



Understanding Cathodic Corrosion Protection

• Why tanks Corrode

Underground steel tanks corrode due to an electrochemical reaction between the tank and the surrounding soil. The process of corrosion occurs due to small voltage differences on the steel surface that result in the flow of DC current from one location to another. Where current flows from the tank into the soil, corrosion occurs. This location is called the anode in a corrosion circuit. Where current flows from the soil to the tank, no corrosion occurs. This location is called the cathode.

• Preventing Corrosion

Protecting underground tanks from corrosion is easily achieved by the use of two commonly applied protection methods: external coating and cathodic protection. These two methods are complementary and should be used in conjunction with the other. An effective external coating can protect over 99% of the tank surface area. However, no coating is perfect. Damage from construction or soil stresses create tiny defects, which may result in accelerate corrosion at the defect. Cathodic protection prevents corrosion at those defects by applying DC current from an external source, forcing the tank to become a cathode. Application of sufficient DC current to the tank will prevent any corrosion from occurring.

• How Sacrificial Cathodic Protection Works

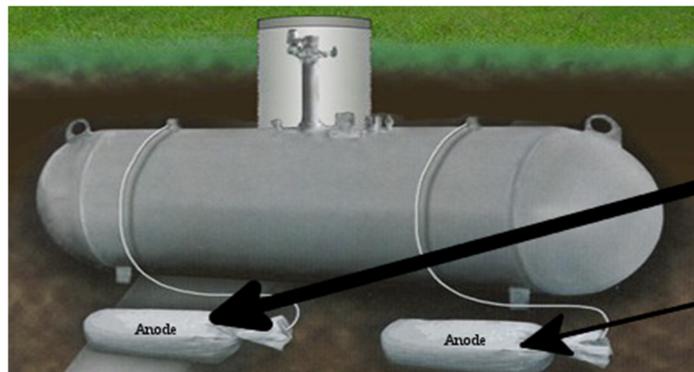
Sacrificial Cathodic Corrosion Rust Protection systems work by creating a galvanic connection between two different metals. The most common anode material is magnesium, which when coupled to steel results in DC current flow from the magnesium to the steel. With this current available to the tank, no corrosion occurs. *This sacrificial magnesium anode is the component that has failed testing on your tank.* Electrical isolation of the tank from metallic piping systems and electrical grounds is critical for the cathodic protection systems effectiveness. *Repairs may require replacement of the sacrificial anodes or may be as simple as installing a non-conductive union to provide the necessary electrical isolation.* Our technicians will do the following steps to determine solution.

• Steps to Diagnose Anode Problem

1. We will disconnect the gas line and the do another anode test.
 - a. If anode test passes at that point all that is needed is a non-conductive union. A non-conductive union will have to be installed.
 - b. If anode fails at that point then a sacrificial anode will need to be installed. We will then give customer a quote to install anode bags. We may have to add more than one, if one does not bring it up above Passing)
2. Replacing anode bags procedure (if needed)
 - a. We will quote customer before replacing the sacrificial anode.
 - b. We will dig hole to bury anode bag, and attach the wire to the steel riser of the tank
 - c. Then another anode test will be done. (this step will have to be repeated until anode test passes)

Thank you for promptly addressing this matter. We do appreciate your cooperation.

Sincerely,
Countryside Propane, LLC.



A Sacrificial Magnesium Anode is buried alongside the tank, then connected through a set of wires. Replacing the anode simply requires digging 2 small holes alongside the tank, disconnecting the wires from the failing anodes, then connecting the wires from the new anodes.