Advanced Heat Treat Corp.

Salt Spray Tests, Cyclic Polarization, Customer Testimonials... It all Points to

UltraOx® for Superior Corrosion Resistance

Advanced Heat Treat Corp (AHT) has been an industry leader in the field of ion (plasma) and gas nitriding with its UltraGlow® and UltraOx® processes. Through nitriding, AHT can improve the performance of your parts with respect to wear resistance, fatigue, surface lubricity, tooling lifetimes, and corrosion resistance. Corrosion resistance from nitriding is driven by the formation of compound zone, or white layer, on the surface of many steel alloys. The addition of post-oxidation after nitriding has also shown great improvements with respect to corrosion properties.

Salt Spray Tests Show UltraOx® Provides Over 240 Hours of Corrosion Resistance

In addition to being able to enhance a material's corrosion resistance, AHT's metallurgical lab at its corporate headquarters is equipped with a salt spray chamber, capable of testing the corrosion resistance of nitrided parts per ASTM B117. The UltraOx® process has demonstrated 240+ hours of corrosion resistance. AHT uses ASTM B117 salt spray testing for internal process development, but also offers a certified testing service for customers who require corrosion testing.

A New Corrosion Testing Service at AHT Michigan: The Potentiostat/ Galvanostat

Advanced Heat Treat is excited to announce the introduction of a new corrosion testing service at our Monroe, MI location. With the addition of a potentiostat/galvanostat, AHT can offer cyclic polarization testing per ASTM G61, among other electrochemical testing methods. So, what can this service do for you?

- Rapid corrosion testing results – testing takes 1-3 hours (not days!)
- Standardized, accurate, and repeatable results
- Quantifiable results regarding corrosion potential, corrosion rate, and more
- Correlated findings to ASTM B117, the industry standard of corrosion testing

Testing 17-4 PH Stainless Steel UltraOx® vs. Conventional Gas Nitriding

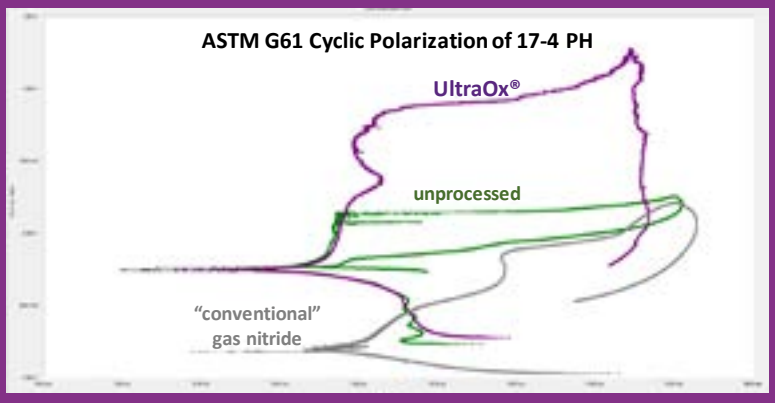

Figure 1: ASTM G61 cyclic polarization scans of 17-4 PH stainless steel. UltraOx® treated 17-4 PH outperforms both untreated and conventionally gas nitrided 17-4 PH, with respect to pitting potential.

More Thorough Corrosion Resistance Analysis

By utilizing both ASTM B117 and G61 corrosion testing methods, AHT is able to provide a complete analysis with regards to your part's corrosion resistance. That same data can be used to drive product development and take your parts to the next level.

A brief example is shown in figure 1 & 2 where UltraOx® gas nitriding of 17-4 PH improves the corrosion resistance of untreated stainless steel, dismissing the industry standard of reducing corrosion resistance during nitriding.

UltraOx®... the Clear-Cut Winner

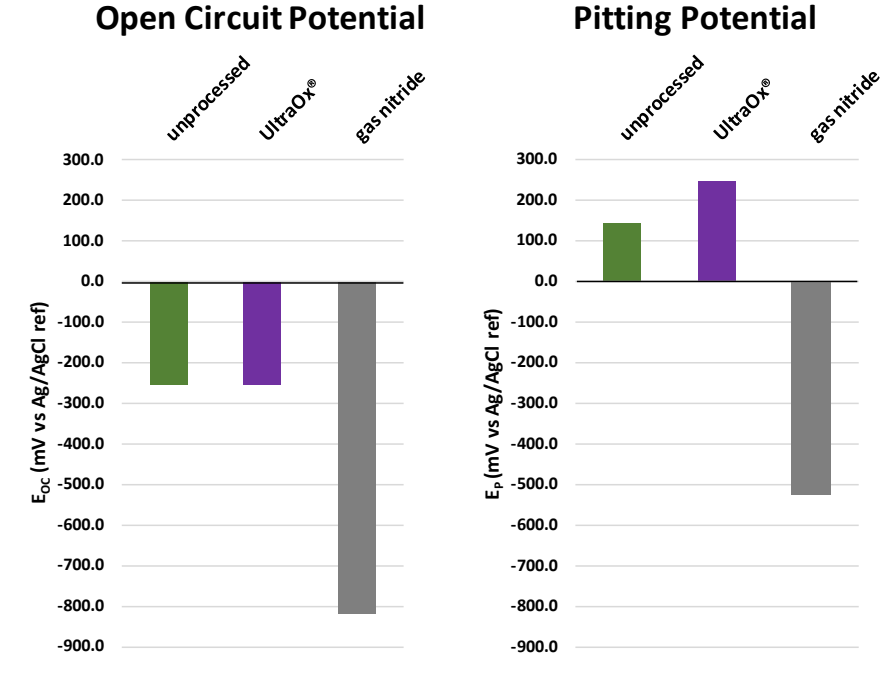

Figure 2: Data of ASTM G61 cyclic polarization scans of 17-4 PH stainless steel, including UltraOx® processed 17-4 PH. Higher potentials represent a higher degree of corrosion resistance.

Our metallurgists are happy to assist with your corrosion resistance needs. Give us a call today at 319-232-5221 or visit www.ahtcorp.com.

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About the Author: Rich Johnson

Rich Johnson started with Advanced Heat Treat Corp in 2017 as a process metallurgist, and in 2018, he as promoted to Materials and Process Manager in Monroe, MI. In this position, he manages the metallurgy and quality departments.

Rich has a master's degree in materials science and engineering from Stanford University. Rich is passionate about the fundamental sciences of nitriding and is always excited to assist customers with their processing needs.