

Specific Capabilities

Finite Element
Code Capability

Analytical Tools

COSMOS/M version 2.5
normal modes static [linear and
nonlinear] dynamic thermal
GEOSTAR pre/post processor

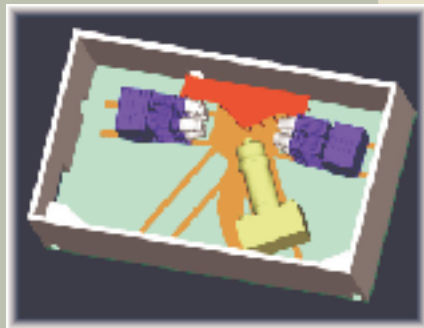
MSC/NASTRAN version 7.0
normal modes static [linear]
dynamic [linear] MSC/PATRAN
version 7.0

Pro/ENGINEER
2000i²
Design & 3-D
Solid Projection
Capability

3-D Mechanical Design Suite
with design and integration
capabilities

Pro/MECHANICA for initial
design studies

3-D Solid projection to aid
visualization



Working for the U.S. Army
Missile Command and Space
and Missile Defense Command,
Physitron has performed
analyses for structural
response and thermal
effects, developed innovative
mechanical testing
procedures, and designed
complex mechanical
systems.

In one project, for example,
Physitron analyzed x-ray
loading on optical
components which showed
deformations as small as
a micron on the surface
of a mirror.

Physitron personnel have
a combined experience
level of over 65 years
in structural design,
analysis, and testing.
Below are several
representative projects
and programs in which
Physitron personnel have
been involved.

PAC-3 LFT&E Program

Structural Modeling of
Avenger/Heavy HMMWV

Structural Analysis, Design
of Gas Gun Testing of
Projectiles

Nuclear Thermal Testing

Ballistic and Fragmentation
Testing

Internal Optics Testing in
Underground Nuclear Test

Design and Analysis of
Pressure Sensors

Typical Assessment of X-Ray
Effects on LWIR Cryo-Mirrors



Design



Test



Analysis



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Specific Capabilities

PAC-3 LFT&E Program

- Lethality testing at HAFB high-speed sled track
- Failure analysis of hyper-velocity projectiles
- Failure analysis of sled hardware
- Instrumentation of sled vehicles
- Data reduction and analysis of results
- Engineering designs for failure prevention



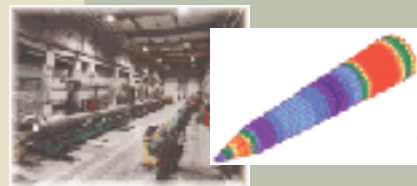
Structural Modeling of Avenger/Heavy HMMWV

- Stress analysis
- Structural response analysis
- Failure analysis
- Nuclear/conventional blast on structure such as vans, launchers, etc.



Structural Analysis, Design and Gas Gun Testing of Projectiles

- Lethality support [analysis, design and testing]
- Finite element modeling
- Implusive load and stress analysis
- Failure analysis
- Iterative re-design process



Nuclear Thermal Testing

- Material testing at flashlamp facility
- System testing at Large Blast Thermal Simulator [LBTS] with Thermal Radiation Source [TRS]
- Test program planning
- Test requirements
- Test data analysis
- Survivability documentation



Ballistic Fragmentation Testing

- Test program planning
- Test requirements and pre-test calculations
- Instrumentation requirements
- Data analysis
- Blast overpressure testing of shelters, etc.
- Ballistic armor testing on shelters
- Fragmentation testing



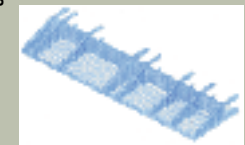
Internal Optics Testing in Underground Nuclear Test

- Survivability support - analysis, design and testing
- X-ray deposition [PUFF/TIGER/FSCATT]
- Finite element/difference modeling
- Stress analysis
- Survivability characterization



Military Truck ISO Cargo Bed Design and Analysis

- Designed for minimized weight
- Designed for increased payload
- Designed for ISO lock compatibility
- Oshkosh Truck Company MTRV program
- Application of finite element techniques for analysis, design, and structural optimization
- Direct interface with fabricator [Ridge Manufacturing] to achieve best fabrication techniques and materials



Typical Assessment of X-Ray Effects on LWIR Cryo-Mirrors

- X-ray deposition calculation [PUFF]
- Finite element modeling, both thermal and structural
- Heat conduction analysis [NASTRAN]
- Deformation and stress analysis [NASTRAN]
- Optical assessment
- Survivability characterization

