

SO Analyzer

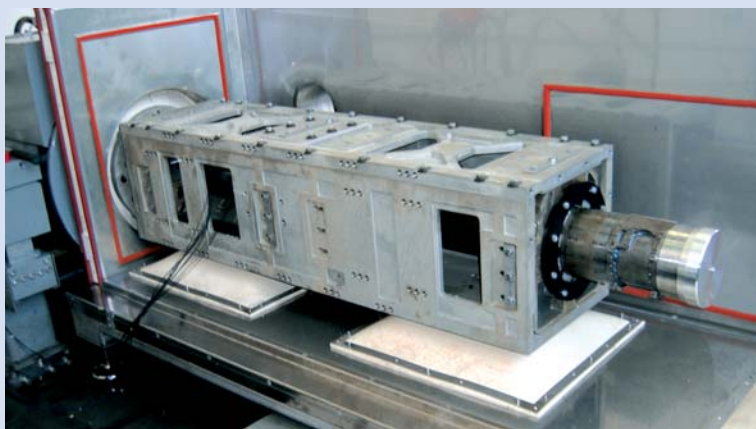
Noise and Vibration Measurement,
Analysis and Reporting



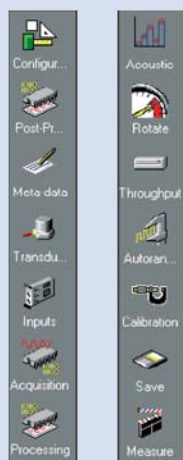
SO Analyzer

With the SO Analyzer, m+p international has developed an engineering tool that takes full advantage of the constant improvements in hardware and software technologies.

It is the perfect choice for accurate and efficient noise and vibration measurements, third-party data import/export, data analysis and reporting of your results in a single package.



Full modal analysis on a rocket engine



■ Comprehensive Application Coverage

A large number of measurement and analysis software options cover the widest range of applications in today's dynamic signal analysis (DSA):

- real-time FFT and time history data acquisition
- modal analysis (incl. MIMO, ODS, SDOF, MDOF)
- impact testing
- rotating machinery data acquisition and analysis
- acoustic analysis
- vibration control analysis
- vehicle pass-by-noise measurements

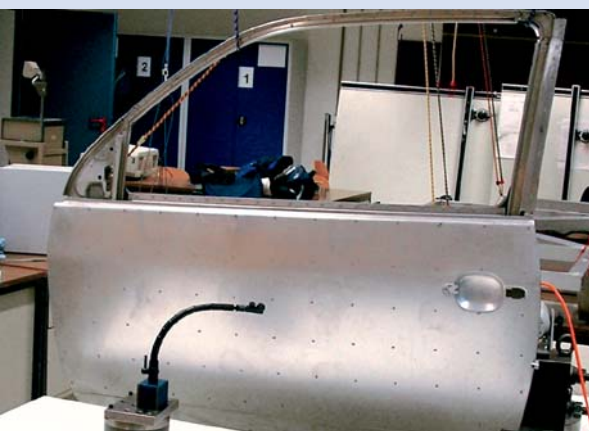
SO Analyzer runs on a desktop PC or laptop and is designed for noise and vibration applications in the field, in the test laboratory and in the office. It supports a wide range of measurement frontends (USB, PCI, PXI, VXI) enabling applications from 4 to hundreds of input channels. Software and hardware modularity allows you to tailor the SO Analyzer to your specific needs, meaning maximum performance for minimum investment and a common user interface across all applications.



Perfectly suited for all portable noise & vibration measurement and analysis applications



Testing in a drop tower



Modal testing of a car side door

■ Intuitive Operation under Microsoft Windows

SO Analyzer was developed in close co-operation with universities and industry experts. Easy operation was one of the key development objectives. Therefore the SO Analyzer has a Microsoft Windows like user interface which simplifies the integration into your company's network system. Test data and setups from multiple sources can be stored into one common workspace or multiple workspaces that also allow creation of substructures to manage different data views or analyze data sets. Drag & drop operation helps to exchange data quickly between workspaces, thus enabling simple or complex data structures to be saved as one project.

■ Active Documents

The architecture of the SO Analyzer is fully ActiveX compliant, allowing you to copy and paste all displays including the data into Microsoft Word or PowerPoint. With the free SO Viewer in the background, all properties such as data rescaling, reformatting, cursors, animation, etc. stay active in these applications. You can easily adjust the data presented instead of looking at static bitmaps and share the active documents with your colleagues.

■ Safe User Guidance

Integrated wizards will guide you step by step through the set-up of all measurement parameters, simplifying use and minimizing setup errors.

■ User Programming

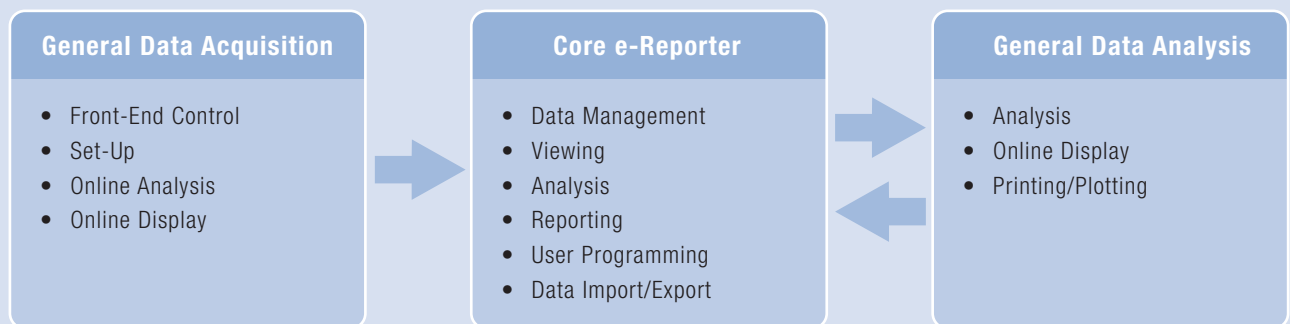
The embedded Visual Basic-like user programming allows you to automate repetitive tasks and implement your own functions.

Core Concept

The SO Analyzer enables the engineer to browse large sets of test data and analysis results regardless of origin, format or location.

For ease of use, you can do real-time data acquisition, import third-party N+V data formats, analyse the results and create your reports from within a single application.

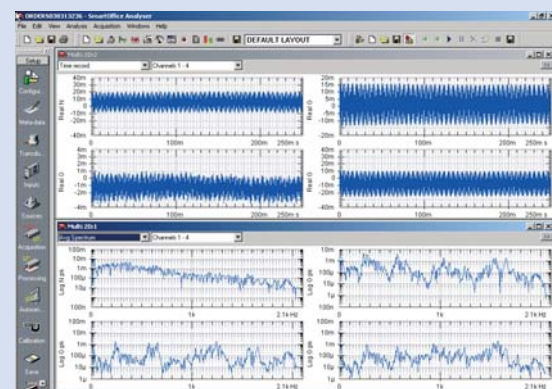
SO Analyzer is made up of three core modules for General Data Acquisition, Central Management and Reporting and General Data Analysis.



■ General Data Acquisition

The General Data Acquisition module acquires multi-channel FFT and time history data while displaying in real-time, general FFT analysis as well as optional structural analysis, rotating machinery, acoustics and many other applications.

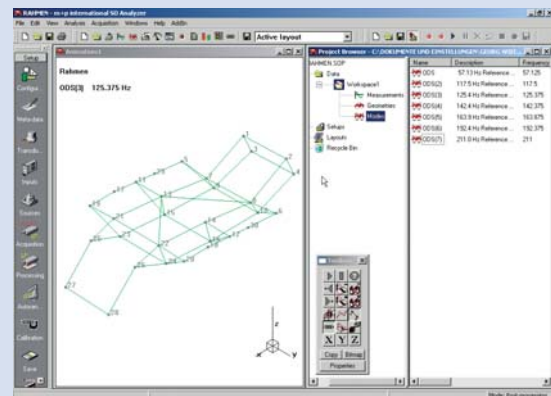
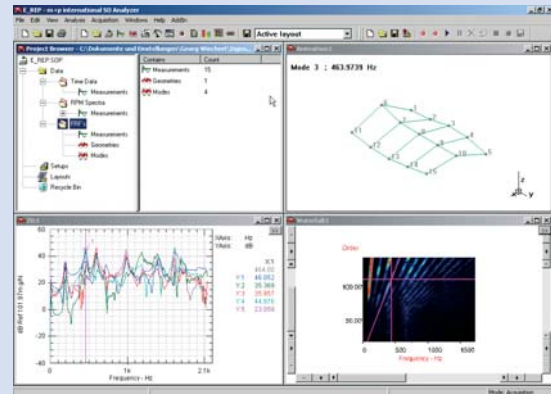
- Support of several industry-standard USB, PCI, PXI and VXI measurement hardware platforms, portable and laboratory solutions, 4 to high-channel count applications
- Continuous or triggered measurements
- Multiple Input/Multiple Output (MIMO) measurements
- Online FFT analysis
- Online analysis and display of all intermediate results



■ Core e-Reporter

e-Reporter is responsible for the central management of all data. This core application includes viewing, reporting and editing previously acquired data, a calculator and a Visual Basic based programming module for user customization. Should you have noise and vibration measurement systems from other manufacturers, you can benefit from the exceptional compatibility of the SO Analyzer: The e-Reporter file translator allows you to import data from many other sources.

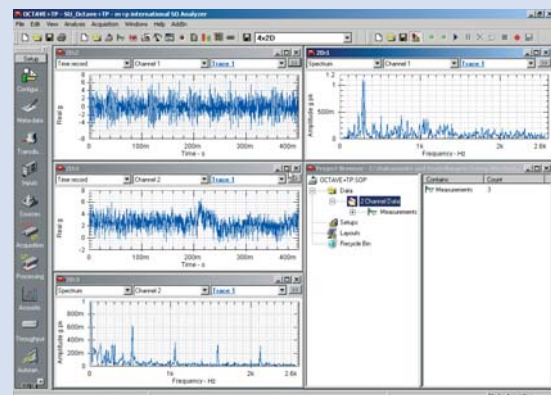
- Central management, analysis and reporting of all noise and vibration data
- Browse, view, rescale, analyse, calculate, organize measurement and mode shape results
- Data import from and export to more than 20 different standard N+V formats for common analysis
- 2D, 3D charts, waterfall graphics, spectral maps
- Mathematical operations with built-in spectral calculator
- Automated ActiveX reporting to Microsoft Word and PowerPoint
- Free SO Viewer software for rescaling and analyzing test data in Microsoft Word or PowerPoint on any PC
- Wizard-driven menus for easy and safe operation
- Embedded Visual Basic programming for automating repetitive tasks



■ General Data Analysis

No matter whether the data was acquired using the SO Analyzer or imported from third-party systems, The General Data Analysis module post-processes this data in the same way supporting a large number of analysis functions.

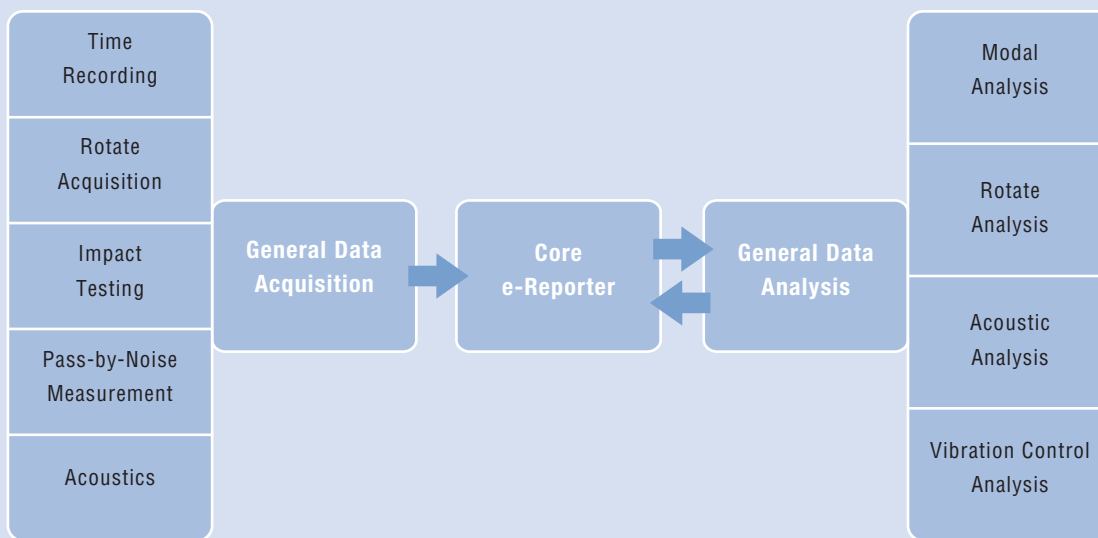
- Analysis of data coming from SO Analyzer measurements or from imported data
- Analysis functions: time (raw and windowed), spectrum (instantaneous and averaged), auto- and crosscorrelation, auto- and crosspower (instantaneous and averaged), frequency response function (FRF), coherence, impulse response, principal input spectra, histogram, probability density, probability distribution
- Viewing, storing and printing/plotting test results



Advanced Applications

The modular design of the SO Analyzer allows you to adjust the software to your specific needs, adding the solution you want.

The SO Analyzer supports a full range of options* covering various noise and vibration analysis applications.



- **Time Recording (Throughput to Disc)**

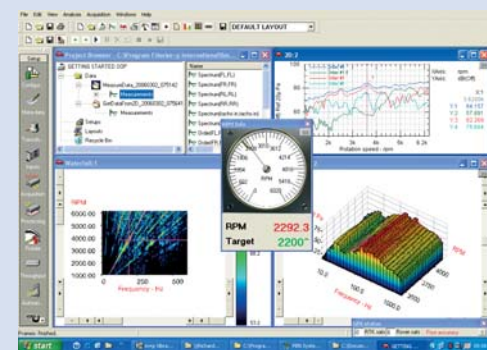
Time history recording provides gap-free storage of time domain data to the local disc or to a frontend memory, replacing conventional tape recorders.

- **Rotating Machinery Acquisition and Analysis**

The Rotate Acquisition and Analysis software package is designed for troubleshooting and analyzing noise or vibration problems related to speed characteristics of rotating or reciprocating machines in operation. Specifications include processing of analog and digital tacho signals, RPM or time-dependent triggering, real-time and computed order tracking, real-time waterfall display, tacho spline fit, RPM spectral map and frequency order tracking.

- **Impact Testing**

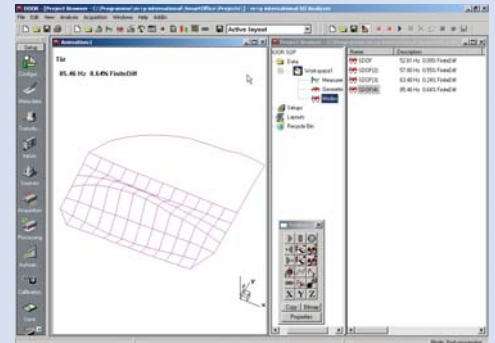
The Impact Testing module is used to quickly collect structural vibration data for structural signatures and modal analysis using an impact hammer that can be at a fixed location or guided around the structure using the geometry model entered by the user. This includes automated operation with audible status indicators to allow hands-free operation of the software.



* Please refer to the SO product information sheets for detailed information.

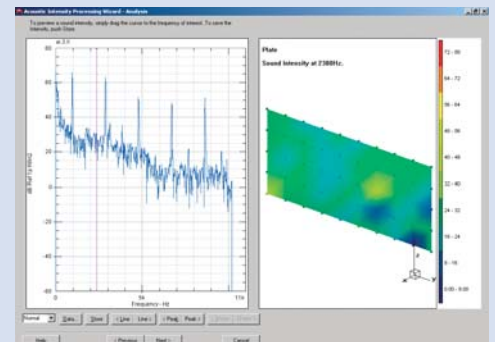
- **Modal Analysis**

The Modal Analysis package provides a complete set of tools for observing, analysing and documenting the vibrational behaviour of machines and mechanical structures. The SO Modal software features Multiple Input/Multiple Output (MIMO) data acquisition, ODS (Operating Deflection Shape), SDOF (Single Degree of Freedom) and MDOF (Multiple Degree of Freedom) analysis, geometry creation, modal model validation (MAC display and table), interface to FEMtools for SDM analysis, correlation/updates between experimental and Finite Element Analysis data, stepped sine, etc.



- **Vehicle Pass-by-Noise Testing**

The SO Analyzer based Pass-by-Noise measurement system uses unique GPS components for both position and velocity information, thus providing maximum accuracy and repeatability. It allows full operation from within the car and by one person.

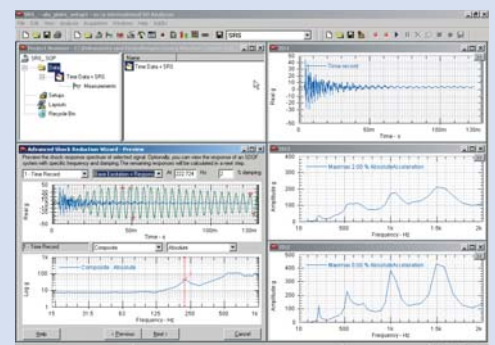


- **Acoustic Analysis**

SO Analyzer provides tools for online and offline real-time octave analysis as well as for acoustic intensity analysis allowing quick location of noise sources and accurate determination of the sound power level regardless of the background noise.

- **Vibration Control Analysis**

SO Analyzer can also be used to provide independent monitoring or additional analysis channels on shaker test systems with both online and offline random reduction, sine reduction and shock analysis, including SRS (Shock Response Spectrum). Data can also be imported from most vibration control systems to allow integration of all test data for post-analysis and reporting.



■ High-Precision Industry-Standard Hardware Platforms

The SO Analyzer supports a range of highly accurate hardware platforms made by renowned manufacturers such as National Instruments and VXI Technology - from the 4-channel USB module for portable applications to 8-channel PCI/PXI cards and high-channel count VXI hardware. Combine the acquisition hardware with the desired computer platform and install the required software to tailor your SO Analyzer according to your specific requirements. The intuitive user interface is consistent across all platforms.

■ SO Analyzer

The SO Analyzer is the next generation of m+p international's dynamic signal analyzers for professional applications in the field and in the laboratory. Thanks to its exceptional flexibility, the SO Analyzer supports a full range of USB, PCI, PXI and VXI measurement front-ends catering to versatile noise and vibration measurements and analyses from 4 input channels to high-channel counts. Just choose your measurement front-end, combine it with your preferred computer platform and select the SO Analyzer software tailored to your requirements.

Within a single software package, you perform real-time data acquisition, analyse the results and create your reports. The Microsoft Windows like user interface and the wizard-driven set-up of all measurement parameters ensure quick and safe operation, minimizing the probability of operator errors. The SO Analyzer provides all tools for sophisticated N&V analyses including real-time FFT analysis, throughput to disc recording, modal analysis, impact testing, rotating machinery analysis, acoustic analysis, vibration control analysis and pass-by-noise measurement. The power of the SO Analyzer even allows multiple capture modes to operate in parallel, e. g. do real-time spectrum analysis to the graphics display as well as recording (throughput) the raw time history data to disc for later post-processing as well as online order analysis.

And if you use noise and vibration measurement systems of other manufacturers, you can benefit from the compatibility of the SO Analyzer: Data can be imported from many sources so that all your test data can be managed, analyzed and reported from one user environment.

m+p international develops and manufactures test and measurement systems for vibration control, noise and vibration measurement and analysis, and process monitoring as well as custom-made functional test stands.

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