

Improve the Reliability of Your Downhole Equipment

The demands on exploration and production equipment are extraordinary – especially downhole tools and equipment where harsh reservoir conditions present the ultimate challenge for sophisticated equipment. Even surface equipment can be pushed to the limit against the frigid temperatures of the Polar Regions and the scorching temperatures of the equator.

Such hostile drilling and production environments demand reliable devices - devices that have already been subjected to stress extremes and proven up to the challenge.

Accelerated Stress Testing Prepares Devices for Hostile Environments

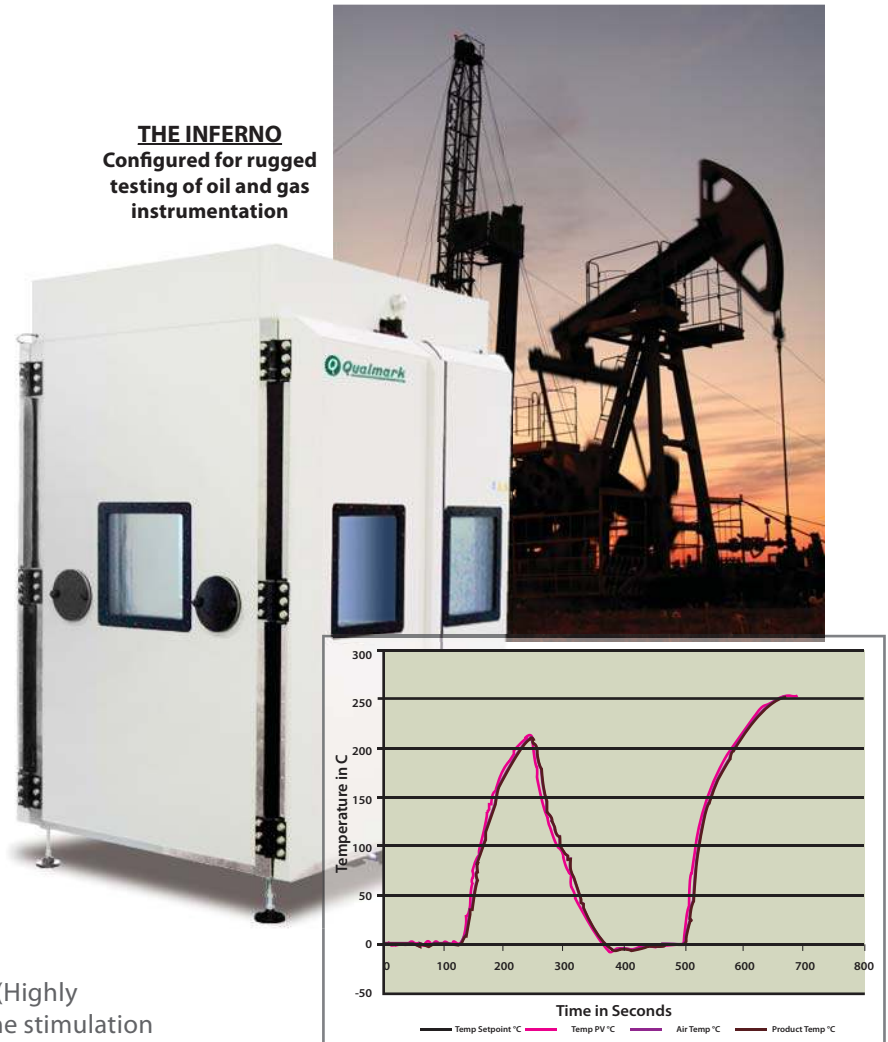
With the increased business need to use complex and sophisticated technology, exploration, production, and service companies cannot afford failures in critical tools and equipment. Qualifying new devices to meet these harsh conditions is also challenging – when is enough testing enough? And how can the testing and qualification process be accelerated?

Accelerated Stress Tests (AST) delivered by HALT (Highly Accelerated Life Test) systems provide the extreme stimulation necessary to analyze design weaknesses and extend operational margins for mechanisms intended to perform in harsh environments.

Qualmark's Inferno™ System Reveals Design And Manufacturing Weaknesses Fast

Qualmark's Inferno is a HALT system specifically configured for testing the durability of oil and gas instrumentation, tools and electronics. Qualmark's chambers can deliver a combination of +250°C to -100°C temperatures, over 60 grms, multi-axis, with 6 degrees of freedom vibration in a matter of minutes. Exposing products to such extremes rapidly reveals design and manufacturing flaws missed by traditional reliability testing methods – dramatically reducing the time line for new product introduction and substantially extending product design margins.

THE INFERNO
Configured for rugged
testing of oil and gas
instrumentation



Meet The Demands of Deep Well Drilling by Exceeding the Stresses With Qualmark's Inferno

The Inferno's unique capability of random, all-axis vibration and aggressive temperature cycling is the most effective way to expose failure modes in complex electrical equipment expected to perform in the extreme environments encountered in oil and gas exploration systems and production. Contact Qualmark today to learn more about the Inferno and our other accelerated stress test systems.

Vibration Features	Table Top Table Top Hardware Actuators Vibration PSD Management Table Product Capacity ¹ Vibration Range ²	48" x 48" (1220 x 1220mm) 144 threaded holes 3/8-16 on 4" centers; M10 optional 12 pneumatic, impulse-type, lubricant-free actuators Six degree of freedom, random, OmniAxial™ broadband excitation Monitor and reset to factory specification for Power Spectral Density (PSD) 600 lbs. (272 kg) 5 - 75 gRMS (10 Hz to 5000 Hz) typical (>100 gRMS special order)
Thermal Features	Heating System Cooling System Temperature Range Thermal Ramp Rate ³	Open-element nichrome type Vacuum jacketed liquid nitrogen injection +250°C to -100°C (+482°F to -148°F) 70°C - 100°C /minute average
Internal Features	Interior Dimension Interior Construction Plenum Exit Lighting	Table in Lower Position: 53.8"w x 54"d x 53.6"h (1366 x 1372 x 1362mm) Table in Upper Position: 53.8"w x 54"d x 34.6"h (1366 x 1372 x 879mm) Stainless steel Flexible aluminum ducting directs air to the product 2 recessed ceiling lights; 1 optional fiber optic light
Exterior Features	Exterior Dimensions Doors External Construction Windows Access Ports Door Lock Sound	69.2"w x 78.8"d x 103.9"h (1759 x 2003 x 2640mm) 4 automated locking doors, two on each side; each door opens 180° Painted steel construction with stainless steel trim (4) 18" x 18" (457 x 457mm) multi-pane windows, 1 in each door (1) 18" x 18" (457 x 457mm) multi-pane window in the front wall (4) 6" (152mm) round ports with phenolic covers, 2 in front and 2 in back Interlocking system prohibits system operation when any door is ajar Nominally 73 dB (A) at 1 meter
Control	Vibration/Temperature PLC Based, PC Operating System Safety	PLC based, PC Typhoon Manager Microsoft Windows Eurotherm temperature (independent safety) Thermal safety system prevents doors from opening during thermal extremes
Utilities	Electrical Air	380V, 400V, 440V, 3Φ, 50/60 Hz, 150A; 480V, 3Φ, 50/60Hz, 125A 96 SCFM Max @ 80 PSI (2.72 m3/min. at 5.52 bar)

¹ Greater load capacities can be designed; contact Qualmark for custom options.

² Measured on bare table; maximum gRMS level dependent on table configuration.

³ Measured -65°C to 85°C in open air 3" above table center; levels vary by make and model.

This document provides an overview of the Inferno features. System specifications should be requested from Qualmark.