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Quick Answers

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A Historical Note On Compression

From the library vaults of Mead Killion, PhD. (www.MeadShare.com)

Wide Dynamic Range Compression (WDRC) goes back to the 1930s when transatlantic cables were being laid on the ocean floor and talking movies were in their infancy. Bell Telephone Laboratories' scientists Mathes and Wright (1934) described the use of "companders": compressors to increase the signal level of quiet sounds before they began their underwater voyage and expanders at the receiving end to restore normal speech levels and loudness variations. Once Steinberg and Gardener (1937) had discovered recruitment and measured the input-output loudness curves of hearing-impaired ears, they commented that the impaired ear acted just as if it had an electronic input expander (like the receiving end of the transatlantic telephones), and what was needed to correct for this loss was a compressor in the hearing aid. In their time, "compressor" meant only a wide-dynamic-range compressor.

Hy Goldberg, in 1965, appears to have been the first to develop a high-quality, wide-dynamic-range circuit for a BTE hearing aid. Interestingly enough, the problems of proper fitting and counseling with this aid appear to have been one factor in its relatively limited acceptance.

In 1973, Eddie Villchur published the results of his own laboratory experiments comparing linear amplification with wide-dynamic-range compression amplification (combined with appropriate post-compression frequency-response tailoring). The dramatic intelligibility improvements he saw, especially in noise, later led Fred Waldhauer of Bell Laboratories and the present author, Mead Killion, to independently devise high-quality wide-dynamic-range compression amplifiers suitable for hearing aids. The former became the ReSound hearing aid circuit and the latter became the K-AMP circuit. Other WDRC circuits followed such as the DynamicEQII developed by Steve Armstrong and his colleagues at Gennum.

References

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