

(54) Title of the invention : AN IMPROVED AIRFOIL WITH DIMPLES FOR NOISE CONTROL

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(71)Name of Applicant :**1)INDIAN INSTITUTE OF TECHNOLOGY (INDIAN SCHOOL OF MINES), DHANBAD**Address of Applicant :Dhanbad - 826004, Jharkhand, India
Dhanbad -----**Name of Applicant : NA****Address of Applicant : NA****(72)Name of Inventor :****1)Shailesh Kumar Jha**Address of Applicant :Department of Mechanical Engineering,
National Institute of Technology, Jamshedpur, Adityapur,
Jamshedpur, Jharkhand 831014, India Jamshedpur -----

2)S. NarayananAddress of Applicant :Department of Mechanical Engineering,
Indian Institute of Technology (Indian School of Mines),
Dhanbad, Dhanbad – 826004, Jharkhand, India Dhanbad -----

3)Sujit KumarAddress of Applicant :Department of Mechanical Engineering,
Indian Institute of Technology (Indian School of Mines),
Dhanbad, Dhanbad – 826004, Jharkhand, India Dhanbad -----

4)Sushil Kumar SinghAddress of Applicant :Department of Mechanical Engineering,
Indian Institute of Technology (Indian School of Mines),
Dhanbad, Dhanbad – 826004, Jharkhand, India Dhanbad -----

(57) Abstract :

The present invention relates to an improved airfoil with dimple for reduction of noise radiation therefrom. The acoustic characteristics of inline and staggered arrangement of circular dimples (D) are provided on the suction surface of a symmetric airfoil (100), where in the first row of circular dimples (D) starts at a distance of one-third of the total chord length (L) from the leading edge (E) of the airfoil (100). The spanwise spacing 'b' (2) between the two subsequent dimples (D) is equal to the spacing 'w' (3) in the streamwise direction. Each dimple (D) is of equal diameter 'd' (1) and depth maintaining equal centre-to-centre distance 'p' (4) between the two dimples (D). The overall area of the dimpled airfoil is kept almost same as that of the un-dimpled ones in order to reduce the loss of strength of the airfoil. The airfoil (100) controls the noise in both the interaction noise dominated zone (1-4 kHz) and the self-noise dominated zone (4-10 kHz) for all the jet velocity.

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