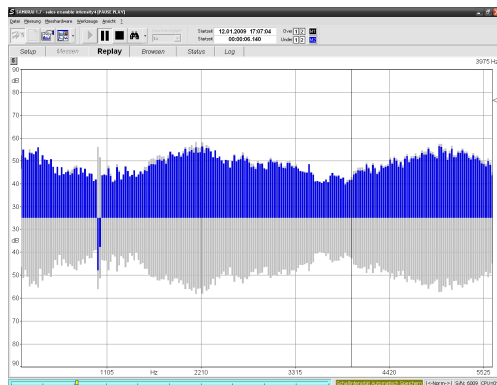


SAMURAI option: SOUND INTENSITY 1



Field of Application:

When investigating acoustic emission and propagation processes, the direction- and frequency-dependent energy flow of a sound field is of interest and is described by the sound intensity (energy per area and time, unit W/m^2).

Sound intensity measurements are made e.g. for locating sound sources or to determine the sound power emitted from a surface. Determining the sound power by means of intensity measurements rather than by methods based only on sound pressure measurements brings advantages e.g. in the suppression of extraneous sound sources.

Description:

Based upon the two microphone signals from a sound intensity probe, this option calculates the sound intensity at the position of the probe in the axial direction of the microphones. The frequency-dependent intensity thus calculated is displayed in third-octave bands or constant-width bands (the number of lines is selectable).

By rotating the probe, the direction of maximum intensity can be found. Furthermore, for stationary noise sources it is possible to use a scanning method to determine the sound power emitted from a defined surface.

The procedure implemented for determining the sound intensity is based upon analysis of the phase differences resulting e.g. from different paths between the sound source and the two microphones. For this reason, high demands are made upon the microphone pair in the probe. The software allows the measurement chain to be calibrated with regard to both pressure and phase.

Technical Data

Standards implemented	IEC 61043 Class 1, ISO 9614-1, 9614-2, 9614-3, ECMA-160 and ANSI-S12-12
Sensors	Intensity probes
Measurement range	20 Hz to 10 kHz, depending on spacer
Features	<ul style="list-style-type: none"> • Sound pressure-, intensity- and power-spectrum, P-I Index + Phase, particle velocity, acoustical impedance and cross-spectrum. • Display in third-octave bands or constant-width bands • Display of the work-area • Pressure and phase calibration; pressure-residual intensity determination for the measurement system • Partial sound power determination according to ISO 9614-1, 9614-2, 9614-3, ECMA-160 and ANSI-S12-12 over a defined surface • Export to Excel, TXT, UFF and NWWin • Option can be used via the SOUND INTENSITY 2 option, which allows custom applications to access SOUND INTENSITY 1

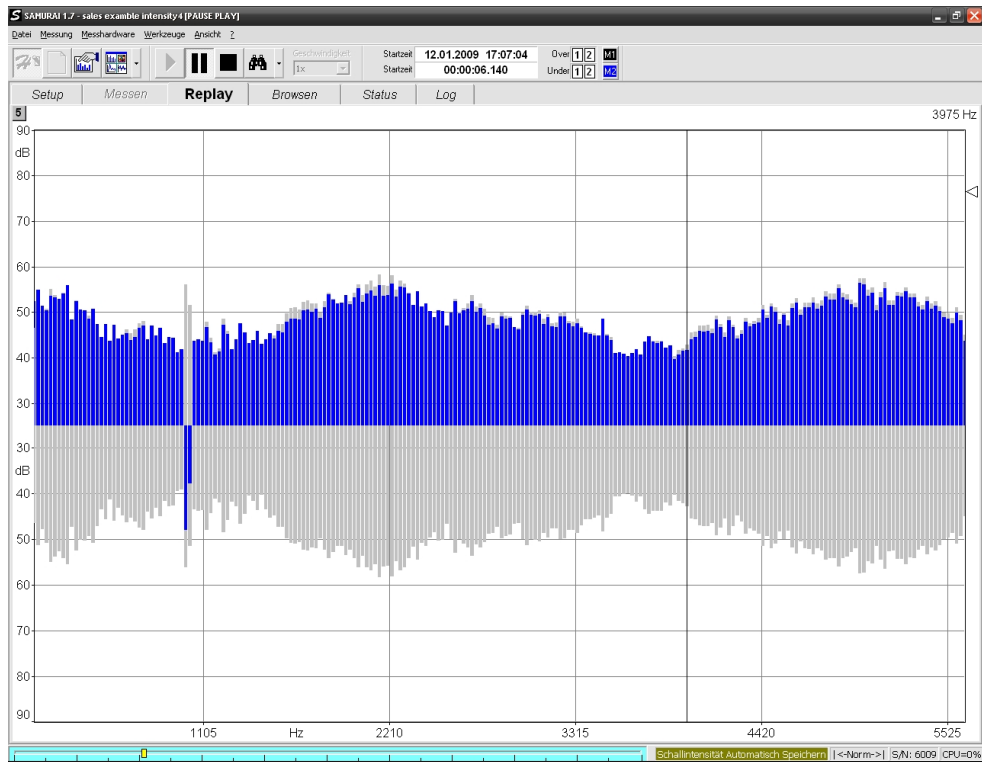


Figure 1: Sound pressure and sound intensity spectrum

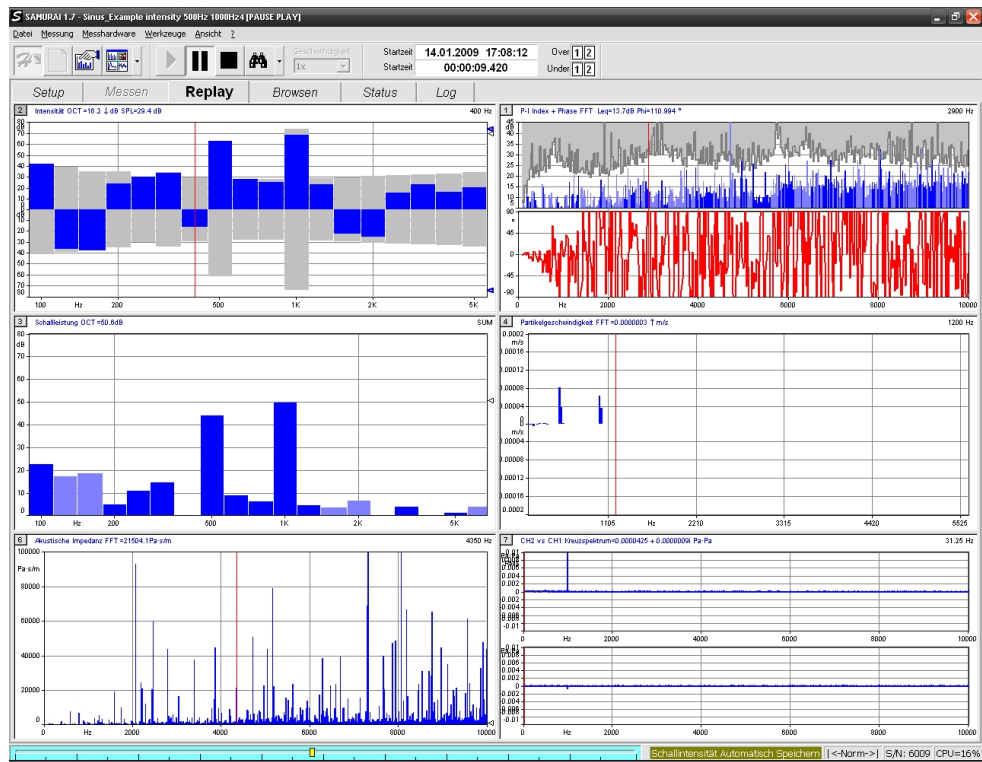


Figure 2: Sound pressure, intensity and power spectrum, P-I Index + Phase, Particle velocity, acoustical impedance and cross-spectrum