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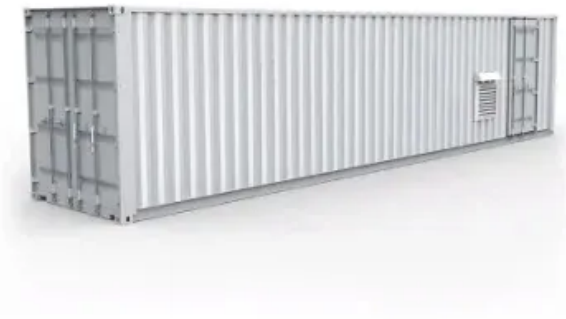
Aili Power Generation Fan Blade



Overview

Can a redesigned optimal fan blade improve axial-flow fan performance?

Results show that with the redesigned optimal fan blade, the airflow rate of fan can be increased, thereby improving the performance of the axial-flow fan.

Can axial-flow fan blades be used in propulsion and power systems?

Finally, to verify the validity of this work, the prototypes of the original and optimal axial-flow fan blades are fabricated and fan performance tests are conducted with these blades on the basis of the AMCA-210-99 standard. The algorithm used in the present study can be applied to the blade design problem in any propulsion and power systems.

How can axial flow fan be redesigned?

ng axial-flow fan by multiplying it with a constant which is greater than unity. The geometry of the redesigned fan blade is generated using nu-merous design variables, which enables the shape of the fan blade to be constructed completely; thus the technique o.

What are the design options for axial fans?

Three design options (straight blades, C-type blades and forward swept blades) are examined in this paper. Taking an axial fan as the research object, the whole 3D numerical simulation was conducted by using Ansys-CFX. Axial fans with three kinds of blades are discussed and compared under design and off-design conditions.

How to optimize axial-flow fan blade based on desired airflow rate?

The technique of inverse design problem (IDP) for optimizing the three-dimensional shape of an axial-flow fan blade based on the desired airflow rate is presented in this work. The desired volume flow rate of air can be obtained from the airflow rate of the existing axialflow fan by multiplying it with a

constant which is greater than unity.

How do axial-flow fan blades work?

The design of an axial-flow fan blade involves stacking several airfoils that can be differently designed for each spanwise section. However, the complex flow field around the fan blade, including circumferential and axial flows, presents challenges when applying the single airfoil theory.

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