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(57) Abstract :

The present invention relates to an airfoil (101, 102) with wavy leading (LE) and trailing edge (TE) serrations for enhancing the reduction of airfoil broadband noise. The airfoil (101, 102) comprises a wavy with a sinusoidal profile saw-like serration (1', 2') at a leading edge (LE) of the airfoil (101) or at a leading edge (LE) and a trailing edge (TE) of the airfoil (102). The wavy serrations provided on the LE and TE of the fan blades provides significant broadband noise reductions of about 9 to 5 dB from mid to high frequency range with respect un-serrated fan of same-size and shape and are observed for all fan rpm values. The introduction of wavy LE and TE serrations (1', 2') together in an airfoil provides an additional noise reduction benefit of about 2 dB with respect to the wavy LE serrations (1') alone particularly from mid to high frequency range.

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