Noise is increasingly the subject of new regulations for the protection of human health and safety as well as for improving the environment in general. As well as sound levels, the perceived sound quality of products from washing machines to vehicles is often an important part of the customer buying decision so must be considered during product development.

m+p Analyzer provides a full range of capability for these applications. Real-time fractional octave filters satisfy all acoustic applications from simple sound pressure, sound power for equipment legislative requirements, intensity mapping to isolate sources to sound quality metrics for product refinement. All this in parallel with narrowband analysis and time history throughput to disc for fully detailed analysis online and offline post-processing of any data source.

**Octave Analysis**

Fully compliant with ANSI S1.4 and IEC 61672 type 1 sound meter specifications including A/B/C weighting and 1/1 to 1/24 octave spacing from 1 Hz to 100 kHz even with high channel counts. Response types include fast, slow, impulse, custom, linear average and LEQ.
YOUR BENEFITS

- Traditional 1/3 octave sound meter features plus fractional octaves to cover all needs
- Traditional microphones and intensity probe measurements for flexibility
- Sound power procedures for all popular measurement methods with full validity analysis
- Sound power using intensity probe for use within noisy backgrounds
- Sound intensity mapping to identify and visualize noise sources
- Sound quality evaluation to refine your products
- Transmission loss, pitch, warble and tonality to develop your own quality metrics
- LOFAR and DEMON analysis for sonar applications

Sound Meter Functions

With m+p Analyzer there is no need for a separate sound level meter as these functions are ready built-in with fast, slow and impulse settings, LEQ, peak hold by band or OASPL. Sound pressure histories and trends over long periods can be captured continuously or sampled.

Sound Intensity

Sound (or acoustic) intensity can be measured in any sound field. Real-time sound intensity measurements use a standard dual microphone intensity probe calculating real-time pressure, intensity and pressure residual intensity index. This technique is directionally sensitive making it ideal for source localization or background noise cancellation. It enables accurate measurements directly in the field without the need for expensive acoustic laboratories.

Sound Intensity Mapping

A wire frame 3D model of your equipment under test is used to guide an operator around a sequence of sound intensity measurements. These results are then mapped to the colour coded 3D image for identification of the principal sound sources and their levels.

Comprehensive acoustic data analysis
Sound Power

Sound power is an absolute measure to determine the noise emissions of a product. All equipment from PC fans to heavy machinery must have published sound power emission levels for environmental regulation. m+p Analyzer wizards guide the operator through the maze of requirements in the ISO 374x standards and, using the intensity measurements, the ISO 9614 standards. The latter method has high tolerance to background or reverberation effects so is suitable for use in most on-site environments rather than needing expensive anechoic chambers or field sites. More specialized applications such as wind farm methods like IEC standard 61400-11 and tonality using ECMA-74 are also available.

Sound Quality

Human perception is critical to improving product competitiveness: Designers face the challenging task that they not only have to reduce the product noise level, but also have to find the “right” sound that attracts the customer. Sound quality metrics can be used to rank and evaluate different product designs. The basis of the m+p Analyzer Sound Quality Analysis is Zwicker loudness according to ISO-532 and DIN-45631. The following metrics are available both online and for post-processing and can be computed from either narrowband or octave band spectra:
• Specific loudness and transient loudness (in terms of sones and bark)
• Loudness and percentile loudness time history
• Articulation index and extended articulation index time history
• Sharpness time history
• Pitch and warble analysis wizards for squeak and rattle analysis
• Statistical analysis of any function, e.g. LSF, L(10), L(50), L(90), L(n)

These functions can be viewed as 2D, 3D charts or as colour maps (spectrograms) for further detailed analysis. Other statistical tools are available for least-squares curve fitting and trend analysis which are useful, for example, in squeak and rattle evaluation.

Human Vibration

Alongside environmental noise, evaluation of other human factors such as hand-arm vibration from the use of power tools or the evaluation of whole body vibration from riding in vehicles as per the various ISO and BS standards are available. These include C/D/H/K weighting and functions such as VDV (vibration dose value) calculations. In conjunction with sound quality algorithms, these vibration results can form a comprehensive set of metrics for vehicle comfort assessment and refinement engineering.
m+p international

Founded in Hannover, Germany in 1980, m+p international develops and manufactures test and measurement systems for vibration control, dynamic signal analysis, data acquisition, process monitoring and test stand engineering. Our product reputation and broad experience coupled with valuable user feedback have led to significant market share in numerous key industries worldwide.

The company has its headquarters in Hannover, Germany with sales/marketing subsidiaries in New Jersey (USA), England, France and China, along with representatives and agents in many countries.

Learn more on the full range of m+p international products and services and their applications. Select the m+p literature library on our website:
www.mpihome.com/en/literature-library.html

m+p VibControl, m+p Analyzer, m+p Coda, m+p VibPilot, m+p VibRunner and m+p VibMobile are products of m+p international.

All trademarks and registered trademarks are the property of their respective holders.

Specifications subject to change without notice.

Germany
m+p international
Mess- und Rechnertechnik GmbH
Thurnithistraße 2
30519 Hannover
Phone: (+49) (0)511 856030
Fax: (+49) (0)511 8560310
sales.de@mpihome.com

USA
m+p international, inc.
271 Grove Avenue, Bldg. G
Verona, NJ 07044-1705
Phone: (+1) 973 239 3005
Fax: (+1) 973 239 2858
sales.na@mpihome.com

United Kingdom
m+p international (UK) Ltd
Mead House
Bentley, Hants
GU10 5HY
Phone: (+44) (0)1420 521222
Fax: (+44) (0)1420 521223
sales.uk@mpihome.com

France
m+p international Sarl
5, rue du Chant des Oiseaux
78360 Montesson
Phone: (+33) (0)130 157874
Fax: (+33) (0)139 769627
sales.fr@mpihome.com

China
Beijing Representative Office of m+p international
Room 1006, Jin Ma Office Building B Seat
Xue Qing Road No. 38
Hai Dian District, Beijing
Phone: (+86) 10 8283 8698
Fax: (+86) 10 8283 8998
sales.cn@mpihome.com

ISO 9001 CERTIFIED

www.mpihome.com