RE: ACCELERATED HIGH-POWER, ULTRASONIC-TESTING OF HI-TECH COMPONENTS AND PRODUCTS

For the companies involved in the production of high tech micro-electronic and micro-mechanic components and systems, It could be of interest to have a testing tool that can give very fast answer about how reliable certain products are, meaning, for instance, that for one minute of testing one would get a result equivalent to several weeks or months (or in some cases years) of testing using traditional testing methods. This is particularly interesting in the R&D phase regarding new products, when it is extremely profitable to have such accelerated testing possibilities, to get almost immediate answer whether certain product would resist years of future exploitation in the field. Instead of giving such products to specialized laboratories for testing (that can take weeks or months, and R&D team would wait for positive or negative results), it will be possible to get critical answers many times during the same working day, and to make number of important product and design improvements in the same time. Using proposed new method of accelerated high-power ultrasonic product-testing, it will enormously accelerate new products development time, and enable the Company to sell advanced, hi-tech, and fashionable products faster than competition, being sure that such rapidly-developed products will resist years of heavy duty operation.

The spectrum of possible applications and test capabilities of the above mentioned ultrasonic equipment is:

1. **Accelerated 3-D shock and vibration tests. 3-D random and uniform (x, y, z), mechanical excitation.**
2. **Ultrasonically accelerated mechanical and structural stability testing (of Watches, Micro-systems and Hi-Tech components).**
3. **Accelerated unscrewing bolts testing (Watch industry, Micro-Systems).**
4. **Ultrasonically accelerated material aging and stress release on cold.**
5. **Ultrasonically accelerated leakage and sealing test (in liquid environment).**
6. **Accelerated testing in humid, corrosive and salted environment.**

Applications: Hi-Tech, Watch-Industry, Microelectronics, Micromechanics, Military and Aerospace, Medical and chirurgical components and implants …

All of above mentioned tests and treatments could be realized in a specially designed ultrasonically vibrating chamber (preliminary prototype available for presentation).

a. **The solid piece to be tested (aged, stress released…) is hanging in the middle of ultrasonic chamber. Small metal balls (introduced in the same chamber) are randomly scattering and bouncing inside of the chamber, realizing uniform 3-D bombardment of the hanging solid piece (watch case, micro-mechanical system, high-tech component…). About 1 minute of such treatment corresponds to more than a week of traditional 3-D vibrational and shocks testing.**
b. **If ultrasonic chamber is filled with water (or some other liquid), leakage, sealing and corrosion resistance tests can be made (on watchcases, high-tech components, microsystems…). Also in**

very strong ultrasonic field in water, we can realize 3-D random vibrational testing, bolts unscrewing tests, stress release etc.

Everybody interested to see the presentation of above described ultrasonic equipment is welcome.

MP Interconsulting
Marais 36
CH 2400, Le Locle
Switzerland
+41-32-9314045
mpi@bluewin.ch
http://www.mpi-ultrasonics.com/