

Goodwest Coats Desalination Tanks for Australian Natural Gas Field

There is a huge Chevron-owned natural gas field and pop-up city in an extremely remote area of Australia with limited groundwater. The need for both process and potable water is being met by using a plentiful resource—seawater. Due to the vital nature of this service, Chevron’s engineering firm, Bechtel, was seeking desalination tanks that would remain corrosion free for 30+ years despite seawater’s extreme corrosiveness.

While the tanks would be used in Australia, the work began on the other side of the globe—at Goodwest’s facility in Rancho Cucamonga, California.

The equipment included three 15’ diameter x 27’ high pressure vessels that weighed more than 50,000 lbs. each. The interior steel configuration was extremely complex (*see photo*) which made a pinhole-free lining installation difficult. One tiny pinhole in the lining can lead to vessel failure within one year in seawater.



Goodwest engineered and installed an elastomeric polyurethane lining using the patented [ECOSYSTEM®](#) gas-expanded technology to create a 1/4” thick barrier between the saltwater and steel. This technology allows for thick-film buildup in a single coat on complex steel structures.

Goodwest is one of few companies that are certified to perform this technique. Bechtel and Chevron have to meet stringent regulations and consequently have rigid requirements and high expectations of any contractor they employ, which is why they chose Goodwest.

The Forms of Corrosion that may Affect Your Assets

A 2002 federal study conducted by NACE determined that the estimated annual costs of corrosion in the United States were \$276 billion. Corrosion is metal’s equivalent of an army of termites.

Understanding the various forms of corrosion is important for engineering ways to combat it. At [Goodwest Linings & Coatings](#), we are experts at reducing your exposure to this highly destructive, electrochemical reaction. The primer below covers the different types of corrosion that your steel assets may be susceptible to:

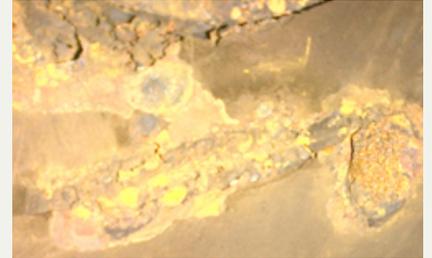
Uniform Corrosion

Uniform corrosion is when metal loss is spread evenly across a large area that is exposed to whatever is causing the chemical reaction (ie. saltwater, oxygen, etc.). Individual pits are not necessarily deep, but if left unchecked, can ultimately compromise a structure's integrity.



Localized Corrosion Pitting

Pitting usually occurs when there is a breach in an interior lining system. All of the electrical potential is focused on that precise spot, resulting in an exponentially higher rate of corrosion than if all of the steel were exposed.



Galvanic Corrosion

Galvanic corrosion occurs when two dissimilar metals come into contact under water. An interesting electrical reaction occurs at the seam of the two metals: one of the two metals speeds its corrosion process, while the other corrodes more slowly.



Lamellar Corrosion

This type of corrosion generally appears on exteriors where the surface has been allowed to corrode for some time. Layers of corrosion pull the metal away from the body of the material. The name Lamellar refers to the thin flat layers of corrosion, which are sometimes referred to as scales.



Erosion Corrosion

This is an acceleration of the rate of corrosion in metal due to the relative motion of a corrosive liquid on the metal's surface. This type of corrosion can lead to pitting, which then exacerbates deterioration.



Stainless Steel Corrosion

Steel is not the only metal that corrodes—others do as well, just in different ways. When exposed to chlorides (ie. saltwater), stainless steel corrosion causes microscopic pits and cracks that are often not visible to the eye but can still cause extensive damage.



The good news is there are ways to guard against this kind of destruction. Sophisticated operations regularly increase their investment in corrosion protection. Steel with properly engineered coatings are a more cost-effective solution than fiberglass or plastic, with significantly more structural strength.

Goodwest has been providing corrosion analysis and solutions for more than 50 years. Check out the [Corrosion Inspection & Engineering](#) page of our website.

About Goodwest

Goodwest has installed dependable protective lining and coating systems since 1961. Providers of water, oil, power, transportation, and other key infrastructures rely on Goodwest to ensure that critical equipment stays in service as long as possible.

Goodwest specializes in applying materials resistant to the most aggressive chemical, abrasion, and high temperature environments.



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