



**Phoenix Analysis &
Design Technologies**

Outline of Capabilities

Phoenix Analysis and Design Technologies (PADT) is a provider of world class Mechanical Engineering Services. The company combines leading edge Computer Aided Engineering (CAE) Technology with experienced and motivated engineers to deliver solutions to customers in a timely and affordable manner. Many customers know the company for one or two particular services that they have used, but can be unaware of the diverse offering that is available. This "Outline of Capabilities" has been combined as a high level overview of what PADT has to offer:

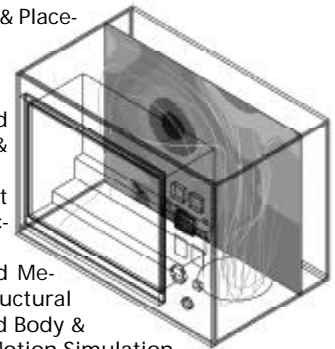
Design & Solid Modeling

- **3D Solid Modeling**
 - 3D Parametric Models
 - Models Based on Existing 2D Drawings
 - Models for use in Downstream Applications Like Rapid Prototyping, Machining, or Analysis
 - Repair and Modification of Existing 3D Models
- **Conceptual Assembly Models**
 - Virtual "Mock-ups"
 - Preliminary Design Models
 - Concept Studies
- **Reverse Engineering**
 - Hand Measurement
 - CMM Data
 - 3D Scanner Data
- **Consumer Product Design**
 - Design Based Upon Industrial Designer Input
 - Ergonomic Studies
 - Plastic Part Design for Manufacture
 - Design Based Upon Cost, Safety and Durability
- **Turbo-Machinery Design**
 - Complete subassembly design
 - Rig Design
 - Custom Pumping & Compressor Design
- **Machine Design**
 - Complete System Design of Machines
 - Component & Subassembly Design
 - Mechanism Design
- **Systems Integration & Packaging**
 - Part Finding Based Upon Customer Specification
 - Tube and Wire Layout
 - System Performance Optimization
 - Interface with Controls Design
- **Detailing & Drafting**
 - 2D Detailing to Customer Specifications
 - 2D Detailing to ANSI Standard
 - 2D Layouts
 - Assembly Drawings, BOM's, Etc...



Analysis & Simulation

- **Structural Analysis**
 - Stress Analysis
 - Deflection Analysis
 - Factor of Safety Analysis
- **Non-Linear Structural Analysis**
 - Material Plasticity & Creep
 - Large Deflection Behavior
 - Non-Linear Contact Between Objects
 - Transient Loading
 - Dynamic Structural Analysis
 - Impact Simulation
 - Drop Shock Simulation
- **Vibration Analysis**
 - Natural Frequency Determination
 - Pre-Stress Effects on Modes
 - Forced Vibration
 - Random Vibration
 - Rotor Dynamics
- **Heat Transfer Analysis**
 - Steady-State Analysis of Components and Assemblies
 - Transient Analysis
 - Calculation of Heat Transfer Coefficients
 - Radiation
- **Motion Analysis**
 - Kinematic Simulation of Mechanisms
 - Dynamic Simulation of Rigid Body Assemblies
 - Interaction Between Mechanisms and Control Systems
- **Computational Fluid Mechanics**
 - Flow through ducts, enclosures & piping
 - Mixed gas flow
 - Particulate Behavior
 - Combustion Simulation
 - Primary & Secondary Turbo-Machinery Flow
- **Electro-Magnetic Simulation**
 - Assessment of System Electro-Magnetic Fields
 - Magnet Design & Placement
 - RF Simulation
- **Multi-Physics**
 - Combined Fluid Mechanics & Heat Transfer
 - Combined Heat Transfer & Structural
 - Combined Fluid Mechanics and Structural
 - Combined Rigid Body & Flexible Body Motion Simulation
- **Other**
 - Acoustics
 - Piezo-Electrics
 - Optimization
 - Sensitivity Studies
 - Trade Studies
 - Correlation to Test



**"We Bring
Dimension to
Your Ideas"**

**Phoenix Analysis &
Design Technologies**

7755 S Research Dr.
Suite 110
Tempe, AZ 85284
Tel: 480 813-4884
Fax: 480 813-4807
www.padtinc.com

Rapid Prototyping & Manufacturing

- **Stereolithography (SLA)**

- High Quality
- Good Surface Finish

- **Fused Deposition Modeling (FDM)**

- ABS Plastic Parts
- Durable

- **3D Printing (Genisys)**

- Low Cost



- Concept Models

- **Selective Laser Sintering (SLS)**

- High Quality
- Very Strong
- Plastic, Copper, Aluminum, Steel

- **RTV Molding**

- Multiple Copies

- High Quality, Painted & Textured
- Cost Effective

- **Models & Mock-ups**

- Best of Technology & Craftsmanship
- Large Mock-up
- Durable

- **Vacuum Forming**

- Cost Effective
- Large, Flat Parts
- Colored & Transparent Plastics

- **Prototype Machining**

- Quick Turnaround
- Engineering Staff to Back Up
- High Quality/Low Volume



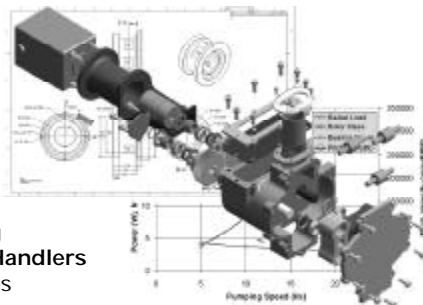
Systems R&D

- **Power Systems**

- Power Generation Systems
- Fuel Cells
- Hybrid Systems
- Accessories for Power Systems
- Performance Assessments
- Packaging
- Component Matching

- **Custom Fluid & Gas Handlers**

- Compressors & Pumps
- Turbines
- Design to Specified Performance



- High Efficiency
- Scalable & Tunable

- **Space Systems**

- Structures & Mechanism Design
- Electronic Packaging
- Systems Engineering
- Trade Studies

- **Vacuum Systems**

- High Vacuum Process Devices
- Semiconductor Processing Equipment
- Industrial Processing Equipment
- Subsystems & Components



Testing

PADT Provides A Comprehensive Testing Solution by Partnering with Dynamic Labs. The close technical and marketing relationship delivers a complete solution to the customer. PADT & Dynamic Labs currently offer the following testing capabilities:

- **Vibration**

- Sine, Random, Sinusoidal Dwell, Random, Gunfire

- **Shock**

- Drop, Bench Handling, SRS, Pyrotechnic, Classical, Half Sine Pulse, Sawtooth, Trapezoidal, Haversine, Long Duration, Transportation

- **Stress/Strain**

- Tensile, Flexural, Cycling, Fatigue, Gage Placement, Load, Structural

- **Performance**

- RPM/Velocity, Power, Pressure Rise/Drop, Flow, Noise, Leaks

- **Climatics**

- Thermal, Humidity, Thermal Shock, Temperature over Vibration, Dust, Salt Fog, Rain

Productivity Solutions

- **Custom Software Tools**

- Specialized Analysis Packages
- Customizing of CAD Systems
- Customizing of Analysis Systems
- Geometry Creation and Modification Tools
- Performance Modeling Tools
- Conversion of Older Software Products
- Graphical User Interface Design and Implementation
- Engineering Database Systems

- **Training**

- Customized ANSYS Classes

- Leveraging Associative, Feature Based Solid Modeling
- ANSYS Customizing & Automation
- Finite Element Analysis Best Practices

- **Seminars**

- Integrated Product Development using CAE Technologies
- Analysis Driven Design
- Effective Process Automation
- Rapid Prototyping Technologies

- **Consulting**

- Improving Enterprise Engineering Efficiency
- Effectively Implementing CAE Technology



"We Bring Dimension to Your Ideas"

Phoenix Analysis & Design Technologies

7755 S Research Dr.
Suite 110
Tempe, AZ 85284
Tel: 480 813-4884
Fax: 480 813-4807
www.padtinc.com

PADT's Experienced Staff is Ready to Work With You.

- Design & Solid Modeling
- Analysis & Simulation
- Rapid Prototyping & Manufacturing
- Testing
- System R&D
- Productivity Solutions