

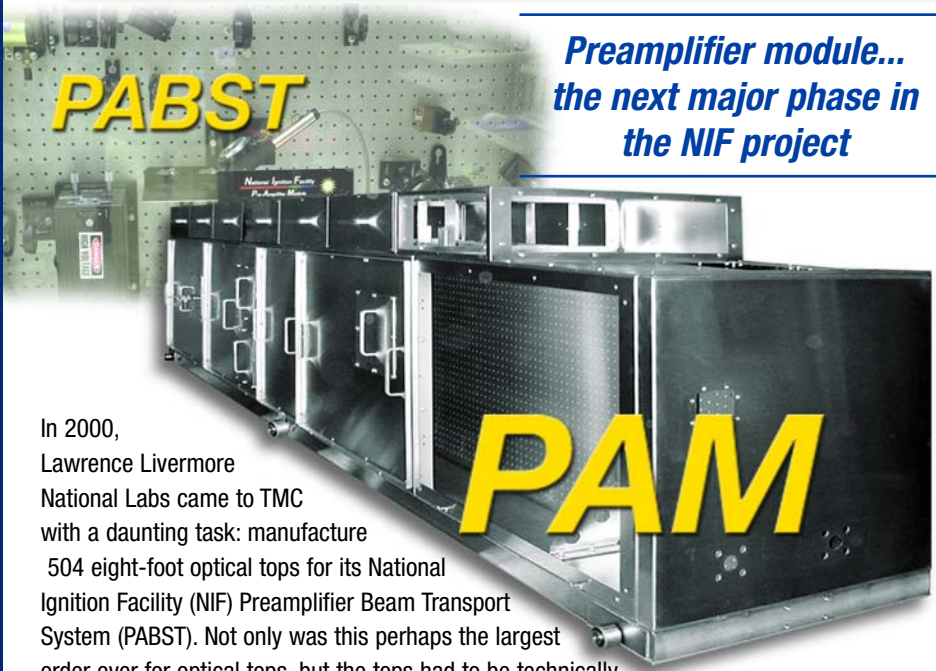
**TMC IS THE WORLD'S LEADING MANUFACTURER OF PRECISION VIBRATION ISOLATION SYSTEMS FOR LOW-AMPLITUDE BUILDING FLOOR VIBRATION.**

Whether your application is laser/optical research, life science research, or semiconductor manufacturing, TMC has a standard catalog product that will solve your vibration problem. Or, we will work with you to custom design and manufacture a system tailored to your unique requirements.

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**Visit us online @ [www.techmfg.com](http://www.techmfg.com) for *What's New at TMC* including up-to-date product information.**

**NIF and TMC Team Up Again**



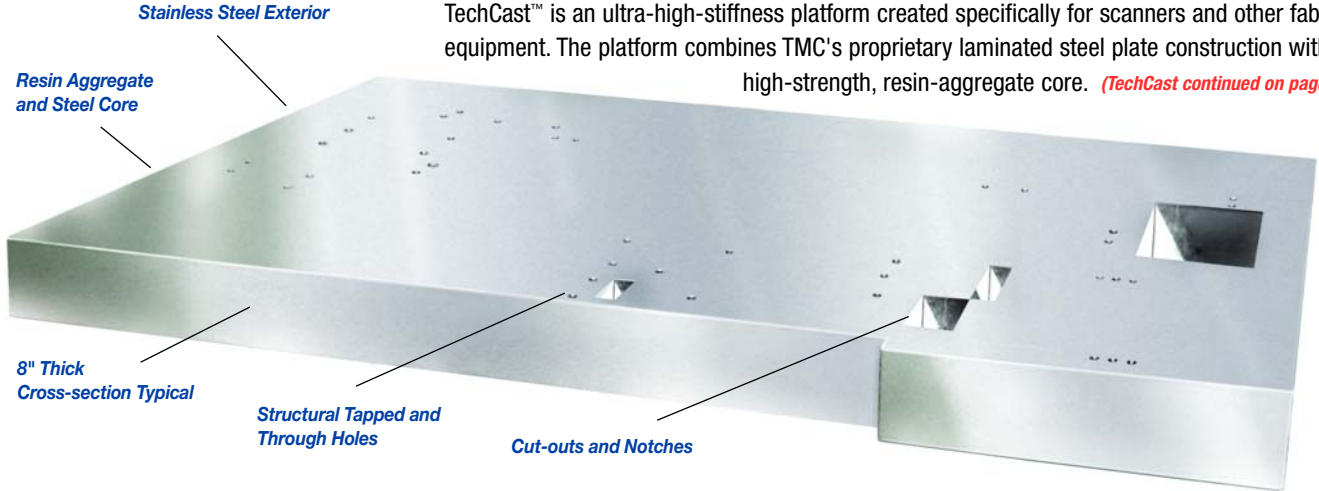
**Pre-amplifier module... the next major phase in the NIF project**

In 2000, Lawrence Livermore National Labs came to TMC with a daunting task: manufacture 504 eight-foot optical tops for its National Ignition Facility (NIF) Pre-amplifier Beam Transport System (PABST). Not only was this perhaps the largest order ever for optical tops, but the tops had to be technically flawless, meet stringent cleanliness, rigidity, and flatness specifications, be cost-effective, and be delivered quickly. TMC met the challenge.

Because of the overwhelming success of the earlier phase of the project, NIF has again chosen TMC for the project's next major phase: design and build the Pre-amplifier Module (PAM) optical tops and housings. *(NIF continued on page 4)*

**TechCast<sup>TM</sup> Platforms – New From TMC**

TechCast<sup>TM</sup> is an ultra-high-stiffness platform created specifically for scanners and other fab equipment. The platform combines TMC's proprietary laminated steel plate construction with a high-strength, resin-aggregate core. *(TechCast continued on page 3)*





**THE TMC 2003-2004  
GENERAL CATALOG FEATURES  
THE INDUSTRY'S MOST  
COMPLETE AND VERSATILE  
LINE OF PRECISION VIBRATION  
ISOLATION SYSTEMS**

This 120-page color catalog presents the company's full product line in an easy-to-follow 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; state-of-the-art isolators; accessories; and standard and custom configurations.

**Acoustic Enclosures and  
Precision Structures**

TMC's integrated steel and stainless steel acoustic enclosures are custom designed to provide maximum attenuation for precision instruments such as SPMs, microscopes, interferometers, and other metrology tools that are most sensitive in the low frequency range of 5 to 50 Hz.

*Acoustic Enclosure  
and Vibration  
Isolation system*



**Features:**

- stainless steel or powder-coated steel finish
- acoustic attenuation up to 40 dB
- fully integrated with our active or passive vibration isolators
- incorporates structural base frames, TMC CleanTop™ breadboards and isolators, RETMA racks, and other structural elements
- optional features: hinged panels, glass windows, electrical grounding, and casters
- custom designed for OEM applications
- Finite Element Analysis (FEA) capability



*For more information, visit [techmfg.com](http://techmfg.com), click Products-At-A-Glance, and go to Acoustic Enclosures.*

**The Matrix Reloaded**

**78 Series Breadboard – Behind the Scenes**

*When used to capture the pits and shadows of cloth, it generated virtual material indistinguishable from the real thing.*



*Surface Optics Corporation*

**It didn't have top billing** in the film, but TMC's 78 Series Breadboard played an important

role in stabilizing the equipment that created the realistic appearance of the virtual actors' clothing in *The Matrix Reloaded*.

Visual effects company ESC Entertainment had to deliver fully computer-generated "copies" of the principal actors for many scenes that are inter-cut with live-action footage.

ESC turned to Surface Optics Corporation for use of a bidirectional reflectometer to measure the bidirectional reflectance distribution function (BRDF) of samples of the actor's clothing, such as Agent

Smith's shirt and Neo's cassock. The SOC-200 Reflectometer, which is mounted to TMC's 78 Series Breadboard, is used to design the paints of Stealth aircraft so they absorb and reflect light waves in the "wrong" direction, making them invisible to radar. When used to capture the pits and shadows of cloth, it generated virtual material indistinguishable from the real thing.

The stiff, highly damped, stainless steel breadboard controls floor vibration and is the spine of the SOC-200's optomechanical system, allowing the optical components to maintain their positions relative to each other.

*For more information describing the BRDF process in detail, download a pdf at [www.virtualcinematography.org/publications/acrobat/BRDF-s2003.pdf](http://www.virtualcinematography.org/publications/acrobat/BRDF-s2003.pdf)*

## Special Siskiyou Offer Extended...

to TMC customers placing online domestic orders for Optical Tables, Breadboards and corresponding accessories through June 30, 2004. 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](http://www.techmfg.com/SiskiyouDesignInstruments).

For complete details see [www.techmfg.com](http://www.techmfg.com)

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## SEE US AT THESE UPCOMING SHOWS

- **Photonics West, San Jose, CA**  
January 27-29
- **Lab Automation, San Jose, CA**  
February 2-4
- **BioPhysical Society, Baltimore, MD**  
February 15-17
- **MicroLithography, Santa Clara, CA**  
February 24-25
- **Pittcon, Chicago, IL**  
March 8-11
- **Defense and Security (formerly Aerosense), Orlando, FL**  
April 13-15
- **CLEO, San Francisco, CA**  
May 18-20
- **3-Beam (EIPBN), San Diego, CA**  
June 1-2
- **Semicon West, San Francisco, CA**  
July 12-14
- **M&M, Savannah, GA**  
August 1-5
- **OSA Annual Meeting, Rochester, NY**  
October 12-13
- **Neuroscience, San Diego, CA**  
October 23-27
- **OSE (Photonics East), Philadelphia, PA**  
October 24-29

## TechCast™ Platforms – New From TMC

(continued from page 1)

### Features:

- Modular design. Can be combined with a variety of TMC stands to accommodate any floor height
- Pre-engineered in close cooperation with equipment manufacturers to ensure spec compliance and utility compatibility
- Engineering support. Simply specify the tool, floor height and sub-floor type. We do the rest.
- Support stands compatible with a variety of floor heights, sub-floor geometries and “pop-out” patterns
- Cleanroom-compatible construction
- Precision manufacturing method assures a much flatter surface than concrete.
- Part of the TMC Quiet Island® family of products

### Benefits:

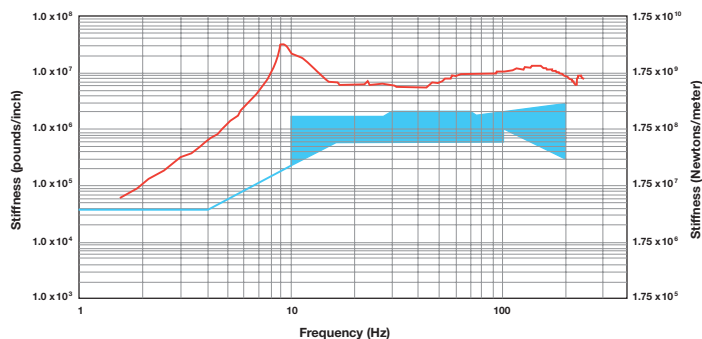
- Cleaner construction than concrete, all stainless steel exterior. Top may be drilled and tapped.
- Easier and less expensive to install than concrete
- Support stand system does not “block-out” complete tool footprint.
- Portable, may be moved as fab requirements change
- Lower cost of ownership (reusable components)

TechCast™ is custom designed to meet tool and site requirements and is guaranteed to

meet commercial scanner floor stiffness specifications (upon review of site-specific floor data). In fact, the platforms are designed to exceed the stiffness of the fab floor to which they are typically mounted.



### Vertical Dynamic Stiffness



### LEGEND

- Actual measured TMC TechCast scanner platform in a semiconductor fab.
- Minimum/maximum envelope of current commercial scanner floor stiffness specifications as a function of frequency. This is based on TMC's understanding of the manufacturers' specifications as of December 2003. TMC is not responsible for the accuracy of, or changes to these specifications.

*This specification is incomplete. For more complete specifications visit <http://www.techmfg.com/Products/FloorPlatforms/techcast.htm>*

**Vibration Solutions:**  
quiet work surfaces for precision  
research and manufacturing

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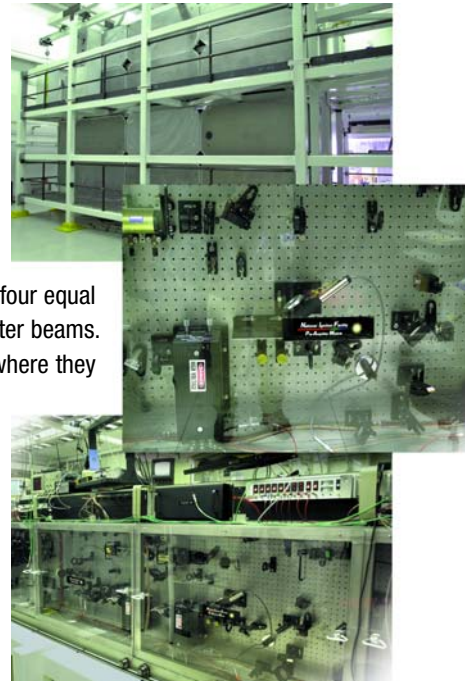
Right, view of upper portion of target chamber with beam tubes penetrating through the ceiling. (Photo courtesy of Lawrence Livermore National Labs)



**NIF and TMC Team Up Again** (continued from page 1)

**TMC** will design and build a complex, 15-foot-long, "T"-shaped, coupled optical table system with an integrated stainless steel housing to control acoustic noise, drafts, dust, and electromagnetic interference. This optical table structure will support the PAM optics. PAM has a total of 48 units that receive a "seed-type" pulse from the Master Oscillator Room and perform certain amplifier functions. The 20-joule output from each PAM goes into ISP, which is a pulse-shaping function.

In the project's earlier phase, TMC optical tops were used to support the optics in the PABST. The PABST splits the PAM beams into four equal beams, creating a total of 192 18-inch-diameter beams. These pulses then enter the Main Laser Bay where they undergo multiple pass amplifications in the slab laser amplifiers before passing on to the target chamber.



Above, in 2000, TMC was awarded a contract for over 500 eight-ft long CleanTop™ Optical Tops to support optics in the PABST Assemblies, part of the National Ignition Facility. This was likely the largest single order for Optical Tops ever successfully completed.

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