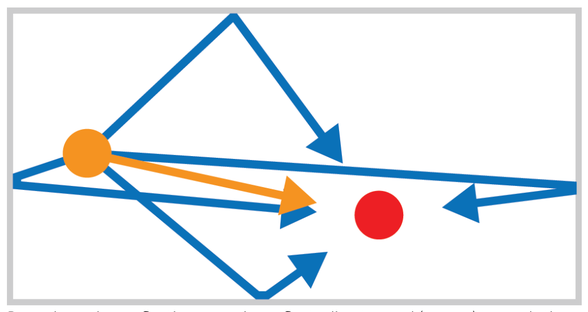
A SPEAKER FOCUSED ON YOU

The embodiment design of a high-end full-range cardioid loudspeaker. High directionality minimizes room boundary reflections and ensures the user only enjoys the sound waves directly from the speaker drivers.

What is wrong with a conventional loudspeaker?

The quality of a Hi-fi audio setup strongly depends on the acoustic properties of the listening room. Sound waves spread omnidirectional within a listening room, causing sound waves to reflect against all room boundaries. These indirect sound reflections reach the listener's ears moments later than the direct sound. Not only are the timing of these reflections off, but different boundaries also reflect different frequencies more efficiently. The result is an unnatural emphasis on some frequencies, a 'coloration' of the sound. Audiophiles have accepted these shortcomings of conventional loudspeakers; absorbent panels are placed, and the speaker is positioned unpractically far away from any walls. Dutch & Dutch speakers turn this the other way around: A speaker that adjusts to your room: Sounding good regardless of the room's acoustics!



Room boundary reflections, speaker reflects direct sound (orange) towards the listener (red), as well as indirect (blue) sound (K.A.J. Knaapen, 2014)

What is a directional speaker?

A cardioid-shaped radiation pattern is achieved by canceling out the non-directional sound waves. Sounds are canceled out at the speaker's rear side by four speaker drivers. So as the listener walks from front to back around the speaker, a decreasing sound amplitude is perceived. Result: Fewer room-boundary reflections. This master thesis describes the embodiment of a new technological loudspeaker concept featuring a cardioid radiation pattern up to the lowest hearable frequencies.

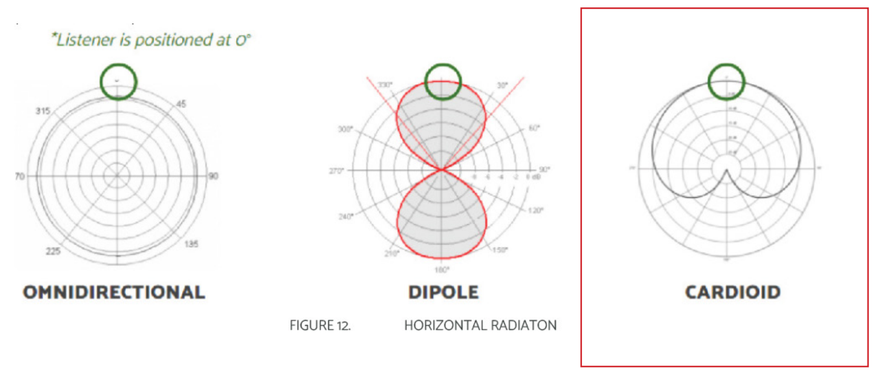


FIGURE 12. HORIZONTAL RADIATON

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