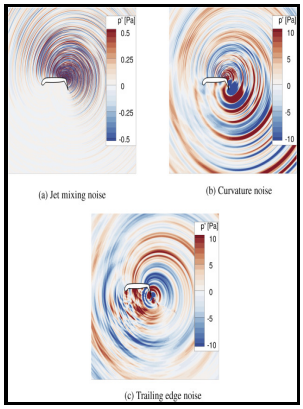
Investigation of rotor noise by aerodynamic disturbance

- - Numerical and experimental investigation of aerodynamic noise from automotive cooling fan module



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-investigation of rotor noise by aerodynamic disturbance
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Numerical study of the effects of rotor tip clearance on aerodynamic performance and tonal noise behavior of fan

The aerodynamic forces or pressures associated with each blade can be resolved into two components: i A drag force due primarily to the thickness of the blades; ii A lift force due to the aerodynamic airfoil shape of the blades. The radiated noise is predicted through solution of the Ffowcs Williams—Hawkings equation. Therefore, the reduction of aerodynamic noise of the cooling fan module is essential to the automotive Noise Vibration and Harshness NVH performance.

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Hence, the character of the noise is dominantly periodic with discrete tones at the compression frequency and integer-ordered Fourier harmonics thereof. Considering the influence of fan shroud, an aerodynamic steady simulation is made at first, and then Large Eddy Simulation LES with the Smagorinsky model is applied to capture the unsteady pressure data on fan surface.

Wind

This thrust force manifests itself through the pressure drop across the rotor. School of Power and Energy, Northwestern Polytechnical University, Xi'an 710072, China Download: 9262 KB Export: RIS Abstract Rotor tip clearance TC is an importance parameter for the turbomachinery design and operation because of its contribution in loss and noise production. University of Cambridge, UK, 2010.

Experimental Investigation on the Development Process of Large

If the wind imparts a torque on the blades then the blades must be imparting a torque on the wind.

Numerical study of the effects of rotor tip clearance on aerodynamic performance and tonal noise behavior of fan

The magnitude and distribution of this force is the primary focus of wind-turbine aerodynamics. Journal of Thermal Science, 2009, 18 1 : 33—39. The aerodynamic noise is mainly generated by the interaction between the flow and the leading edges.

Wind

And in the middle part of stationary domain, tetrahedral grids are generated for improving the computational efficiency. Supervisor: Not available Sponsor: Not available Qualification Name: Thesis Ph. Traditional method of automotive cooling fan design mainly depends on trial-and-error method, which is very costly.

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