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## The K-Coupler

### A New Acoustical Impedance Transformer

A loudspeaker is an electromechanical transformer that, as the name implies, signals. In the simplest case a membrane radiates sound directly into the air. The possibility is to couple the radiating membrane to the air through a horn, a kind of horn.

While looking for an optimal acoustical impedance transformer the American patents (1951, 1954 & 1968) he presented a solution to be noted, which combines horns, high efficiency, high bandwidth, and wide horizontal dispersion, with high efficiency: the K-Coupler. This design (fig 1) consists of a tube with a

The basic idea is as follows: when a membrane radiates sound in an infinite independent radiation resistance. Finite pipes however present only a small low frequency-reflections arise because of the fixed length of the pipe, causing responses. Such systems create resonances due to the vibrating aircolumn pipelength/wavelength fraction of  $1/4$ ,  $3/4$ ,  $5/4$ ,  $7/4$  etc. To create more resonances have a lot of wind instruments.

Karlson took this construction size increasing openings in the infinitely many resonance frequencies radiation exists. The cut can be made. Karlson found an exponential energy is radiated before the end causes an extraordinarily flat response. [2]

By using a horn (e.g. exponential radiation resistance at the horn horn mouth also follows. Finite because of this, have reflections. This is an important difference

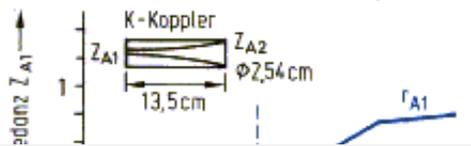
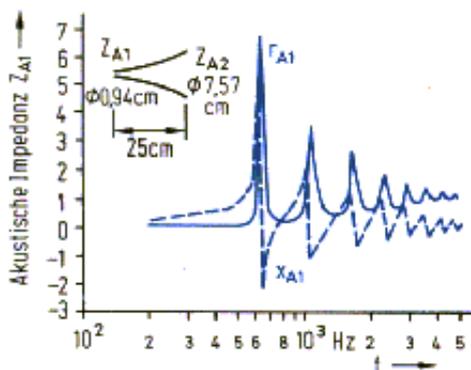
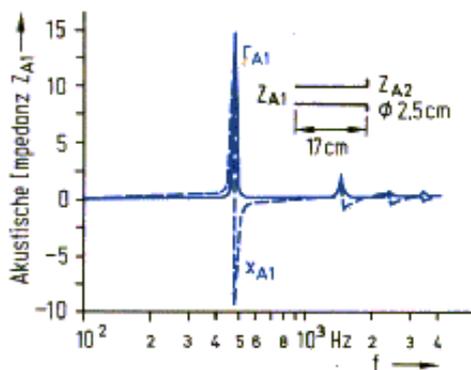


fig 1. Acoustical Impedance of (middle) and a K-Coupler (bottom impedance,  $r_{A1}$  = real part of  $Z_{A1}$ )

