is the ability to access all sections of the pipe to do a 100% assessment. The integrity of the pipe under the Bundwall is also subject to the extent of corrosion happening under the Bund wall. Post repair and the need for monitoring them is important.



HOMC Guided Waves as Reliable Solution

The Higher Order Mode Cluster (HOMC) Ultrasonic Guided waves can be deployed axially in through transmission mode (AHOMC-TT) for pipes with access to the region of interest such as elevated pipes, elbows, bundwalls etc. Not only the depth of wall loss but the profile of corrosion is also determined with extreme high sensitivity to the deepest wall loss. The sizing accuracy is in the range of +/-5-10% in the range of 20% to 80% Wall loss. It can be deployed on pipe sizes 2 inches and above



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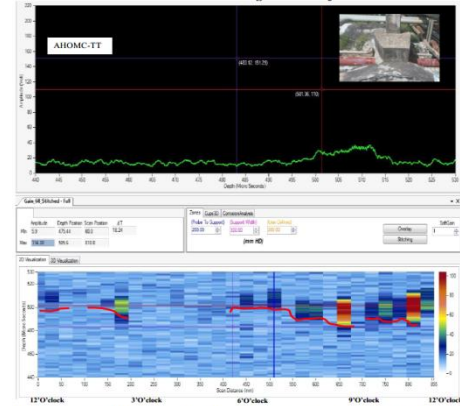
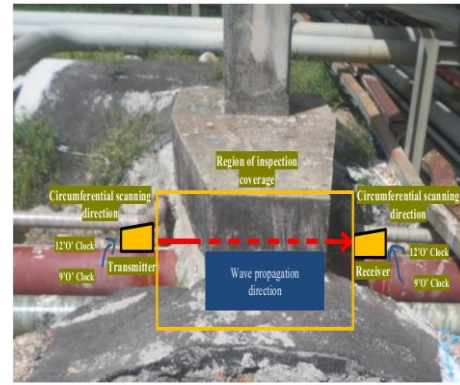
Corrosion Assessment Under Bundwall



HOMC INSPECTION of 12 inch AGO Pipe Passing Through Concrete

A 12inch AGO Line crossing under a concrete Bunwall was inspected in a Refinery using AHOMC-TT Method. The length of the bund wall was \approx 1 to 1.1m. Corrosion with an estimated wall loss of about 55-65% was observed on the pipe section covered under the concrete. The corrosion was present around the 6 'O' clock position of the pipe. End customer hacked the concrete portion at around the 6'O' clock position to validate the HOMC findings. A localized patch of corrosion was observed at 6'O' clock position and a maximum depth of 60% wall loss was observed.

The defects were mapped very accurately by HOMC and sizing levels were extremely precise when compared with pit gauge measurements. The advantage of HOMC is that it is not affected by the wrapping and through transmission technique deployed are amplitude independent to provide accurate defect profile and sizing.



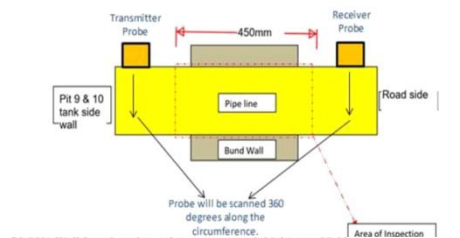
The deepest corrosion profile between the two probes seen across the pipe circumference is as highlighted in red. In some locations loss/scattering of data was seen possibly due to the attenuation caused by the concrete cover (very tight bonding between the pipe and concrete can sometimes cause attenuation due to signal leakage). The wall loss estimation is strictly based on the regions from where reliable data was obtained and there is a possibility of some potential deeper spots.

HOMC INSPECTION of 20 inch Pipe Passing Through Bund wall

A major tank terminal facility was experiencing leaks in there pipes that was passing through the Bunwall. The length of the Bundwall was \approx 450-500mm. The end customer called for a HOMC inspection in order to detect and quantify the deepest corrosion spot on the pipe covered under the Bund wall.

The inspection was performed by Axial -TT HOMC. Corrosion in most of the pipes were observed between 5 'O' clock to 7'O' position as per the HOMC data. In some locations there was a small gap between the bund wall sleeve and the pipe, the end customer did some visual inspection using boroscopy to confirm the presence of defects and get a rough estimate of the depths. The visual findings co-related well with the HOMC findings.

The advantage of HOMC is that it is not affected by the Bundwall/concrete sleeve and through transmission technique deployed are amplitude independent to provide accurate defect profile and sizing.



HOMC

RELIABLE- PRECISE -ACCURATE

FOR CORROSION ASSESSMENT UNDER COMPOSITE SLEEVES