

een basverlagend idee

In het tijdschrift "Journal of Kinetic Energy" kwamen wij enige tijd geleden het onderstaande artikel tegen, waarin een methode wordt beschreven om op eenvoudige wijze het basbereik van een gesloten luidsprekerbox naar beneden toe te vergroten. Een zeer aparte methode, dat moeten we toegeven. Misschien dat in een volgende uitgave van het "Journal of Kinetic Energy" (afgekort "JOKE") nog eens een praktische uitwerking van dit idee verschijnt.

Met dank aan de heer J. van Hees uit Millingen a/d Rijn.

It is a wellknown fact that the low frequency response of a closed loudspeakerbox with large dimensions will be extended compared to that of a smaller one. This is because of the higher compliance of the smaller box and so the higher f_c . (f_c is the resonance frequency of the loudspeaker system)

right weight and volume of the absorber near 98% of the radiated energy will go into it trying to move the object. The thin wires prevent energy transport to the sides of the box. When we could manage to let the absorber float even near 100% would be possible! We can compare this energy-absorber with a so called black hole; the (kinetic) energy going into it will never go out. The same effect occurs when using a box with infinite dimensions.

GETTING MORE BASS OUT OF YOUR LOUDSPEAKER SYSTEM WITHOUT ALTERING ITS VOLUME.

Theoretical calculations and diverse experiments gave the following formulas for volume V and mass M .

where : f_c = res. freq. of system
 f_{ms} = res. freq. of speaker unmounted

$$a' = (Q_{tc}/Q_{ts})^2 - 1$$

with : Q_{ts} = Q factor speaker unmounted
 Q_{tc} = Q factor speaker in system

Down f_c the frequency response will resemble that of a 12 dB/oct. high pass filter. In a closed box we do not use the energy radiated by the back of the loudspeaker, it will be destroyed! This means in more mathematical words; the kinetic energy will be transformed into a potential one because there is always a balance between kinetic and potential energy. This energy will be "eaten" by the filling of the box (heat development) and the sides of the box (vibration!). Keeping in mind the above mentioned balance we decided to make a low frequency absorber. The idea is to use a movable solid mass in the cabinet behind or just below the bass loudspeaker hung on thin wires from the top of the box. With the

$$V = \frac{\sqrt{Z_{dc} - R_c}}{M_a + M_l} ; \quad M = \sqrt{a' + 1} \cdot \frac{Q_{tc}}{Q_{ts}}$$

M_a = weight of air of netto box in gr
 M_l = total moving mass of (bass)loudspeaker
 Z_{dc} = impedance of loudspeaker for DC-current
 R_c = voice coil resistance

After thoroughly examination of all kind of material best results were obtained with metal (excellent for heavy metal) and pieces of rock (suited for rock and other (pop-)music). It is obvious that it is important to avoid parallel sides so "wild shaped" material will suit best.

WARNING: This idea is protected by several patents (pending), so no commercial usage is allowed!