



Hoyt Application Note

Pipeline Cathodic Protection Using the 582 or 17/3 Rugged Analog Meter Series



Cathodic protection is a technique used to control corrosion by directing the path and direction in which current flows¹. Cathodic protection can be used to protect and extend the overall duty cycle of several different metallic products. For example, steel in boat hulls, tanks, bridges, off-shore platforms, or even reinforcement in concrete. In this application note we are focusing on the pipeline cathodic protection. Pipelines for oil, gas, water, and other chemicals are crucial infrastructure that keeps towns and cities running smoothly. So how does cathodic protection typically work for pipelines and what role does Hoyt play?

Pipelines are coated chemical from the original manufacturers, however, in most cases this is not enough to provide trouble-free operation for 30-50 years. To increase the lifetime of a pipeline an Impressed Current Protection (ICCP) is used. An ICCP has an AC transformer rectifier which converts the AC signal to a DC signal which flows in only one direction and a series of anodes buried in the ground near the pipeline. The number of anodes and conductive backfill material used depends of the application and local soil composition.

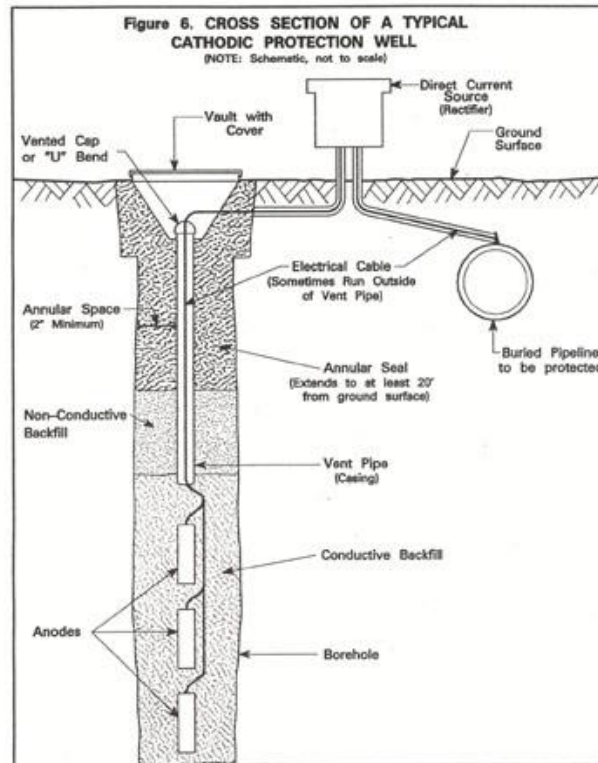


Illustration #1

The positive output from the rectifier is connected to the anodes buried in the ground and the negative terminal of the rectifier to the pipeline. Current flows from anodes down into the ground and then is picked up on the pipeline coating back to the negative terminal of the rectifier. This provides an alternative path for the electrons to move and allow the discharge positive ions. Positive ions attract elements like water and oxygen which speed up the corrosion process. An outdoor instrument panel houses the rectifier, meters, wiring, switches, diodes, and other controls. Typically, the Hoyt built 582 or 17/3 round industrial meters that have a scale of 0-50VDC and 0-50ADC are used for most applications. They are rugged and can handle the extreme changes in temperature.



Illustration #2

References

https://en.wikipedia.org/wiki/Cathodic_protection ⁽¹⁾

http://www.water.ca.gov/groundwater/well_info_and_other/california_well_standards/cpws/cpws_introduction.html (Illustration #1)

<http://www.universalrectifiers.com/> (Illustration #2)

