

Mode Analysis System

Mode analysis

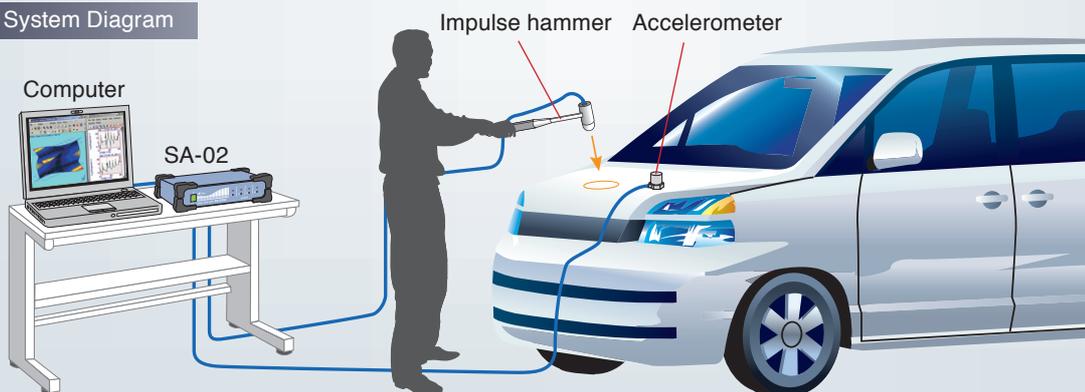
In order to control vibrations of structural objects or to establish a fatigue life prognosis, knowing the natural frequency, vibration mode, and similar characteristics is a key requirement. The finite element method and other numeric analysis methods have been commonly employed to predict vibration conditions. Mode analysis is a useful tool for validating such predictions made with the finite element method.

For mode analysis, the target object is struck with a hammer or a similar tool, and the resulting vibrations are picked up by a piezoelectric accelerometer. The data are then recorded and analyzed by the system. The acquired time data are transformed into transfer functions, i.e. frequency data through FFT analysis. Inherent values (natural frequency, natural damping ratio, eigenvector) are determined by the software with the curve fit method, and animation is used to visualize behavior at various frequencies.

Mode analysis direct link software

Previously, importing measured data into a mode analysis system was a complex process involving many steps. The mode analysis direct link software greatly facilitates the procedure by managing post-measurement analysis and the creation of animated representation in a single flow. First, shape-defined 3D shape data are imported. The measurement points and direction for each channel then are displayed as arrows, for pre-measurement checking. After measurement, transfer functions and time data including measurement point and direction information are saved as dedicated data files for the mode analysis software. The data files are then utilized by the mode analysis software to perform analysis including animation etc.

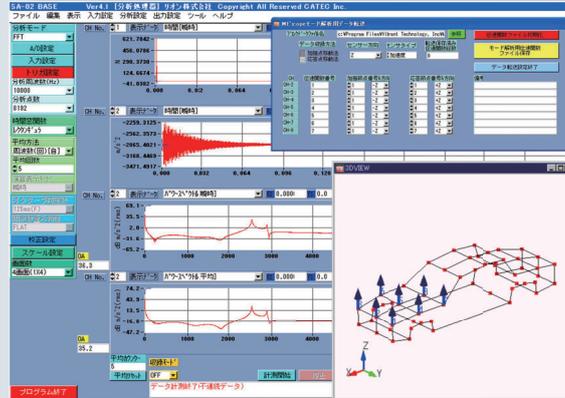
System Diagram



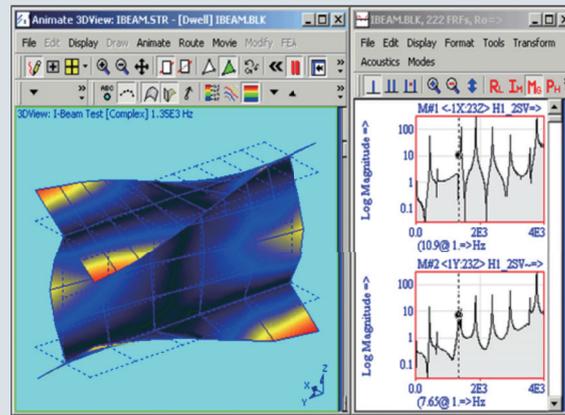
Equipment configuration

Product	Model	Quantity
4-Channel Signal Analyzer	SA-02A4	1
Computer for SA-02		1
Mode Analysis Software (This software is a product of Vibrant Technology Inc.)	ME'scopeVES	1
Mode analysis direct link software for SA-02		1
Impulse hammer (e.g. Dytran 58 series)		1
Piezoelectric Accelerometer	PV-90T/91C/97I/41	1

Measurement result examples



Measurement in progress screen



Measurement result screen

Application examples

Vibration condition examination of structural objects, products, components, etc.

Applicable standards, reference material

None



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