Which side of the disc generator is equipped with the fan blades

How do fan blades work?

Fan blades are attached to the fan disk,which is rotated by a shaft driven by a gas turbine. In modern passenger aircraft,most of the propulsive thrust comes from fans,which are driven by gas turbines. A single stage fan was developed to produce high thrust and act as a multi-bladed propeller.

What is a turbine disk?

The turbine disk is referred to as such without blades. When the turbine blades are installed,the disk then becomes the turbine wheel. The disk acts as an anchoring component for the turbine blades. Since the disk is bolted or welded to the shaft,the blades can transmit to the rotor shaft the energy they extract from the exhaust gases.

How do Fan disks work?

Most of the pressurized air is exhausted through the rear of the engine, where it expands and its velocity increases. Fan disks are large and heavy. The one shown in the photo is over 31 inches (1.2 m) in diameter, and rotates up to 3800 rotations per minute (RPM). Fan disks must withstand the centrifugal force of the attached fan blades.

What is a disc turbine agitator?

The disc turbine (or Rushton turbine) is the most widely use fermenter agitatorand consists of a disc with a series of rectangular vanes set in a vertical plane around the circumference and the vaned disc has a series of rectangular vanes attached vertically to the underside. You might find these chapters and articles relevant to this topic.

Do curved blade disc turbines produce radial flow?

Curved-blade disc turbines such as that shown in Figure 8.25 generate primarily radial flow,similar to the Rushton turbine. However,changing the shape of the blades has a significant effect on the impeller power requirements and gas-handling characteristics.

How do you connect a shaft to a turbine disk?

The methods of connecting the shaft to the turbine disk vary. In one method, the shaft is welded to the disk, which has a butt or protrusion provided for the joint. Another method is by bolting. This method requires that the shaft have a hub that fits a machined surface on the disk face.

Most previous studies to examine icing phenomena on aero-engine fan blades were based on numerical simulations. Das et al. [19], [20] conducted a series of numerical studies to examine the characteristics of ice accretion on the fan blades of a high bypass turbofan engine. Hutchings et al. [21] integrated various icing simulation tools to characterize the shape ...

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Various types of damage have been observed on service exposed titanium rotor fan blades, including: high strain low cycle fatigue (LCF), foreign object damage (FOD), wear and fretting (Fig. 2). FOD is the predominant mode of damage for rotor fan blades, which leads to their removal from service with considerable low cycle fatigue life remaining ...

In total, six fans are investigated, one reference fan without slits and five fans with slitted leading edges. The geometry of the slits is defined by the slit height h, the slit width w and the slit spacing d.The slit height was kept constant at h = 22.5 mm and the slit width and slit spacing were varied.The slit height in relation to the mean chord length of the fan blades has a ...

The trailing edge design of fan blades is a critical aspect of fan engineering that directly impacts the aerodynamic and aeroacoustic performance of the system. By understanding the key parameters that characterize the ...

The stator and rotor of the disc generator have a flat disc structure, with axial air gap flux, and they are alternately arranged in the axial direction. The following describes a direct drive ...

Lightning striking of wind turbine generators (WTGs) has taken place frequently in recent years and usually results in severe blade damages. In order to study the lightning attachment behavior of the WTG, a scaled-down model with a ratio of 1:100 was assembled to simulate a 2 MW-class wind turbine for which each blade is equipped with two pairs of ...

On the concave of the impeller blade, a negative pressure is created as the fan rotates this draws air pressure into the space between the fan blades. A centrifugal fan unit is usually driven by an electric motor. The motor spins the ...

The picture of the generator and fan direction is indeed the way it is on my car. When I replaced the old generator with the new one I did replace and polarize the regulator. The braided ground strap runs fron the rear generator plate bolt hole directly to the neg. terminal ground bolt located on the left side of the engine compartment.

The Fan and Fan Case. While the fan isn"t the core, it is worth mentioning. The high technology fan is made of a proprietary hybrid-metallic structure that is light-weight and according to Pratt & Whitney enables thinner leading edge airfoil designs that generate improved aerodynamic performance over carbon fiber blades, which would be more difficult and costly to ...

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Compared with traditional titanium alloy fan blades, composite fan blades have the characteristics of light weight, low noise, high efficiency, strong resistance to foreign objects, outstanding ...

The front rotor disk is in the front of the stator armature disk, and 120 permanent magnet poles are stuck in the front rotor yoke; in similar way, the rear rotor disk is in the rear of the stator ...

Full-field dynamic strain reconstruction of rotor blades under multi-mode vibration. Yuda Zhu, ... Xuefeng Chen, in Measurement, 2022. 1 Introduction. Rotor blades are the essential component in turbomachinery, such as aero-engines, gas turbines, and steam turbines, whose reliability directly affects the operational safety in service [1-3].Due to the severe environment, including ...

In five cases the fan blades of this type of gas turbine have broken in the first 100 h of operation (after first operation and or after repair), and in some cases the broken blades have punctured through stators coils (copper conductors), which has caused short circuit between rotor and stator, resulting in unit explosion, leaving extensive financial damages [2].

Montazer-Ghaem-VI 123 MW capacity generator unit. The unit was equipped with two rotating fans, one at each end namely at the turbine side and the exciter side of the generator. The failed fan consisting of 11 blades was mounted on the generator-rotor at the

The fracture of cooling fan blades has been occurred five times at the turbine side of the generator in our case of study, just 100 hr after resuming operation after overhaul. Using numerical analysis as well as laboratory investigation -- includes visual inspections, metallography and SEM -- can help better finding failure problems that cause blade failures.

The figure below is a photograph of a generator fan that has its blades welded to an inner hub. The hub is shrunk on to a generator"s rotor shaft end. The highest stress location for this design is at the weld attachment areas. After several years in service, one of the fan blades liberated from the hub caused extensive generator damage.

Most rotor blades manufactured today are produced as two skins. These blades therefore comprise two load-bearing skins for the aerodynamic suction side and pressure side, into which the main reinforcement is integrated. The two skins are joined together by means of structural adhesive joints and via shear webs to form the final rotor blade ...

On the design and structural analysis of jet engine fan blade structures. Leye M. Amoo, in Progress in Aerospace Sciences, 2013 3 Material choices for fan blades. The materials used in the construction of fan blades are similar to those used in other rotating machinery. Hence the fan blade is composed of materials that are relatively common structural materials with extensive ...

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The fan blades from the special type of rotor generator of Iran-Montazer-Ghaem-Unit 6 failed during service. These equipments were supplied by GEC-ALSTHOM Belford under the following conditions; Turbine rotation: 3000 rpm; output power: 118 MW; the generator rotor fan consisting 11 blades which were fixed by way of two screws onto the centering ring.

The fan blades are usually considered to be part of the compressor section, or ""cold section"", of the engine. Fan blades are mostly made of titanium and consist of a blade body, a rounded leading edge (LE) a sharp trailing edge (TE), an integral platform and a dovetail or single tooth attachment as shown in Fig. A1.

Wind turbines, like aircraft propeller blades, turn in the moving air and power an electric generator that supplies an electric current. Simply stated, a wind turbine is the opposite of a fan.

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This sector model, which exemplifies a challenging industrial case with publicly available detailed geometry and flow information, comprises a disk and fan blade with a sector angle of 16.364 degrees.

In this question it is mentioned that the fan, compressor and turbine blades are mounted loosely in the disc. This is well demonstrated by this video posted by RedGrittyBrick. ... compressor and turbine blades are mounted loosely in the disc. ... When computers were equipped with faster and faster CD-ROM drives, the reduction of vibrations ...

Ceiling Fan Blades Explained: Functions & Types 71. With regards to the performance of ceiling fan blades, the angle at which they"re positioned plays a crucial role in determining the airflow generated. The blade angle, also known as the pitch, is the angle at which the blades are tilted in relation to the ceiling.

The unit was equipped with two rotating fans, one at each end namely at the turbine side and the exciter side of the generator. The failed fan consisting of 11 blades was mounted on the generator-rotor at the turbine end, and had a total service life of about 41000 hours prior to the failure.

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