THE THRILL OF SOLUTIONS.

Indicating Technology for High Speed Data Acquisition

450 Combustion Noise Meter

The compact Combustion Noise Meter is a cost-efficient and easy-to-use measuring device that uses specially designed filters to calculate the combustion noise from an analogue (voltage) combustion pressure signal. This signal is usually delivered by a conventional indicating measuring system.

The result value delivered by the Noise Meter is either a digital signal display in dbA on the front panel, or a representative voltage signal (0 – 10 V ... 63 – 120 dbA) on the rear panel.

The measurement is carried out online.

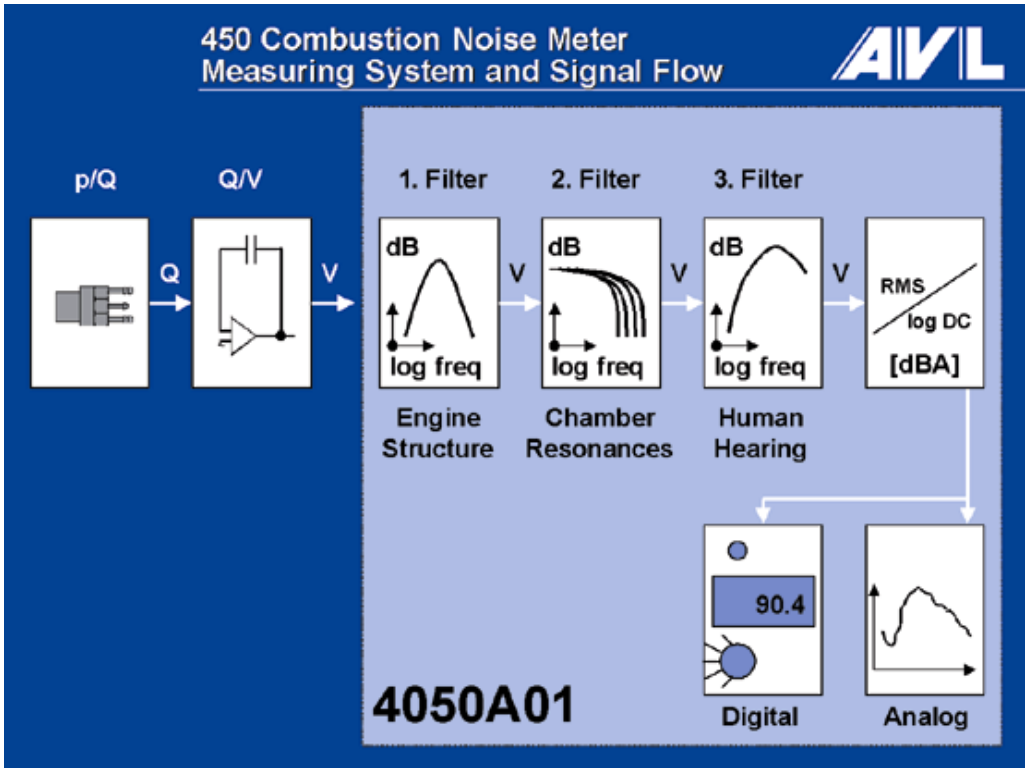
Areas of Usage

Reduction of noise emissions is an urgent requirement in modern engine development. In addition to the growing importance of measuring airborne noise which requires special (rather costly) test beds, there always has been a demand for determining the combustion noise on its own.

The best source therefore is the combustion chamber pressure signal that is commonly used with indicating measurements. It is a natural parameter for drawing conclusions about emitted combustion noise. It uses a frequency analysis of the cylinder pressure signal and the engine structure can be specifically excluded. The combustion noise can therefore be measured without the influences of mechanical engine and ambient noise.

Last Update: 10.01.2000

Principal Function



The diagram shows how the original signal is processed.

In the first block the signal is applied to a U-filter corresponding to the frequency attenuation of an engine block. This attenuation filter represents an average engine mass based on numerous experiments.

The next block shows the possibility of filtering combustion chamber resonance (e.g. pipe resonance) with selectable low pass filters that can be switched on the front panel.

In the next section the signal is guided through an A-filter that matches a standard value correction in acoustics to the aural characteristics of the human ear.
The signal is further processed by “root-mean-square” conversion to logarithmic DC values that relate to the aural threshold.

Here the signal is divided into two outputs:

- digital signal display on the front panel in dbA and
- analogue voltage output on the rear panel.