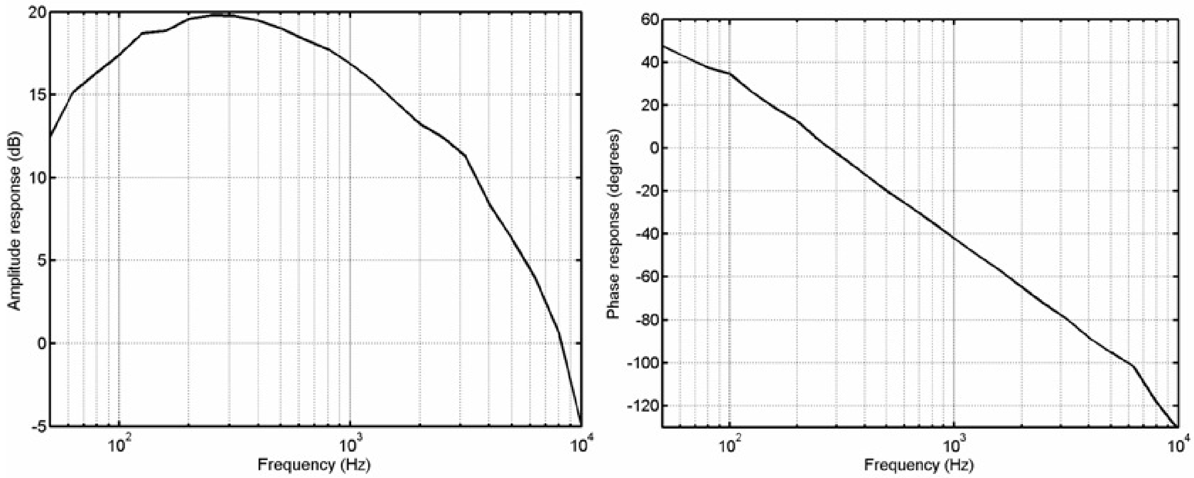

Fig. 3.12: Amplitude and phase response of a Titan element in a ½″ package (from [3]).

The frequency and phase response of a Microflown can represented in terms of an electronic model of the device, with the output of an "ideal" Microflown {having flat frequency and phase reponse} subsequently altered by three passive *RC*-type networks to emulate the low frequency and high frequency behavior of the device, as shown in the figure below:

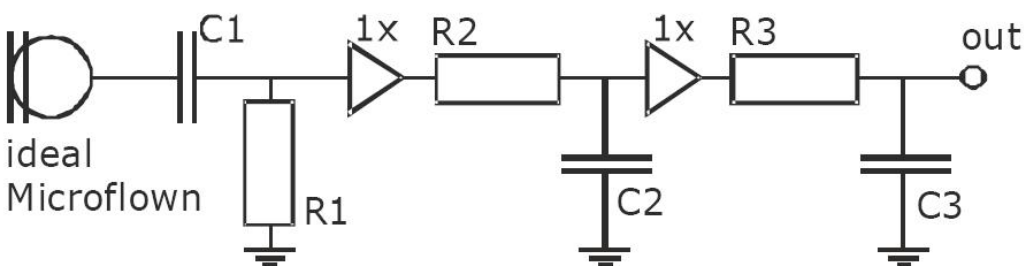

Fig. 3.6: Electrical model of the frequency dependent behaviour of a Microflown.

Using this electrical model to represent an actual Microflown, the frequency and phase response of the device are approximately given by:

$$V_{out}(f) \simeq V_{out}(250Hz) \cdot \frac{1}{\sqrt{1+\left(f_{blay}/f\right)^2}} \cdot \frac{1}{\sqrt{1+\left(f/f_{difn}\right)^2}} \cdot \frac{1}{\sqrt{1+\left(f/f_{htcp}\right)^2}}$$

and:

$$\varphi(f) \simeq \tan^{-1}\left(f_{blay}/f\right) - \tan^{-1}\left(f/f_{difn}\right) - \tan^{-1}\left(f/f_{htcp}\right)$$

A signal conditioner is used on the Microflown output signal to correct (*i.e.* undo/invert) the frequency and phase response such that both are flat at the output of the signal conditioner.

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