Critical Pitting Temperature Software

The Critical Pitting Temperature Software runs an important pitting test available in no other commercial corrosion test system: Critical Pitting Temperature. Designed to control your Gamry Potentiostat, tests are run using our Microsoft® Windows™ based software. The results are analyzed using Microsoft Excel™ augmented with our specialized menus. Nothing could be more powerful and more cost effective for diagnosing your pitting problems.
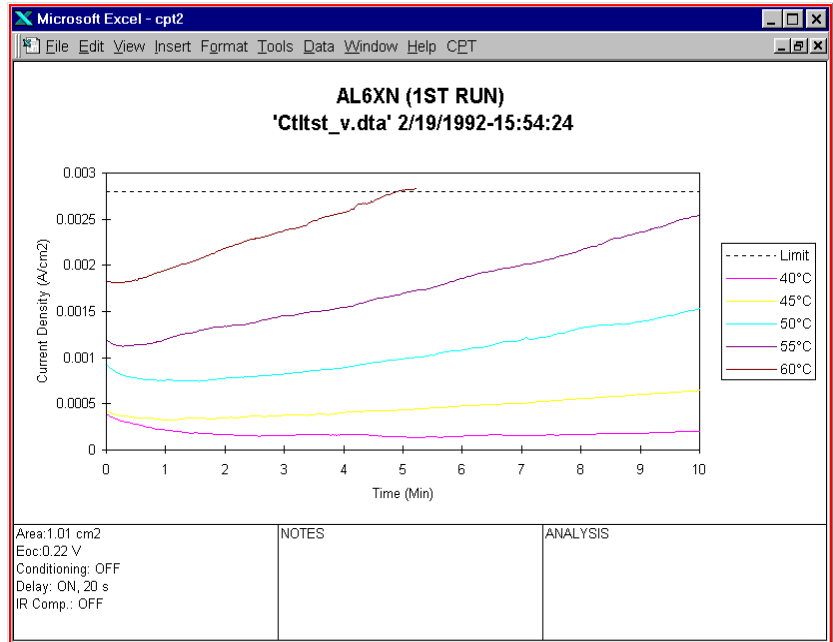
Applications for the CPT include materials selection in the chemical process industry, alloy ranking, evaluating pitting inhibitors, etc. Anywhere you have a pitting problem, the 7f]h]WU`D]hh]b[Hया्d YfUhif Y techniques, coupled with the cyclic polarization or critical pitting potential scans, will be useful.

Critical Pitting Temperature

In the Critical Pitting Temperature technique, the temperature is increased in steps while monitoring the current at a fixed potential. The temperature is controlled to within I° C during the experiment. The resulting data is a series of current/time curves at different temperatures, allowing you to determine the critical pitting breakdown temperature of your system.

Cyclic Thermammetry In a Cyclic Thermammetry test, the cell temperature is slowly ramped up while cell current is measured. A constant anodic potential is applied. When either the temperature or current hit a predetermined limit, the scan is reversed. The result is a curve very similar to a cyclic pitting scan, but with temperature as the independent variable.

CPT Testing of Stainless Steels (ASTM G I50) The ASTM G I50 ("Electrochemical Critical Pitting Temperature Testing of Stainless Steels") test provides a prediction of resistance to pitting propagation on stainless steels. Similar to Cyclic Thermammetry described above, G I50 ramps the temperature at I° C/minute while applying a constant anodic potential. Current is monitored during the temperature scan until a rapid increase is recorded. The CPT point is defined at the time a rapid current increase occurs, or when current density exceeds I00 $\mu A/cm^2$.

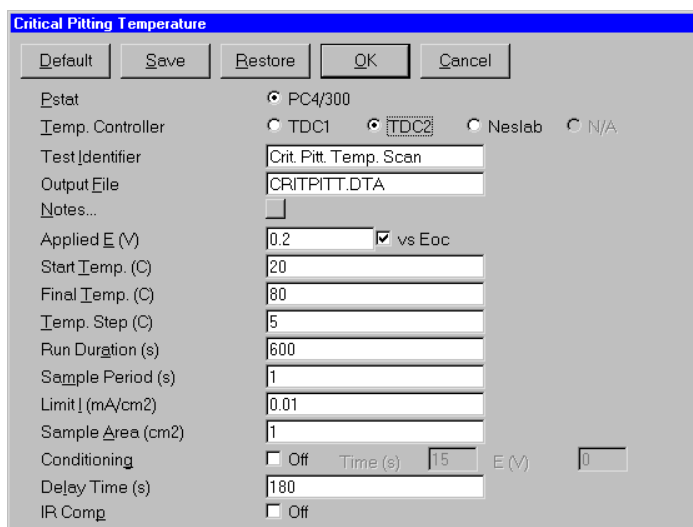## Experiment Hardware

The 7f]h]WU`D]hh]b[Hया्d YfUhif Y experiments require computer control of your test cell's temperature. Gamry Instruments TDC2™ Temperature Controller directly controls external heating devices such as our Flexcell's™ Heating Mantle. The TDC2 and Flexcell Heating Mantle are required for ASTM G I50. You can also interface the 7f]h]WU`D]hh]b[Hया्d YfUhif Y Software directly to Neslab Recirculating Baths. With either device, temperature limits, step sizes, delay periods, etc. are all under user control. Gamry's Flexcell is designed to eliminate crevice corrosion around the specimen seal, which may invalidate the test results with other cells.

TDC2 Temperature Controller

Experimental Setup

Easy to use Electrochemical Software, operating under Microsoft Windows, offers an unprecedented combination of simple operation and flexibility. The dialog box demonstrates how easy it is to set up a Critical Pitting Temperature experiment. Test parameters include temperature steps, current limits, pitting potential, etc.

Systems Information

The Critical Pitting Temperature Software requires a Gamry Potentiostat to conduct experiments. The TDC2 Temperature Controller or a NESLAB Recirculating Bath are needed for automatic temperature control. The Flexcell is recommended for CPT measurements (see Flexcell brochure). The TDC2 with a Flexcell Heating Mantle is required and manufactured to conform to ASTM G 150.

Electrochemical Software packages are subject to a limited 1-year factory service warranty (Gamry Instruments software and components only). Computers and computer accessories are subject to the computer vendor's warranty.

Gamry Instruments can also supply complete systems including the above items and system software installed in a desktop or portable computer. Custom computer configurations, software, training and installation are available by special order. Contact us for further details on these systems. Gamry Instruments cannot guarantee compatibility with all ISA/EISA bus computers.

CPT110   Rev 4.0 - 10/1/00   Copyright 1990-2001 amry Instruments.   All specifications subject to change without notice.