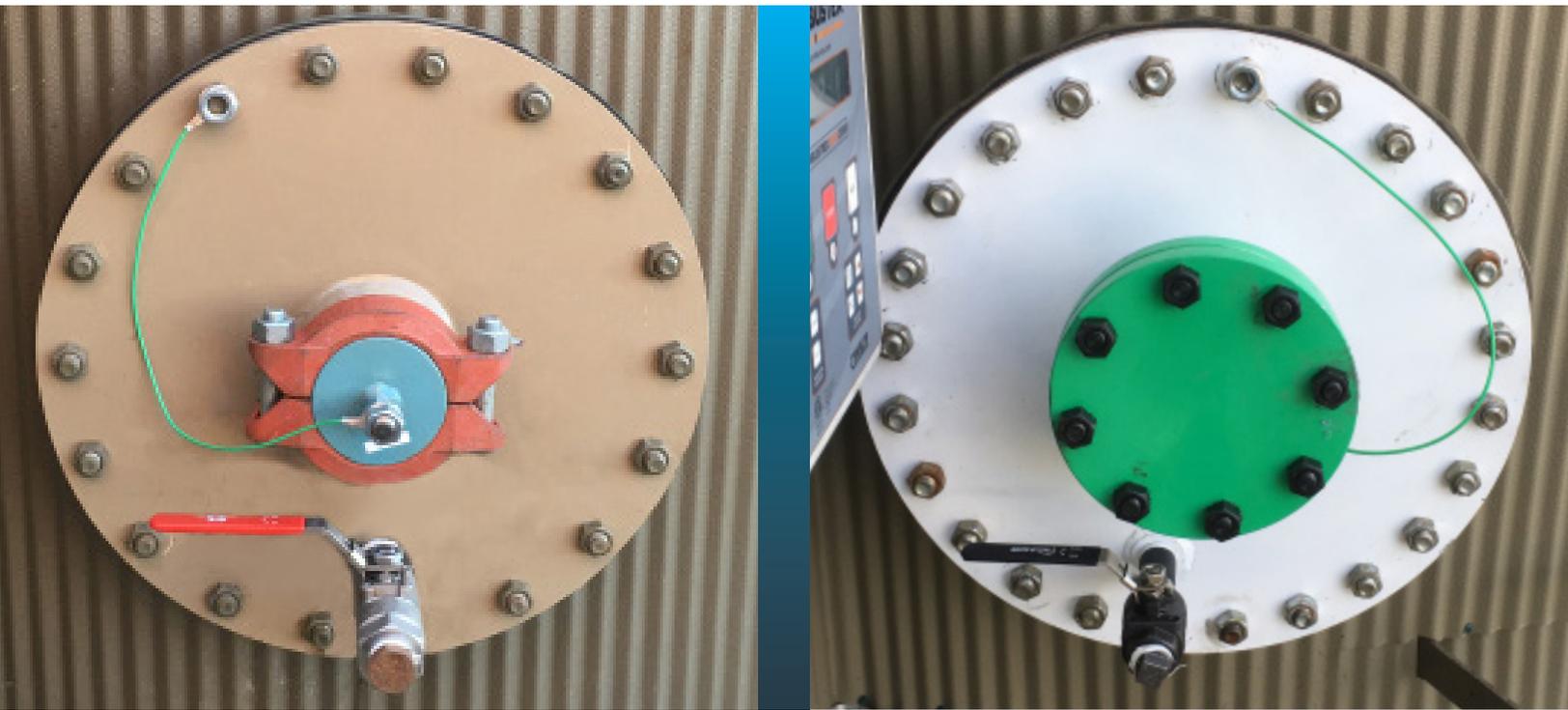


CORROSION **CONTROL** FOR TANKS & VESSELS





The Green Head

TankGard Green Head

This sacrificial system was designed with the producer in mind. The problem with many of the existing anode systems is they do not provide enough cathodic protection for the heater treater vessel, and most importantly they do not protect the fire tube.

The existing systems include:

1. The block: This provides little exposure to the surface area of the anode. It is placed on a cinder block; the grounding mechanism is unreliable; it requires partial entry into the manway to be removed, which exposes staff to hazardous environments. During the changing process, maintenance personnel have to partially put their head into the hazardous environment to properly remove or replace the anode. When opening the manway, significant amounts of oxygen enter the vessel, which enhances the corrosion process.
2. Red/Blue Head: These anodes are an improvement to the block anode, but they have some significant drawbacks: A) They are smaller. B) They have an unreliable grounding system. C) They do not allow for total consumption of the anode material. D) Worst of all they crack and leak causing a spill.

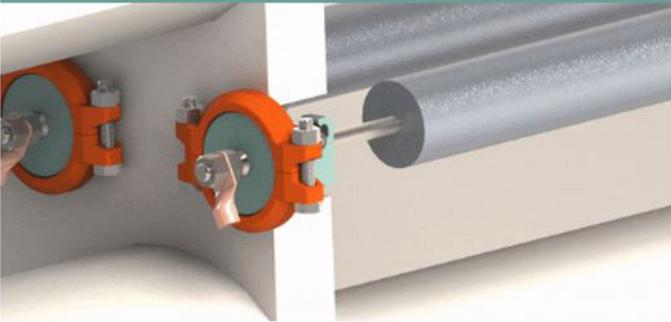
The **Green Head** is an improved anode deployment method for sacrificial anodes that gives the following advantages:

1. A steel *Victaulic* cap or flanged interface, and is a self-grounding system. This is preferable to a plastic cap, and ensures that there is no risk of leakage. **This is a one-time upgrade to the vessel.**
2. The cam-lock anode receiver allows for longer and heavier (larger diameter) anodes to be quickly deployed, giving longer life and higher current absorption. This translates to fewer anode changes and saves money. The system provides a quick fit positive engagement for the anodes.
3. Reference sensors deployed with the system enable [the actual level of cathodic protection on the fire tube](#) to be measured. This allows accurate scheduling of anode replacements.
4. The anode consumption is lower cost per pound because the plastic anode head is eliminated and the casting is optimized, **no waste.**

Anodes need to be longer and thick in order to work effectively in these tanks; large block anodes do not provide sufficient current and are not recommended.

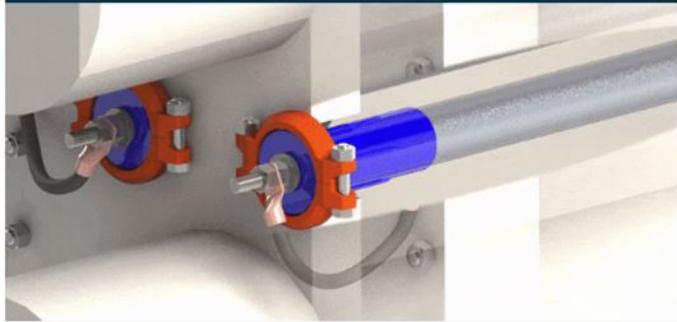
Many years ago, plastic heads were designed (Red & Blue heads) to interface with existing tank nozzles and provide electrical isolation of the anodes, such that the current output into the vessel could be measured. These are still in wide use today even though they have three fundamental drawbacks:

GREEN HEADS



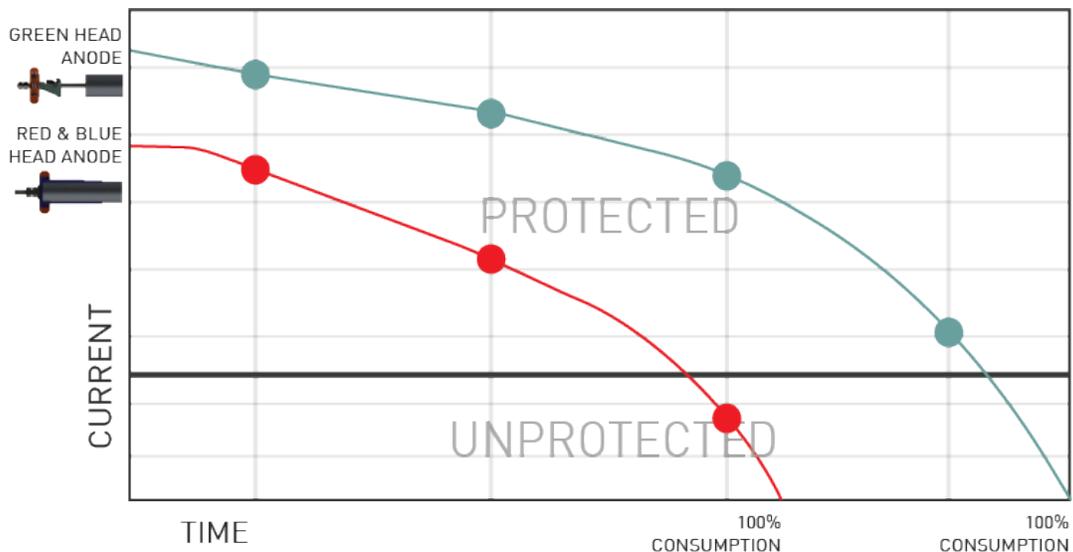
- ✓ Green heads have a **leak proof** connection point - even when the anode is fully depleted.
- ✓ Green head has a **larger anode**, 100% of which is exposed and working to protect the tank & fire tube.
- ✓ Green head will provide **30-50% longer life**

BLUE HEADS



- ✗ They are prone to leakage as the expanding anode corrodes and splits the cap.
- ✗ They cover about 5lbs and 8" of anode material which reduces current and wastes money.
- ✗ They restrict the diameter of anode that can be deployed to 3" ensuring that frequent replacement is required.

With the Green Head receiver in place, larger anodes can be deployed giving higher initial current and steady maintenance current. Larger diameter anodes can extend life to over 24 months between anode replacement. The receiver can be retrofitted to existing manways flanged or Victaulic nozzles to that receive even bigger anodes for greater cathodic protection.



GREEN HEAD VS RED/BLUE HEAD ANODE SIDE BY SIDE COMPARISON

Tank Links

Tankgard Tank Links

Tankgard has improved cathodic protection systems used in Salt Water storage tanks. The Tank Link system can be deployed without entering the vessel and provides a high level of cathodic protection inside steel salt water tanks.

First the tank is evaluated for coating integrity and vessel size. Then this information is used to calculate the amount of consumable material needed to fully protect the vessel.

Next, the link system is installed from the thief hatch and tethered to the manway hatch below. The Links will sit in the lower portion of the tank to ensure optimization of the cathodic protection system.

Last, an HP1Z sensor is installed to monitor the level of protection the tank is receiving and also to let the producer know when the anode needs to be changed.

Advantages

1. Allows anode material to be introduced in large quantities and for high current demand through limited access points.
2. Gives increased life over conventional anode designs.
3. Cost effective, no tank entry required to install.
4. Adaptable to many different vessel geometries.







The Sensor

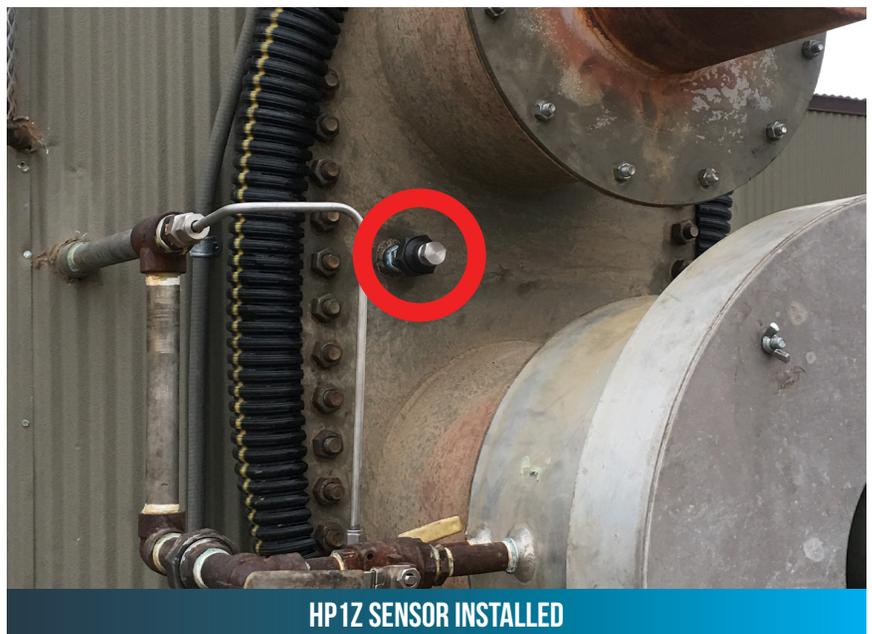
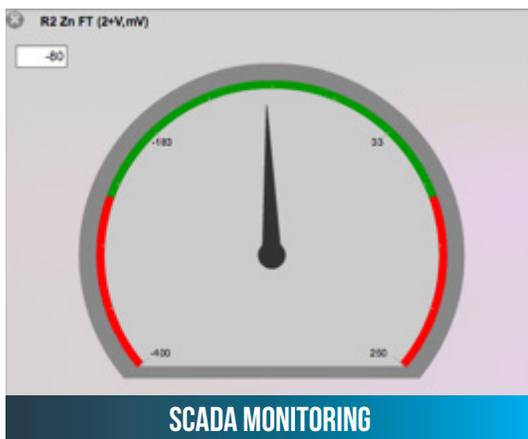
The HP1Z Sensor

The HP-1Z is a reference electrode designed for positive monitoring of internal cathodic-protection systems for tanks and pressure vessels.

This sensor is suitable for a number of applications where the electrode needs to be located in a specific area, or where internal access is limited.

This reference electrode is an industry game-changer. For the first time, producers can monitor individual heater treaters to ensure that the vessel and fire tube are being cathodically protected.

1. This sensor is easy to install, it can be retrofitted to work with the SCADA system or a standalone cellular monitoring device.
2. It provides a real-time snapshot of the vessel's level of cathodic protection.
3. It can be easily interrogated.
4. It ensures that the anode is being monitored for its ability to provide protection to both the vessel and the fire tube.
5. It is rugged and very **inexpensive**.







CONTACT US

Elite Main Office:
5056 Bennett Loop Ste 200 Willison, ND 58801
Phone: 701-572-9380

Derek Allen
Owner/President
Cell: 701-609-0008

David Allen
VP Innovation/Business Development
Cell: 208-390-2678

Dillon Allen
VP Operations
Cell: 208-716-0230