White Paper

EON Generation2 Development Strategies and Implementation

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Introduction

In 1995 JBL introduced the EON Series of powered speakers. This breakthrough speaker line launched an entirely new concept of speakers, incorporating consumer ease of use into a package that was lightweight and powerful with excellent sound. In addition, innovative material selection and manufacturing techniques established a new benchmark for cost / performance. The first generation of EON products became the all time best selling powered sound reinforcement speaker system with over 300,000 sold.

EON G2, the second generation of EON builds on the technological innovation of EON. Let's take a brief look at some of the technologies that have made EON the success it is.

Low Frequency Driver Innovations

When JBL engineers tackled the development of a portable powered speaker system it became clear that simply repackaging conventional amplifier and transducer technology would not yield the desired performance and reliability. A conventional low-frequency driver with the motor strength required could weigh nearly 20 pounds (9 kg.). Since this was nearly half the total weight budget for the EON15P, a new approach was taken.

The result is JBL's exclusive neodymium Differential Drive(r) transducer. The use of neodymium as a magnetic material in speakers will produce benefits even when used in an otherwise conventional design. Neodymium is magnetically "stiffer" and hence suffers less from flux modulation with a resulting decrease in harmonic distortion. In addition, neodymium delivers more magnetic strength than conventional materials so less of it is needed resulting in weight reduction.

JBL combined neodymium with the Differential Drive speaker. The Differential Drive system uses two voice-coil windings on a single voice-coil former. This greatly simplifies the magnetic circuit and eliminates the need for a heavy steel back plate - further reducing speaker weight. But the benefits of neodymium Differential Drive(r) technology extend beyond weight reduction. Since this design results in a symmetrical magnetic circuit, significant reductions in even-order harmonic-distortion are achieved.

Taking the Heat—ThermoMaster®

Powered speakers present another engineering challenge - how to get rid of the amplifier heat. A high-powered, compact speaker has little room for the large heat sinks needed to dissipate amplifier heat. Relying on internal fans was rejected since fan noise emanating from a tripod-mounted speaker would be unacceptable. And of course it would be absurd to expect users to set up external fans to cool the heat sinks.

In combination these unique JBL technologies have delivered the performance, convenience and reliability that have resulted in over 300,000 EON speakers working hard world wide. EON powered speakers have proven they can take it. In fact there are units in JBL's quality labs that have been running at full power for 11,000 hours. EON is one more demonstration that JBL plays louder, longer.

The answer was simple - the whole purpose of a speaker is to move air, why not use some of that air movement to cool the amplifier? The result was the Theromomaster® Total Thermal Management® system. This JBL exclusive technology mounts the amplifier to an all aluminum baffle. The baffle includes cooling fins in the ports. As air moves in the ports, amplifier heat is dissipated.

Reduced Power Compression

Power compression occurs as a result of the voice-coil heating up during operation. As the voice-coil heats up, its impedance rises. As its impedance rises it draws less power from the amplifier and produces less output. In some instances, the reduction in output can be the equivalent of losing half of the PA system after twenty minutes of performance. Since EON's baffle is already made out of aluminum, the next step was to integrate the horn and the woofer frame into the baffle casting. The large radiating surface of the EON baffle does an excellent job of dissipating heat from the voice-coil. The result is a measurable and audible reduction in power compression.

Increasing Customer Value

In addition to adding technological innovations, other new features and benefits were added to increase the customer's value of EON G2.

More Power. Obviously more power makes the speakers louder allowing it to fill larger performance spaces with less need to resort to multiple speakers. The EON15 G2's power has more than doubled to 300 watts (low-frequency) with 100 watts for the high frequency horn.

Added Mixing Functionality. The original EON15P speaker had one input, for either a line level or mic level input. EON15 G2 still has this input with the addition of two 1/4" input jacks and two-band equalization. This allows a single or duo act to reinforce vocals and instruments without an external mixer.

Updated Appearance. EON G2 is constructed of a new copolymer material with greater resistance to scuffing and scratching. The speaker is all black with a handsome EON logo stamped into the grill.

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