Fall 2002

news@TMC™

Technical Manufacturing Corporation

INSIDE

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Donation by TMC solves unusual vibration problem

More than half a million annual visitors will soon be able to view the amazing development of live embryos at San Francisco's Exploratorium thanks of two Vibration Isolation Laboratory Tables donated by TMC.

Part of the museum's Microscope Imaging Station, the exhibit features a time-lapse video, taken under a microscope, of a transparent zebrafish maturing from a single cell to a fully developed hatching egg. It is essential that the image remain completely motionless for the entire 61 hours of the embryo's development. Most imaging applications require only a few seconds of quiescent performance.

Gimbal Piston™ Isolator

"Our 63-500 Series Table is perfect for this application," said Steve Ryan, TMC's Vice President, Marketing. "The table provides extremely efficient vibration isolation of floor noise both vertically and horizontally. In addition to the isotropic nature of the isolation, the Gimbal Piston™ vibration isolation system works well with light mass loads and maintains the efficient isolator performance down to the low amplitude input levels typical of building floor

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The Palace of Fine Arts Building (1915) was built to celebrate the Pan-Pacific Expo, Panama Canal opening, and rebirth of San Francisco after the 1906 earthquake.

This photo shows the mezzanine level floor (where the exhibit is located) from the floor below and conveys a sense of the vibration problems inherent in the building.

TMC introduces Q-Damp™: Vibration Isolation at critical low frequencies

TMC introduces Q-Damp™, a building-block approach to active vibration cancellation. The modular Q-Damp was designed specifically for use with TMC's Gimbal Piston™ Air Vibration Isolation Tables and is ideal for electrophysiology research, metrology tools, AFMs, and optical microscope-based tools.

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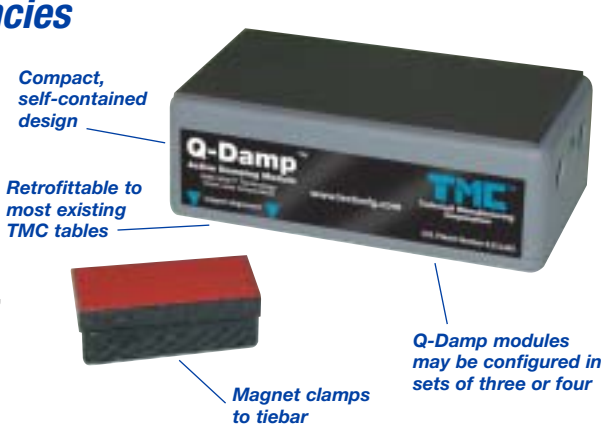

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Special Siskiyou Offer*

(continued from Back Cover)

to TMC customers placing online orders for Optical Tables, Breadboards and corresponding accessories through May 31, 2003. This promotion includes...

- ❑ all 75, 77, and 78 series Breadboards
- ❑ all 710, 770, 780, and 790 series Optical Tops
- ❑ all System 1 Modular Post Mount Supports (11-16 Series)
- ❑ all Optical Table accessories

When you purchase...

- ❑ $2,500 in value of any of the above TMC products, you are entitled to a $250 credit for positioning equipment
  or...
- ❑ $5,000 in value of any of the above TMC products, you are entitled to a $750 credit for positioning equipment
  or...
- ❑ $10,000 in value of any of the above TMC products, you are entitled to a $2,500 credit for positioning equipment through Siskiyou Design Instruments.

How it works...

A. Customer places an order through TMC's web site.
B. Once the order is placed, the customer is prompted to go to Siskiyou's web site.
C. Customer completes Siskiyou's order for positioning equipment.
D. After TMC ships your order, your Siskiyou positioning equipment will be sent to you.

*** Note:**
- ❑ This offer is for online domestic orders only
- ❑ Does not extend to custom products
- ❑ Cannot be combined with any other TMC products or promotion

TMC introduces Q-Damp™

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"TMC's passive pneumatic vibration isolation systems, such as the patented Gimbal Piston, provide excellent mid- to high-frequency vibration isolation with a low resonant frequency. For many applications, this passive attenuation is more than adequate," said Steve Ryan, TMC Vice President, Marketing. "But with the ever-increasing trend toward more precise research and manufacturing instrumentation and processes, many applications require enhanced vibration isolation at low frequencies."

Gimbal Piston isolators amplify slightly at the system resonant frequency, 1 to 2 Hz. Q-Damp improves upon this performance by suppressing the resonance and providing vibration isolation in this critical low-frequency range.

The modular Q-Damp works by sensing residual vibration on the isolated surface in the vertical direction. This information is processed using a patented technology and drives the compact electromagnets, which mount to the underside of the table top. An opposing magnet mounts to the table's tiebars. The restoring force provides three degrees-of-freedom vibration cancellation and up to 12 dB of isolation at 2 Hz, the resonant frequency of the passive system.

Q-Damp was co-developed by the R&D departments of Lord Corporation and TMC. Using patented NVX™ technology, it is tailored to fit easily and quickly onto TMC's 63-500 Series High-Performance Laboratory Tables. And because Q-Damp is a completely modular and self-contained part of the pneumatic vibration isolation system, it can be specified with a new system or retrofitted to an installed table.

TMC EXPANDS HEADQUARTERS TO ACCOMMODATE GROWTH

Technical Manufacturing Corporation (TMC) has completed construction at its Peabody, Mass. headquarters to increase office space, R&D facilities and demonstration rooms. The expansion, to 70,000 square feet, is the result of TMC's growth over the last few years.

Record demand for the company's precision vibration isolation systems caused a shortage in available office and laboratory space as TMC increased its staff over the last few years to accommodate its rapid growth. TMC products enable both basic research and cutting-edge industrial applications including semiconductor, electro-optics, and life science.

"We're taking a long-term perspective on the economy," said Ulf B. Heide, president, TMC. "As it improves, we will be positioned to move ahead efficiently with ample room to grow. Though some of the industries we serve have slowed, other market segments have experienced growth and the future prospects for our technology and equipment remain very bright."

"The relentless drive in industry toward greater precision has required us to expand our R&D efforts and develop more advanced products to meet our customers' needs," said Steve Ryan, TMC Vice President, Marketing. "Our expanded R&D facilities give our scientists and engineers the space required to continue to develop the most sophisticated vibration isolation systems commercially available."

The present site was acquired and the original building constructed in 1984. In the last decade TMC expanded both manufacturing and office space. The new addition was built by Connolly Brothers, Inc., Beverly, Massachusetts.

San Francisco's Exploratium

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vibrations. The table was specifically designed for use with optical microscopes such as the Zeiss Axiocam 200M inverted microscope used in this exhibit."

The time-lapse sequencing is accomplished by outfitting the microscope with a digital CCD camera attachment. The camera is controlled to take a photograph every six minutes. A sequence of 610 photos over the 61-hour period is compiled to create the time-lapse sequence that shows the development of the zebrafish embryo from a single cell through hatching.

The Imaging Station was a particularly challenging vibration isolation problem due to a combination of factors. Complicating the requirement that the image remain vibration free for 61 hours was the Exploratium's location. The museum is situated in San Francisco's Palace of Fine Arts Building, built in 1915.

The exhibit is located on the more recently constructed mezzanine level, an area appropriate for light office space but not at all suited to sensitive time-lapse photography. The corrugated steel floor is supported by lightweight steel beams and steel stanchions.

The problem of the lightweight, resonant, high-ambient-vibration floor is compounded by the excessive surrounding foot traffic. Approximately 600,000 people visit the Exploratorium every year. Most visitors are children who run and jump within feet of the exhibit. This "onboard" source of noise excites the light, resonant floor into a severe vibration environment, hardly suitable for precision microscopy.

The Microscope Imaging Station will be completed in the fall of 2003. In the meantime, as the exhibit evolves, visitors will be able to view time-lapse videos, observe the equipment in action, and participate in the exhibit's development.

"Our ultimate goal is to provide visitors with access to the standard user controls (x, y on the stage, focus, magnification, and lighting)," said Charles Carlson, Director of Life Sciences at the Exploratorium. "And we will display a host of other organisms, such as worms and fruit flies, which, like the zebrafish, provide spectacular images. In addition, we plan to extend our resources to scientists, so that visitors – classrooms, teachers, and the public – can observe actual experiments relevant to biomedical issues and general biology."

Major support for this project comes from the National Institutes of Health and The David and Lucile Packard Foundation, with additional support from Carl Zeiss Microscopes, Technical Instruments, and Universal Imaging, as well as Technical Manufacturing Corporation.

The Exploratorium was established in 1969 as an interactive science museum and, as such, has inspired hundreds of similar science centers around the world. It is a dynamic force and a leader in informal science, training mathematics and science students and teachers for more than 25 years.

www.techmfg.com

2003 TRADE SHOW SCHEDULE

- *Photonics West, San Jose, CA*
  January 28-30, 2003
- *Lab Automation, Palm Springs, CA*
  February 1-5, 2003
- *MicroLithography, Santa Clara, CA*
  February 25 & 26, 2003
- *BioPhysics, San Antonio, TX*
  March 1-5, 2003
- *Pittcon, Orlando, FL*
  March 10-13, 2003
- *Aerosense, Orlando, FL*
  April 22-24, 2003
- *3-Beam, Tampa, FL*
  May 9, 2003
- *Cleo, Baltimore, MD*
  June 3-5, 2003
- *Semicon West, San Francisco, CA*
  July 14-16, 2003
- *M&M, San Antonio, TX*
  August 4-7, 2003
- *Photonics East, Providence, RI*
  October 28-30, 2003

TMC ANNOUNCES THE RELEASE OF THE 2003 RESOURCE GUIDE

TMC's 2003 Resource Guide will feature the industry's most complete and versatile line of precision vibration isolation systems in an easy-to-use format. The comprehensive guide includes: a 26-page, detailed technical background section; optical tops, breadboards, and supports; laboratory tables and tabletop platforms; floor and sub-floor platforms and stands; active systems; accessories; standard and custom configurations.

The updated technical background section of the 2003 Resource Guide provides a primer on precision floor vibration isolation. Included are insights into noise measurements, theoretical and practical application of passive and active vibration isolation systems and an explanation of the specifications of table tops.

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15 Centennial Drive
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INSIDE

Visit us online @ www.techmfg.com for What's New at TMC including up-to-date product information.

Label

TMC has teamed up with Siskiyou Design Instruments

Siskiyou is a leading high-end designer and manufacturer of positioning equipment with 30 years' experience in the optics industry.

TMC has announced an agreement with Siskiyou Design Instruments of Grants Pass, Oregon, to offer TMC customers merchandise credits toward Siskiyou positioning equipment with the purchase of certain TMC optical tables, breadboards and accessories.

"This is truly a synergistic relationship," said Steve Ryan, V.P. of Marketing, TMC. "Our equipment is compatible and our customers use both companies' products. We are pleased to be able to offer TMC customers a savings on products that are essential to their work."

Since 1969, TMC has designed and manufactured precision vibration isolation systems and optical tables for sensitive research and manufacturing processes worldwide. Siskiyou is a leading high-end designer and manufacturer of positioning equipment, with 30 years' experience in the optics industry. It formerly supplied positioning equipment for a major optics catalog.

"We are pleased to be able to offer our customers a saving on products that are essential to their work."

This special promotion is valid for domestic orders placed through TMC's web site, www.techmfg.com. Siskiyou provides a diverse range of micromanipulators, microscope sample positioners, motion control systems and modular opto-mechanical building blocks to life science and photonics researchers. Unique among its competitors, Siskiyou is a vertically integrated company performing all design, manufacturing, anodizing and assembly in-house.

See page 2 for Special Offer details

TMC™

THE SPECIALISTS.

Use this reply card for more information on how the specialists at TMC can help solve your vibration isolation problems.

TMC™

❑ Please send me the new 2003 Resource Guide.

❑ Please have a TMC representative contact me.

❑ Send me information about your product applications for the following industry:

❑ Life Sciences ❑ Optics ❑ Semiconductor

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