



## VIBRATION CALCULATIONS - 1

- ◆ Spectra Quest, Inc.  
8227 Hermitage Road  
Richmond, Virginia 23228  
Phone: (804) 261-3300  
Fax: (804) 261-3303  
E-mail: [info@spectraquest.com](mailto:info@spectraquest.com)  
Website: <http://www.spectraquest.com>



# Product Highlights

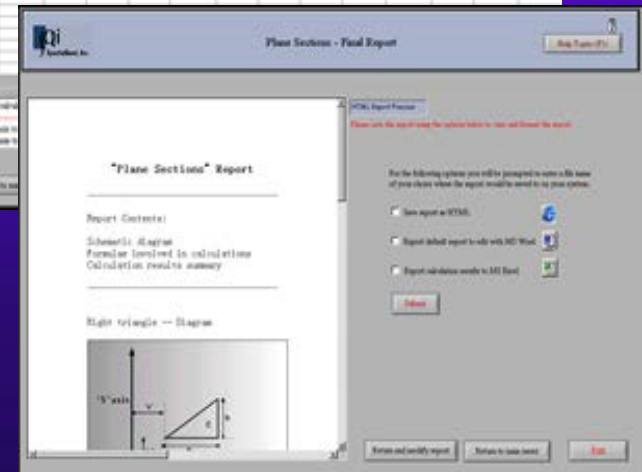
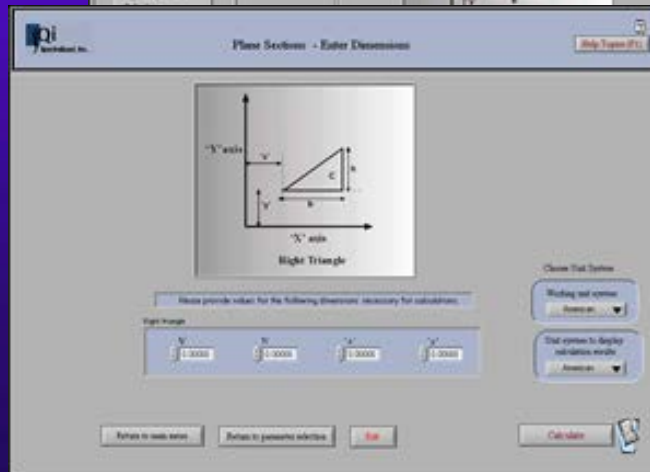
- ◆ *Easy to use graphical interface*
- ◆ *Extensive graphical utilities including figurative representations and animation of mode shapes*
- ◆ *Choice of calculations in American/SI unit systems*
- ◆ *Listing of common Engineering material properties used in calculations*
- ◆ *Report generation and editing utilities including data export to MS Word, MS Excel and HTML formats*
- ◆ *Description of all formulae involved in calculations*
- ◆ *Provides access to saved calculations and reports for viewing at any later time.*

# Product Details-Plane Areas

- ◆ Vibration analysis calculations covering fundamental topics in:
  - *Plane area sections*
    - Calculation of Area
    - Centroid
    - Rectangular and polar area moment of inertia about the centroidal and translated parallel 'x' and 'y' axes



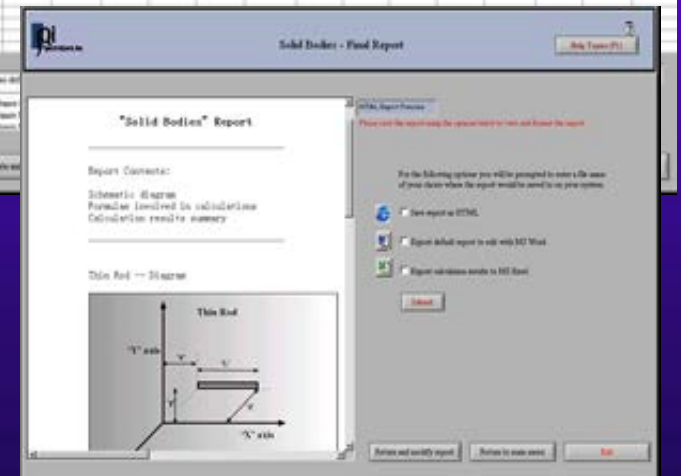
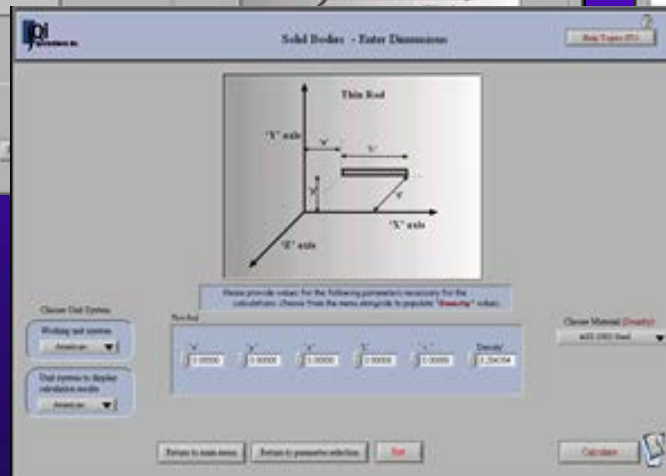
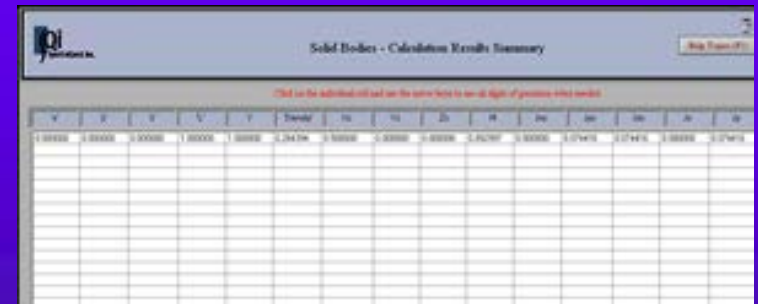
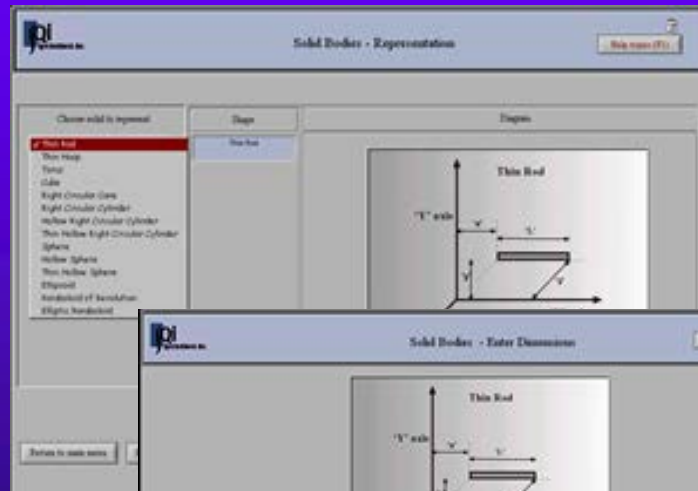
Area	Centroid X	Centroid Y	Moment of Inertia Ix	Moment of Inertia Iy	Polar Moment of Inertia Jc	Centroidal X	Centroidal Y	Centroidal Ix	Centroidal Iy	Centroidal Jc
10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000



# Product Details-Solid Bodies

- **Solid Bodies**

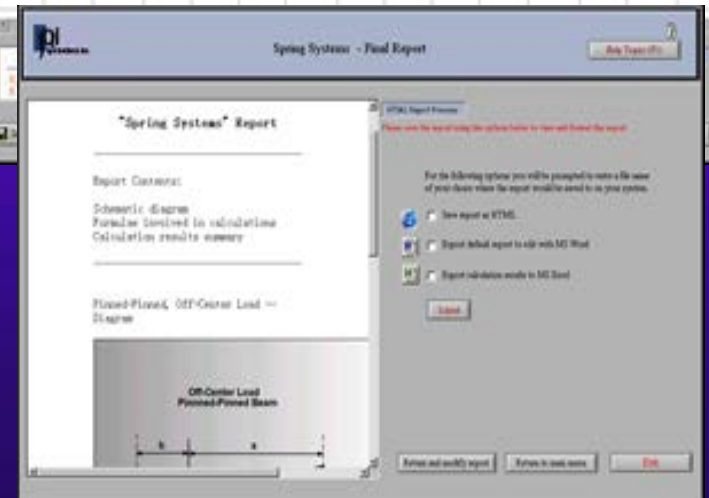
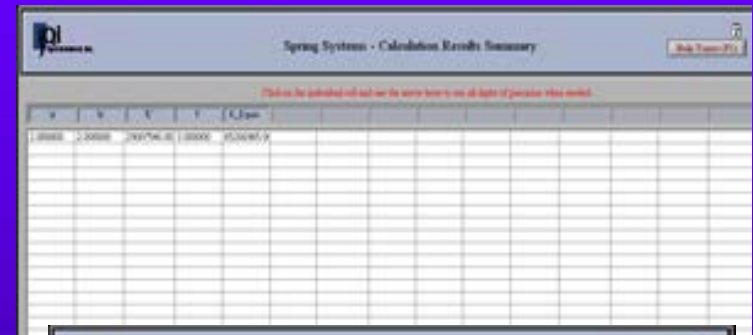
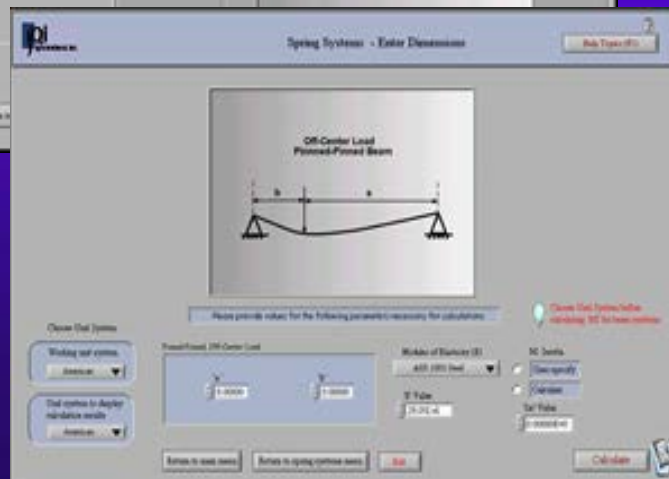
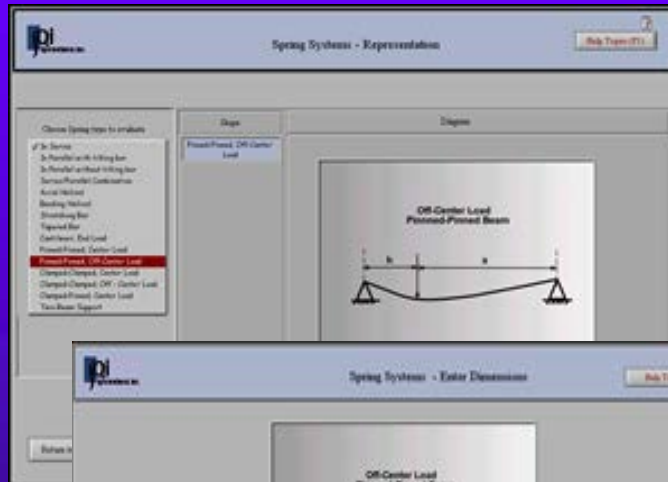
- Calculation of Mass
- Center of Mass
- Rectangular and polar mass moment of inertia about the centroidal and translated parallel 'x', 'y' and 'z' axes



# Product Details-Equivalent Springs

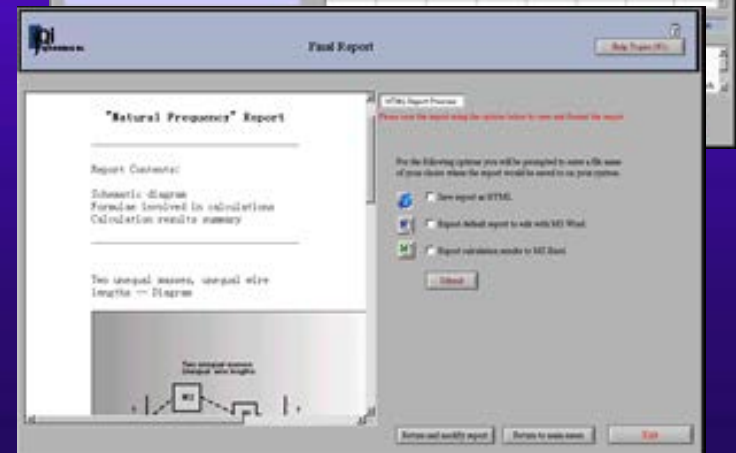
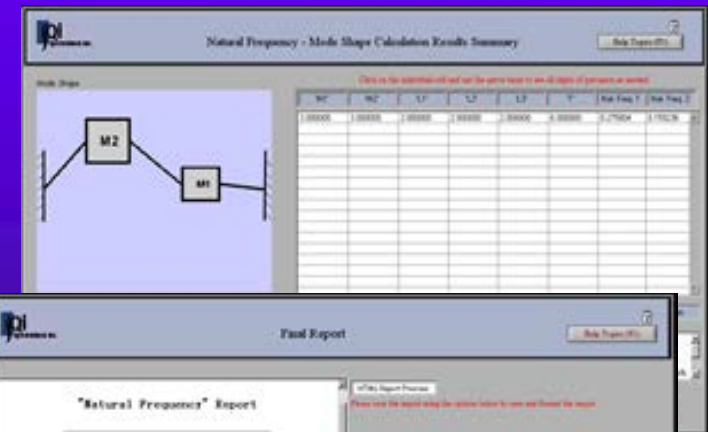
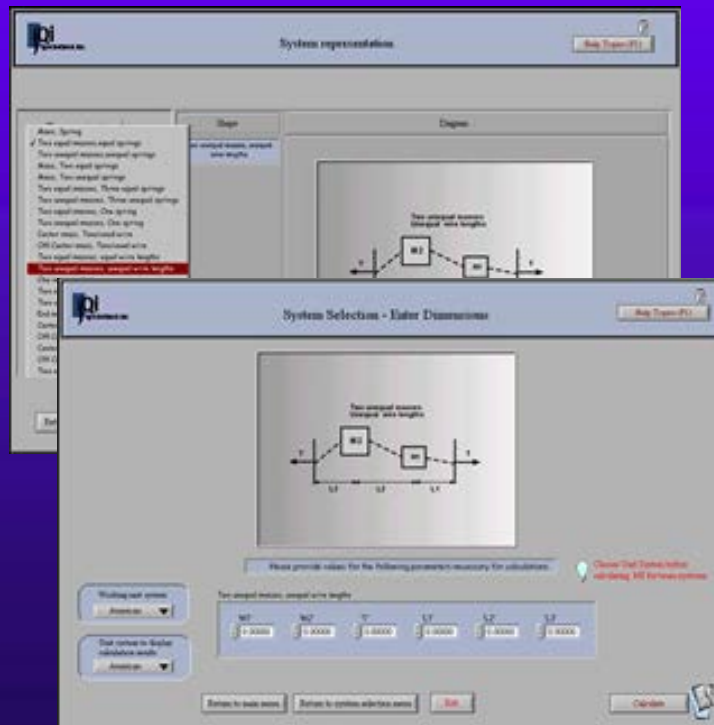
- *Spring Constants*

- Evaluation of equivalent spring constants for several single and 2-DOF systems including axial and helical springs, bars and beams.



# Product Details-Natural Frequency/Mode shapes

- **Natural Frequency/ Mode shape estimation and representation**
  - Calculation of natural frequency values for several single and 2-DOF systems including mass-spring combinations, tensioned wire systems, beam and pendulum systems
  - Animation and representation of associated mode shapes.





# Benefits

- ◆ Easy and fast calculation of fundamental vibration properties for commonly encountered mechanical engineering systems.
- ◆ Graphical interface for depicting and understanding different mode shapes.
- ◆ Schematic diagrammatic representation of all systems for enhanced understanding.
- ◆ Easy access to formulae involved in the calculations.
- ◆ Calculations and reports generated kept track through unique session ID's for future reference if needed.
- ◆ Reporting feature with facilities for exporting to popular word processing software's.
- ◆ All in one package that helps to determine the natural frequency of several systems starting from the very *basics or directly* as required.