Annerstedt-Hegge Acoustics

A35 Heritage

Design fundamentals and tech notes:
Based on the legendary Dynaco Aperiodic A-35 speaker by David Hafler, the A35 is improved with modern technology. Its legendary smooth presentation is retained but we have brought its performance into the forefront of contemporary speakers.

While we have retained the simplicity of this iconic 2 way system with its unique Dual Spectrum Damping architecture featuring a 10" woofer we have brought the original design up to date by implementing a new horn loaded neodymium soft dome tweeter from Seas as well as a unique serial filter developed by Seas R&D in Moss Norway.

The A35 Loudspeaker employs two unconventional techniques for the passive crossover network.; Self Compensating Serial Filter Architecture & Charge-Coupled Linear Technology.

SELF COMPENSATING SERIAL FILTER ARCHITECTURE

Simple Design
Our Serial Filter, or Series Crossover design offers a critical advantage over the standard parallell dividing network topology by allowing us to use radically fewer components that potentially degrade the signal. But is simple filter topology comes with a caveat, it is only made possible by choosing drivers with some vey specific and exclusive characteristics, like lack of cone break up and naturally smooth and extended matching responses way beyond their passband.

Coherent Phase
The A35 bass driver offers a benign naturally falling response that is completely lacking in the severe breakup modes that is typical for most modern rising response bass drivers. Coupled with the smooth onset of the small horn loaded silk dome it allows us to use gentle slope low and high-pass filter topology. The simple series coupled filter gives a more coherent phase response leading to an seamless integration between drivers.

Ideal Load
The Serial Filter topology creates a more stable and improved impedance matching for the amplifier, particularly at crossover frequencies compared to conventional parallell configurations. By producing less stress on the amplifier we therefore improve the performance especially with tube amplifiers or other amplifiers sensitive to impedance variations.
The interaction between drivers and components in our design configuration also naturally balances some of the frequency response anomalies that may arise in parallell designs, this added benefit is called Self Compensation.

Energy Sharing
Since the drivers share the signal in series configuration, each driver is subjected to a more even distribution of energy. This reduces the stress and heat buildup of the driver contributing to the lack of power compression, or the ability to preserve transients and dynamics at higher levels.

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A new HighEnd speaker manufacturer with collaboration between Norwegian and Swedish HiFi veterans.

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CHARGE-COUPLED LINEAR TECHNOLOGY

Charge-Coupling works in basically two ways:
- By controlling and utilizing the capacitors piezoelectric nature
- By biasing the capacitor above zero crossing

The capacitor series pair in the A35 filter has a voltage applied to its center point. By doing this, the individual capacitors are charged biasing the dielectric gap above or below ground potential without DC appearing outside the confines of the capacitor pair. When this occurs, the music signal driving through the pair of capacitors never cross the dielectric zero point, resulting in a far more linear operation. This is analogous to the difference between 'Class A' and 'Class B' amplifier operation.

The benefits of Charge-Coupled Linear Technology lies in what this charge bias does to the capacitors themselves. When an audio signal passes through, a capacitor changes polarity, that is passes through zero volts, the current flow changes direction. But it does not do that instantly, due to dielectric absorption the capacitors "remembers" the previous state and resists change. This leads to a blurring of transients in the drive signal, a highly audible distortion.

The impedance of a capacitor is dependent on the signal frequency and the physical and electrical nature of the capacitor. Factors that determine the sound quality of capacitors in a crossover network include the material composition of the conductive plates, the material composition of the dielectric, and the tightness of the winding of the capacitor.

It has been established that capacitors that are more tightly wound have better transient response than those who are wound more loosely. Applying a constant voltage to a capacitor results in a piezoelectric effect, which physically squeezes the capacitor tighter. At higher power levels the alternating current of an audio signal can cause a capacitor to exhibit substantial piezoelectric behavior, causing it to expand and contract with the changing voltage. This results in a deterioration of linearity, as well as fluctuations in transient performance. By applying a constant voltage the capacitors are pre-squeezed effectively minimizing this effect.

The method of charge-coupling - biasing over zero crossing - probably has an even greater effect than controlling the piezoelectric effect. By biasing the capacitors so that the signal does not reverse current flow through the capacitor, zero crossing distortion is eliminated. Charge-coupled capacitors constantly operate within their linear range, so time delay and dielectric absorption is neutralized , resulting in less phase distortion and a more musical presentation.

Per Anders Annerstedt

Measurements:
Height 57,5 cm
Width 32 cm
Depth 23,5 cm
Weight 12 kg.

The speaker presents an open large soundstage with great dynamics. It gives the music openness, and makes it easy to follow the musical instruments.

Above you see the frequency measurement using the Klippel System made at Seas Laboratory by the principal designer Per Anders Annerstedt.

Design options:
Standard finishes are Oak and Walnut. Other finishes can be supplied at additional charge.

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