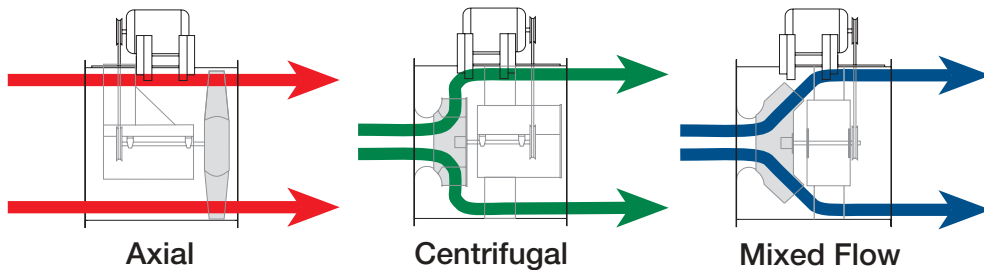


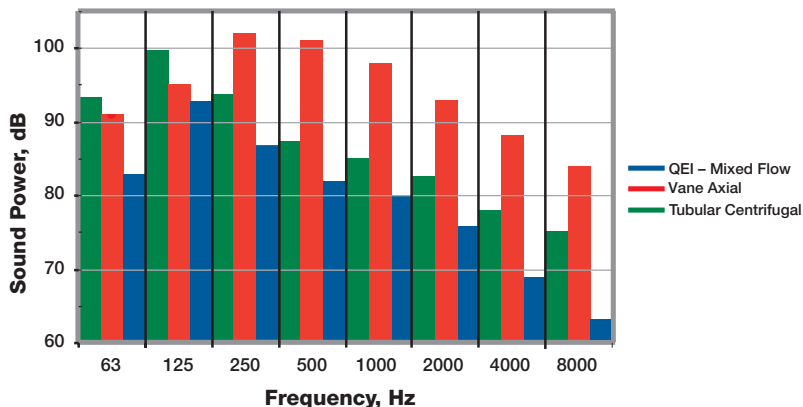
# How the Mixed Flow Fan Works

The "Mixed Flow" name comes from the unique wheel that combines the best properties of vane axial fans and tubular centrifugal fans. Axial fans are efficient as a result of the straight through airflow pattern inherent with the design. Tubular centrifugal fans lose efficiency because incoming air is forced to make two 90° directional changes before exiting the housing. Mixed flow fans draw and exhaust air in a more linear fashion resulting in higher efficiencies, reduced motor requirements and lower operating costs than a tubular centrifugal.



The second benefit of mixed flow wheels is reduced sound. Tubular centrifugals tend to be quieter than axials because they operate at lower RPMs. Mixed flow fans in turn require lower fan RPMs to achieve the same airflow and pressure as a tubular centrifugal because of their improved efficiency. In most applications, the QEI will be 5 to 15 dB quieter than a similarly sized tubular centrifugal or vane axial.

Finally, the QEI provides a high quality sound that may reduce the need for attenuation. Studying the sound power by octave band, tubular centrifugals tend to have their highest sound levels in the 63 and 125 Hz octave bands. These lower frequency sound levels are difficult to attenuate, which may pose a design problem based on the application. The peak sound levels for vane axials is usually in the 250, 500, and 1000 Hz octave bands. Fortunately these higher frequency sounds can be attenuated with inlet and outlet silencers. Mixed flow fans are quieter across all octave bands. This reduces concerns about low frequency rumbling and may negate the need for inlet and outlet attenuation.



This sound chart shows a QEI-33 mixed flow fan compared to units of similar outer tube diameter. This comparison used an operating point of 20,000 cfm with 1.5 inches wg of static pressure (Ps).