

Buyer's Guide

Microphones & Audio Monitors

**AT2020 Goes
To USB**
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TECHNOLOGY REPORT

AutoCal Automates Room Alignment

By Christophe Anet

ISALMI, Finland In the 1970s, the writers of the original N12 specification for monitoring conditions in Nordic broadcast control rooms were very modern thinkers.

The most advanced requirement was the measurement of the monitoring loudspeaker frequency response at the engineer position in the listening room.

The answer and solution of Genelec since 1978 has been to feature frequency response adjustments via DIP switches in all its loudspeakers.

Audible improvements

However, it is still more a rule than an exception to hear loudspeakers blamed for unsatisfactory quality of sound reproduction even though, in most cases, the loudspeaker itself is not the culprit.

Reasons are predominantly found either in the room acoustics or in the loudspeaker placement in the room, or both.

Improving this loudspeaker/room interaction is probably the area where it is now possible to achieve most audible improvements by using powerful DSP and automated system calibration.

Genelec AutoCal is a fully automated acoustical calibration tool for a single-room multichannel loudspeaker system.

A calibrated high-quality measurement microphone records loudspeaker-generated log-sweep sine signals to determine the correct acoustical alignment for every loudspeaker and subwoofer on the Genelec Loudspeaker Manager — GLM and GLM.SE — control network as well as to align the entire loudspeaker setup to work together as a system.

AutoCal features single location (SinglePoint) or multiple location

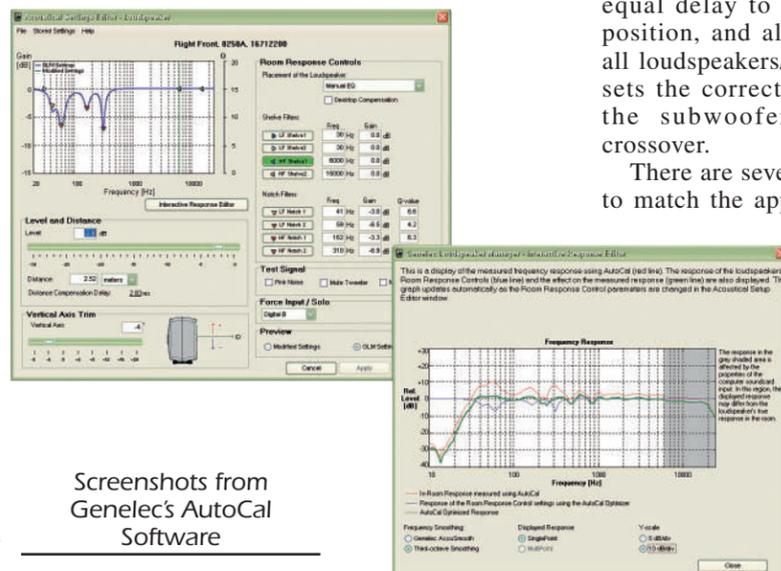
(MultiPoint) measurements. MultiPoint is a central feature of AutoCal, especially useful for rooms with more than one operator or with producer listening positions.

Internal algorithms

Following calculation of the frequency response of every loudspeaker and subwoofer, AutoCal determines the correct acoustic settings for a flat frequency response at the listening position or the best approximation for a flat response across the MultiPoint area.

It then adjusts the loudspeakers for equal delay to the primary listening position, and aligns output levels for all loudspeakers/subwoofers as well as sets the correct subwoofer phase for the subwoofer/main loudspeaker crossover.

There are several internal algorithms to match the applied correction to the perception capabilities of the human hearing system. The automated calibration procedure aligns distances within 1.5 centimeters and levels to within 1 dB. A typical 5.1 system takes less than five minutes to calibrate.



Screenshots from
Genelec's AutoCal
Software



Measurement Microphone

Each 8200 series loudspeaker and 7200 series subwoofer has four notch filters to configure.

The new SE7216A subwoofer, part of the SE DSP System, also features four notch filters with the ability to provide two notch filters for each of its eight digital outputs connected to the 8130A digital input active loudspeakers.

The AutoCal technology in Genelec DSP systems is not there to fix mistakes of electro-acoustic designs or blunders in room acoustics.

Rather, it offers improved usability and consistency for often complicated and rapidly changing production environments and provides an extremely efficient tool for integrating loudspeakers into the acoustics of the listening room.

■■■
Christophe Anet is Technical Editor at Genelec in Isalmi, Finland.

For information from Genelec, contact Lars-Olof Janflod in Finland at telephone: +358-17-813-311; FAX: +358-17-812-267; e-mail: genelec@genelec.com; or visit <http://www.genelec.com/> on the World Wide Web.

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