SilcoTek's Corrosion Resistant CVD Coatings

SilcoTek® Corporation
225 PennTech Dr.
Bellefonte, PA 16823

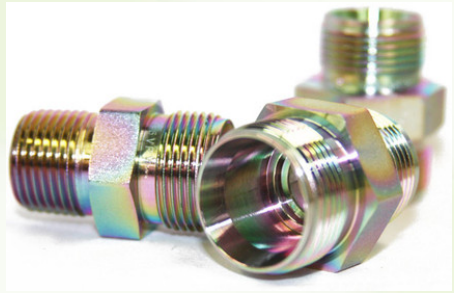
+1 (814) 353-1778
www.SilcoTek.com

The Challenge of Corrosion

- Aggressive process and sample media
- Harsh external environments
- Expensive maintenance and replacement
- Little room for failure

SilcoTek's Solutions

Dursan®



Ceramic-like with full pH range resistance and mechanical durability

Silcolloy®

Excellent protection from acids, high temperatures, and oxidation

Salt Spray (ASTM G85)

- 24 weeks of acidified salt spray per ASTM G85-A2
  - Total exposure time: 4,032 hours

Uncoated 316L

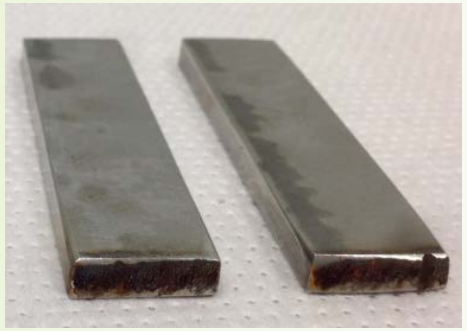
Silcolloy-coated 316L

Dursan-coated 316L

Salt Spray (ASTM G85)

(continued from previous slide)

- Dursan-coated 316L SS is completely unaffected by 168 days of acidified salt spray
  - Even corrosion resistant duplex alloy 2205 showed moderate corrosion under these conditions



Uncoated Duplex Alloy 2205

Dursan-coated 316L

Salt Spray (ASTM G85)

- 4 weeks of pH-neutral salt spray (NaCl), then 24 weeks of acidified salt spray per ASTM G85-A2
  - Total exposure time: 4,704 hours

Uncoated 316L

Silcolloy-coated 316L

Dursan-coated 316L

Salt Spray (ASTM G85)

(continued from previous slide)

- Dursan coating provides complete protection even after 196 days of cyclic salt spray exposure
  - Silcolloy shows minimal corrosion at coupon edges

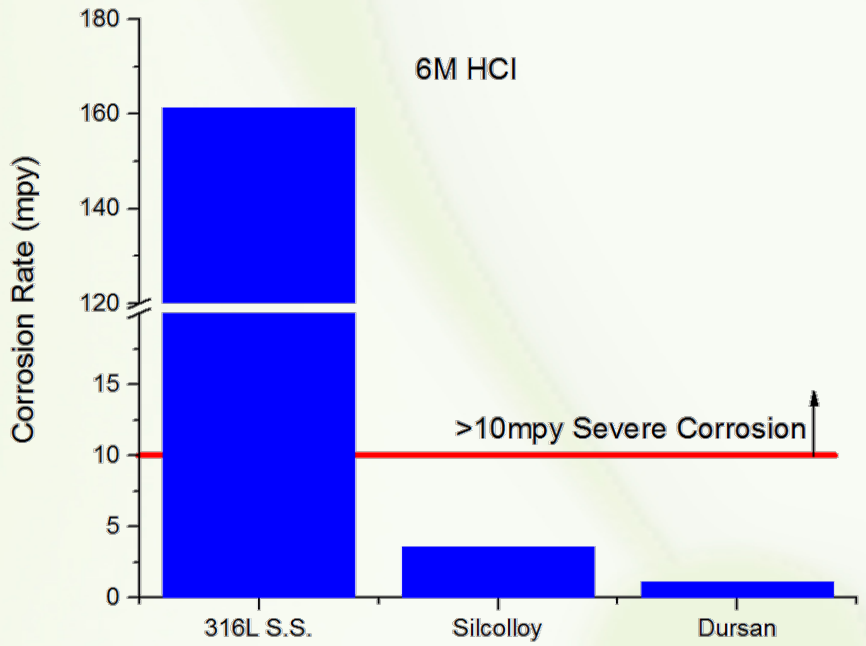
Uncoated 316L

Silcolloy-coated 316L

Dursan-coated 316L

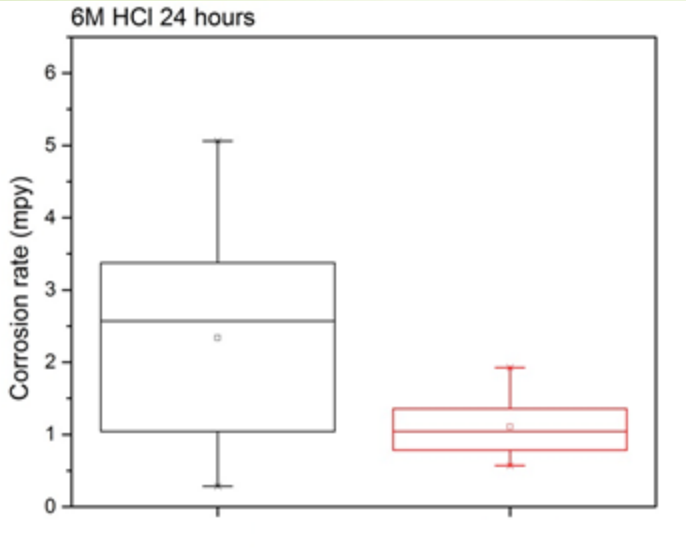
HCl

- ASTM G31 Guidelines
- 6M HCl Acid Exposure
- 24 hrs at Room Temperature



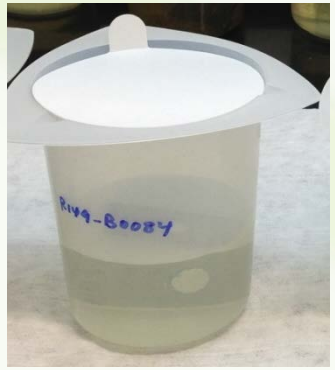
HCl

HCl Corrosion



Other coating | Dursan®

Other Coating

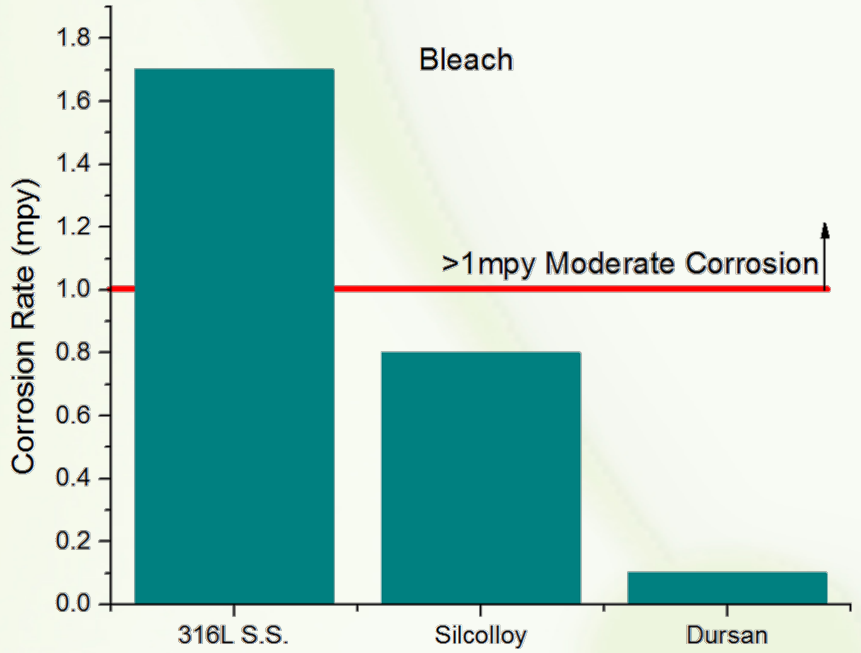


Dursan®

The solution containing Dursan-coated 316L SS shows no discoloration (corrosion) after the 24hr immersion test.

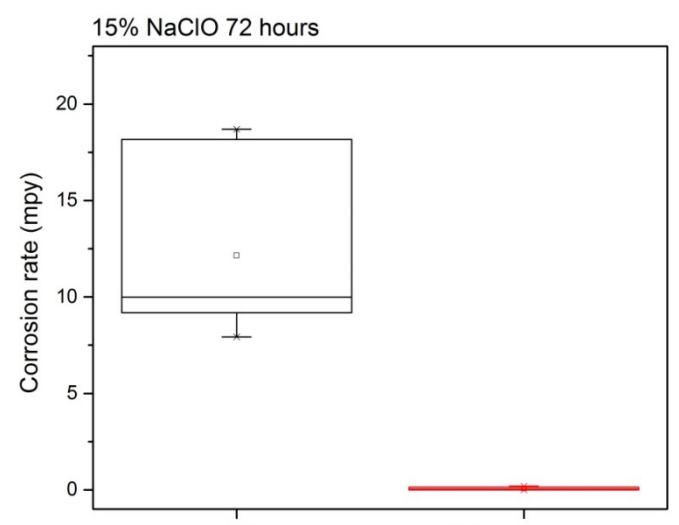
15% Bleach

- ASTM G31 Guidelines
- 15% NaClO Exposure
- 72 hrs at Room Temperature



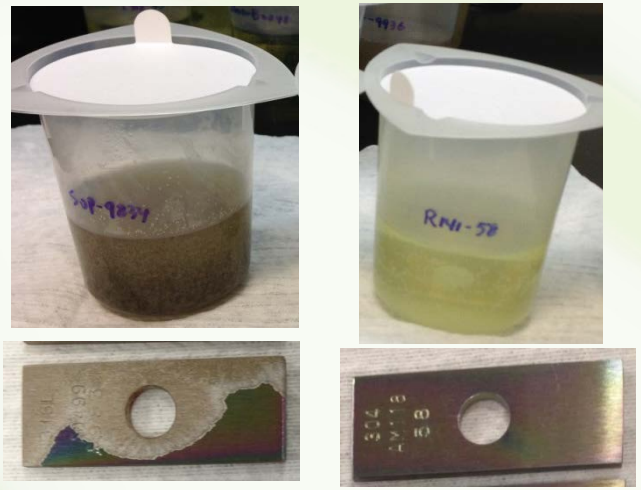
15% Bleach

Bleach Corrosion



Other Coating

Dursan®

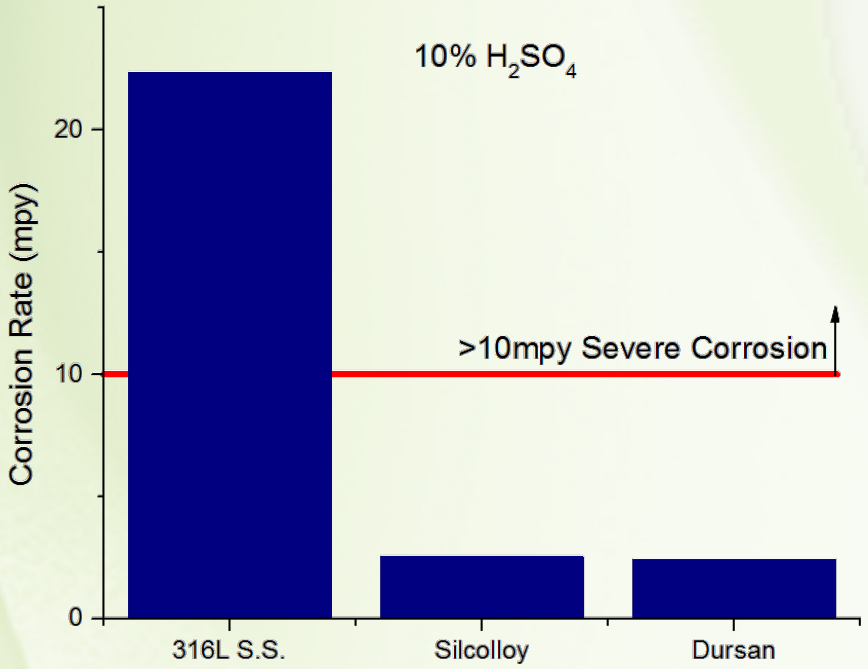


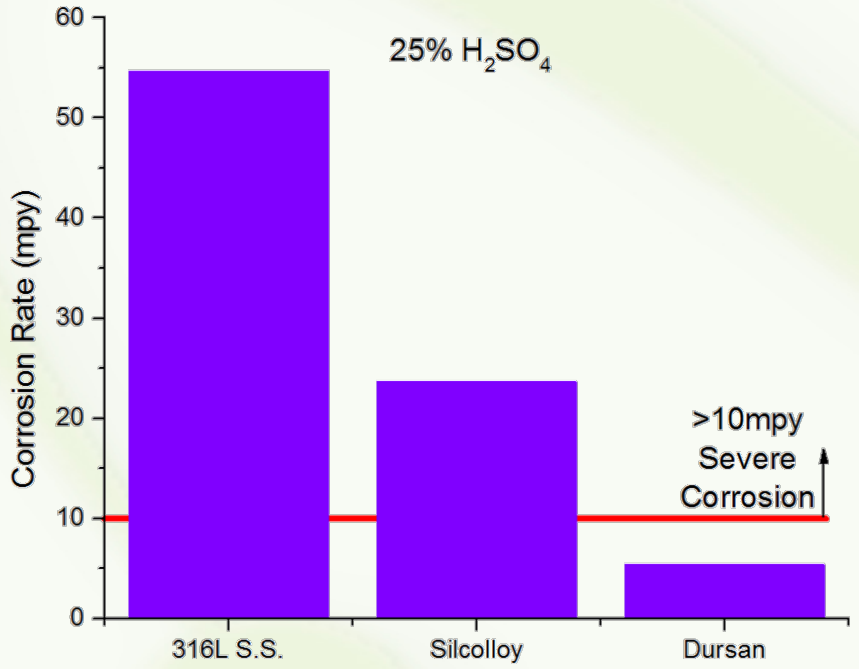
Other Coating

Dursan®

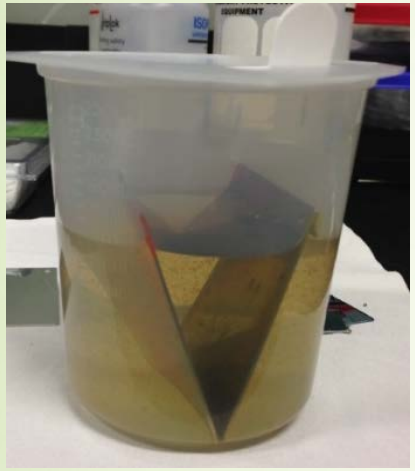
Sulfuric Acid

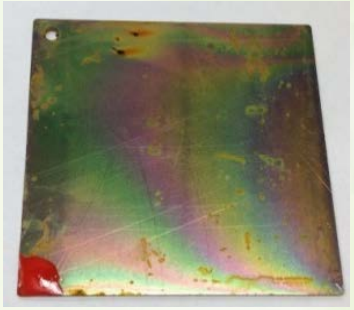
- ASTM G31 Guidelines
- Sufuric Acid Exposure
- 24 hrs at Room Temperature

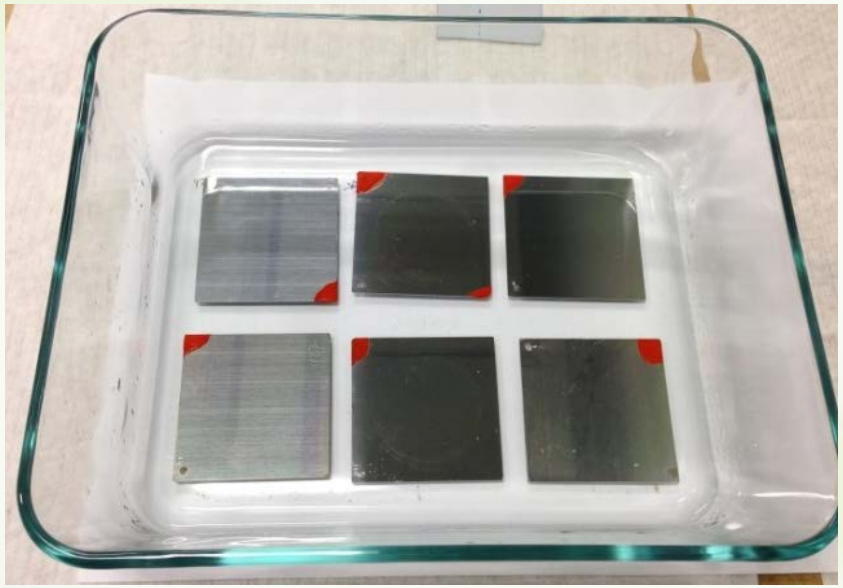




Salt Water Immersion



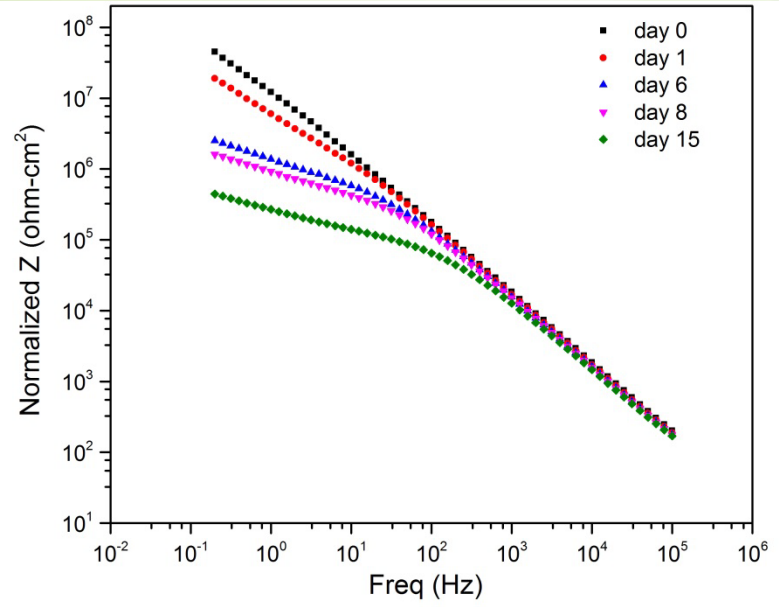


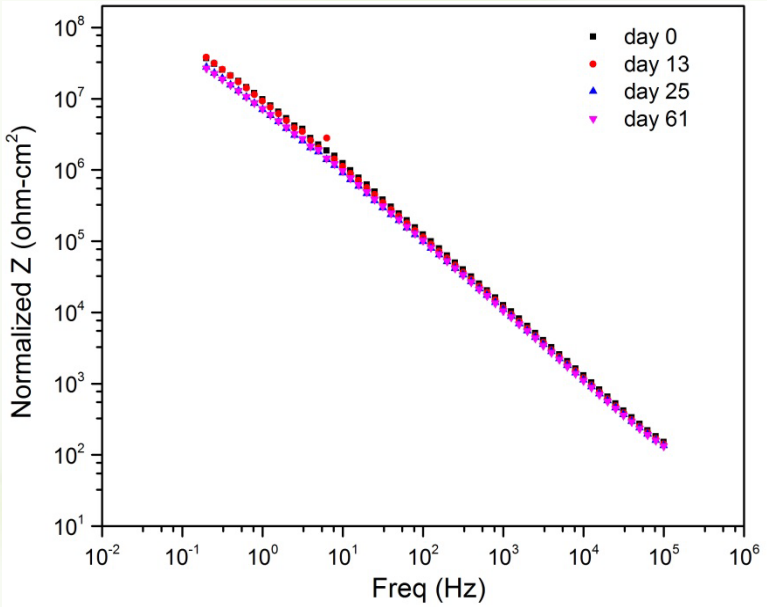


Dursan® Coating (right) shows no degradation in salt water after 60 days of exposure

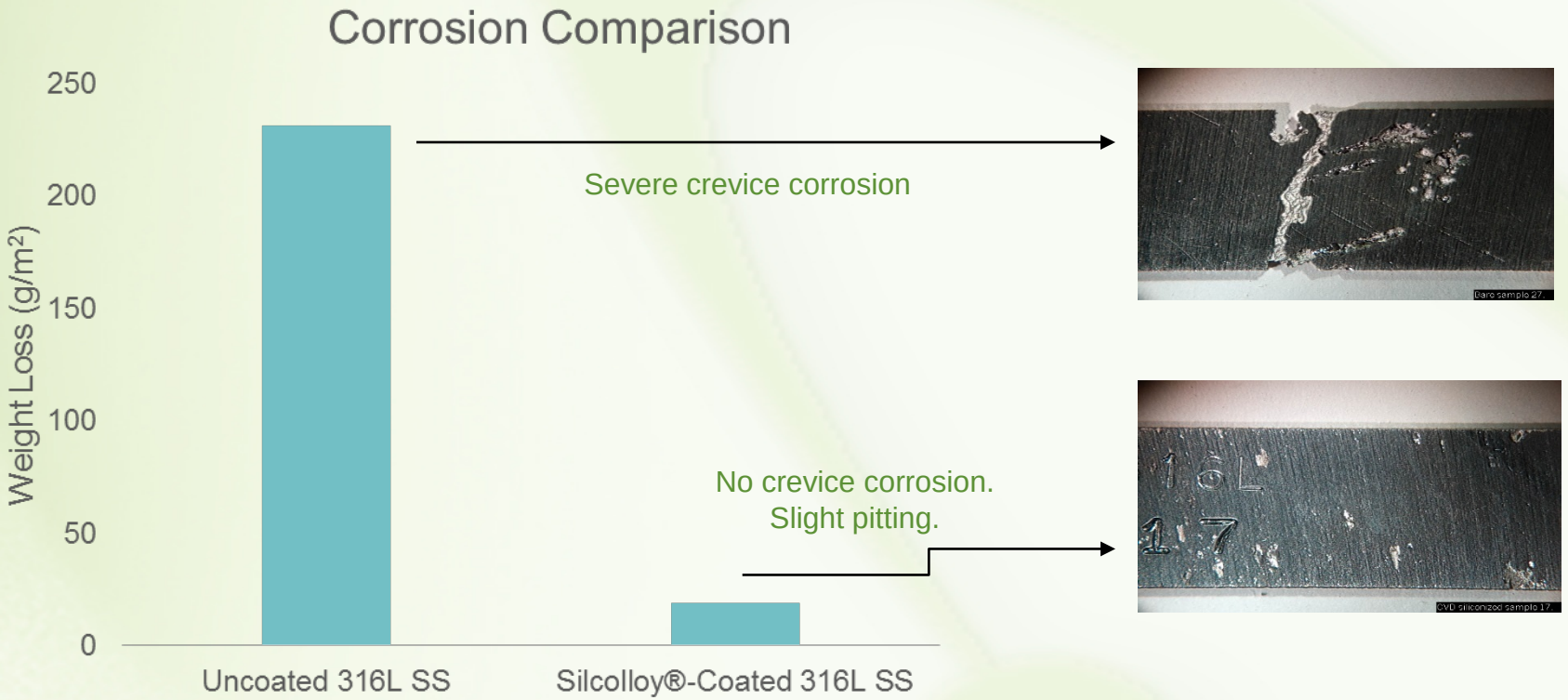
Salt Water

Dursan® Coating (right) shows excellent dielectric stability in salt water after 60 days, providing an effective corrosion barrier on the substrate.





ASTM G48 B: Pitting and Crevice Corrosion



SilcoTek Coatings as a Solution

- Cost-effective alternative to exotic metals
- Upgrade current components or easily install new, coated parts
- Advantages of CVD process: easily coats complex geometries; doesn’t affect tolerances; environmentally benign

Case Study: Turner Designs Hydrocarbon Instruments

See how Turner Designs Hydrocarbon Instruments cut costs and increased performance of their oil in water monitors by using stainless steel coated by SilcoTek's corrosion resistant surface technology instead of exotic metals.

Download the case study ⟶

Download Now

Contact SilcoTek

- For technical service and sales:
  - SilcoD@SilcoTek.com

- In the USA, call: 814-353-1778
- In the EU, call: +49 6172 279718

- www.SilcoTek.com