

# DynaQual Test Labs

Where being stressed is a good thing

## Houston Based Independent Test Lab

### QUALIFICATION TESTING

We provide testing and expertise to help engineering teams increase reliability of electro-mechanical sub-assemblies.

### PRODUCTION SCREENS & ESS

Stress screening to assure quality control off the production line.

### RE-QUALIFICATION

Testing products following reconditioning to certify and field ready.



## WHAT DO WE OFFER

### HALT/HASS

Accelerated life testing,  
Production screening,  
Design Qualification.

### VIBRATION & SHOCK

Mechanical stress tests,  
System validation testing,  
Random, Sine, Classical  
Shock, and Pneumatic  
drop shock.

### THERMAL TESTING

Life Testing of  
electronics, temperature  
cycling, product screens  
with humidity and data  
logging.

### PRESSURE TESTING

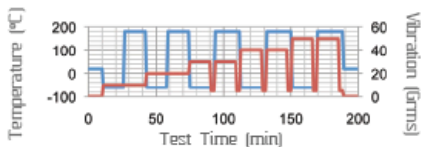
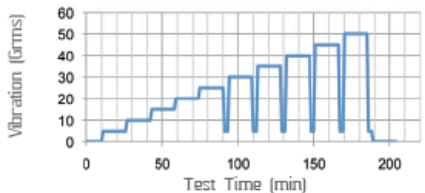
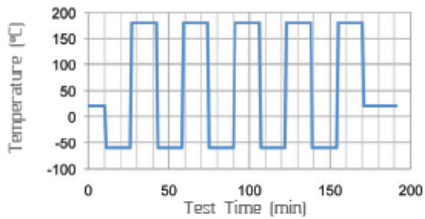
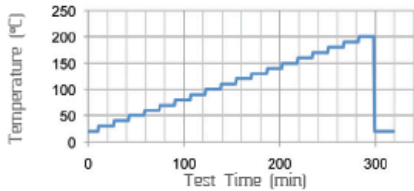
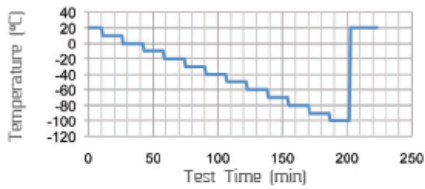
Pressure to 30,000 psi,  
Temperature up to  
+280°C, Simultaneous  
data logging of  
temperature and  
pressure.

### FLOW LOOP

Simulate flow for new  
product qualification,  
Field troubleshooting,  
Tool diagnostics,  
technology comparison.

### CUSTOM FIXTURE

Design and fabrication  
for one-off applications



## The HALT Process

### Step 1 • Cold Step Stress

- Starts at room temperature
- Cool down in 10°C steps to lower operating or destruct limit
- Dwell times are typically 15-20 minutes to stabilize product

### Step 2 • Hot Step Stress

- Starting at room temperature
- Heat up in 10°C steps to upper operating or destruct limit
- Dwell times are typically 15-20 minutes to stabilize product

### Step 3 • Rapid Thermal Cycling

- Cycle between the upper and lower operating limits
- Maximum rate of change the chamber is capable of
- Test a minimum of 5 cycles
- Dwell times are typically 15-20 minutes to stabilize product
- Important to monitor product

### Step 4 • Vibration Step Stress

- Entire test performed at room temperature
- Wideband random vibration applied in 5Grms increments
- Steps applied to operating or destruct limits reached
- Dwells of 15 minutes
- Utilize "tickle vibration" above 20Grms

### Step 5 • Combined Thermal with Vibration

- Rapid thermal cycling combined vibration step stressing
- Uses same limits as Rapid Thermal Cycling
- Vibration follows limits discovered in Vibration Step Stress
- Dwell times are typically 15-20 minutes to stabilize product
- "Tickle vibration" also used here

## WHY INDEPENDENT TESTING?

- Products failing at too high of rate?
- Reliability program in need of upgrade or outsourcing?
- Does testing need a quicker turnaround?
- Do you screen your product before going in the field?
- Warranty costs rising?

## THE DYNAQUAL ADVANTAGE

- Independent, unbiased test results
- Custom testing to increase reliability.
- Manufacturing screening to assure quality in the field.
- Life Cycle testing to decrease warranty work.
- Fast and efficient

**"Well Resolutions Technology uses DynaQual for vibration, shock testing, and qualification of electronic assemblies. The staff is very knowledgeable and professional. We strongly recommend them."**

- BORISLAV TCHAKAROV,  
VP TECHNOLOGY & COO WELL  
RESOLUTIONS TECHNOLOGY

### Equipment

HALT/HASS  
Qualmark Typhoon 4  
Inferno  
-100°C to +250°C  
80g(rms) vibration

Pressure Testing  
6" x 30" Hyperbaric  
30,000 psi and 220°C

Thermal  
Russells G-32 Elite  
Thermotron S-16C  
-70°C to +177°C  
Humidity and Data

Pneumatic Shock  
VST PSM-600-3030  
Duration: 0.5-30mSec  
10g to +1000g

Flow Loop  
3 1/2", 4", 6" liners available  
up to 350 gpm  
Drop Testers

Vibration  
ETS MPA714 ED Shaker  
15,400 Force-lbs  
5'x 2' Slip Table  
Vertical and Horizontal



# DynaQual

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