







## CONCLUSION

PWHLAD can enhance the lift when the aircraft is taking off and landing. According to the efficiency calculation based on a simplified large aircraft, PWHLAD could provide an increase of 2.62% in total lift. For 300-400 tons large aircrafts, the lift could increase 7.86-10.4 tons at the original weather condition and take-off speed. As the increase in lift is proportional to the weight of the aircraft itself, the increase will become larger as the plane is heavier. It will allow An-225 to carry 15.7 tones more load. Load capacity is one of the most important indicators to an aircraft. PWHLAD is benefit to promote the overall performance, especially the taking-off performance and load capacity.

## NOMENCLATURE

$A$	=	amplitude of oscillation
$\alpha$	=	the decay coefficient
$\beta$	=	efficiency of mechanical wave filter
$c$	=	velocity of sound at a given pressure
$C_x$	=	force coefficient in the $x$ direction
$C_y$	=	force coefficient in the $y$ direction
$dt$	=	time step
$F_x$	=	$X$ component of the resultant pressure force acting on the vehicle
$F_y$	=	$Y$ component of the resultant pressure force acting on the vehicle
$f$	=	vibration frequency
$h$	=	height
$\rho$	=	air density

$\rho_0$	=	air density at a static state
$\rho'$	=	instantaneous change in air density
$\Delta\rho$	=	average change in air density
$\Phi$	=	mass flux
$\eta$	=	derivative of mass flux (total mass of air traveling through the generator's surface in unit time)
$R$	=	the radius of pressure wave generator
$v_a$	=	aircraft velocity
$v$	=	flow velocity
$\omega$	=	angular frequency

## CONFLICT OF INTEREST

The authors confirm that this article content has no conflict of interest.

## ACKNOWLEDGEMENT

Declared none.

## REFERENCES

- [1] Z. Jiang, and Y. Chen, "Aerodynamic design OF modern aircrafts," National Defense Industry Press, Beijing, 2011.
- [2] D. A. John, "Fundamentals of Aerodynamics," McGraw-Hill, New York Press, 1, 2, 2010.
- [3] Zuwen Qian, "Non-linear Acoustics," Science Press, Beijing, 1992.
- [4] D. Lin, "Foundation of Recording Acoustics," China Broadcast Press, Beijing, pp. 203-212, 2003.
- [5] R. Feng, "Ultrasound Manual," Nanjing University Press, Nanjing, pp. 26-28, 1999.
- [6] S. Feng, "Introduction of Ocean Science," Advanced Education Press, Beijing, 1999.

Received: June 10, 2015

Revised: July 29, 2015

Accepted: August 15, 2015

© Fu and Lv; Licensee *Beuthan Open*.

This is an open access article licensed under the terms of the (<https://creativecommons.org/licenses/by/4.0/legalcode>), which permits unrestricted, non-commercial use, distribution and reproduction in any medium, provided the work is properly cited.