

Generator with fan blades

Do generator rotor fan vanes & blower blades fail?

The potential failure of generator rotor fan vanes and blower blades has been identified as an area for detailed risk assessment in the electric power generation industry. Liberation of fan component has caused catastrophic damage to both the rotor and stator components on a number of units.

What is the failure analysis of a generator rotor fan blade?

The failure analysis of a generator rotor fan blade was investigated by mechanical analysis and metallurgical examination of fracture surface. Fracture took place at the airfoil root, surface examination showed that the blade had cracked by a high cycle fatigue mechanism. However, there was no evidence of material defect.

Do rotor fan blades fail?

In general rotor fan blades are designed to run for a long time and premature failure of these blades are unusual, therefore it is necessary to do an exact failure analysis. In this paper, a mechanical analysis was performed with the metallurgical examinations for competent analysis of blade failure.

How long did a generator rotor fan last?

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. The fan rotational speed was 3000 revolutions per minute (rpm) and the maximum operating temperature of the blades was 90°C. Figure 1.

Do generator rotor fans/blowers have high stress?

Generator rotor fans/blowers are subject to both high steady and fatigue stresses during operation. The fan/blower blade itself is highly stressed. The highest stresses in an axial blower are developed in the base of the blade or in the blade root attachment to the blower hub.

Why are generator rotor fans/blowers important?

Generator rotor fans/blowers are critical, highly-stressed components justifying design scrutiny, proper material selection, quality fabrication techniques, and judicious non-destructive examination. Generator rotor fans/blowers are subject to both high steady and fatigue stresses during operation. The fan/blower blade itself is highly stressed.

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Failure of fan blade leads to low productivity, high cost of replacement and maintenance of cooling tower fan blade in service. This paper presents a review on failure mode and material ...

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Generator PULLEYS And FANS - ET-123. MGA generator pulleys (for pushrod engines) came in two different sizes. The standard pulleys were two piece stamped sheet metal riveted to an alloy hub. If the rivets work loose the part is usually junk and needs to be replaced. ... The fan blades initially jammed on the bolt head for the adjuster link, so ...

The failure of a rotating axial flow fan of a 123 MW electric power generator unit is analyzed. The fan was mounted on the generator-rotor at the turbine end. Initial investigations showed that three fan blades had fractured just about 11 h after resuming operation following the last overhaul, causing extensive damage to the unit. The failure of the blades was investigated ...

In some cases, fracture of blades causes short circuit between rotor and stator and consequently generator explosion and huge financial loss. Since fracture in cooling fan blades has been occurred ...

Changzhou Keyleader Fan Technology Company Ltd. Is a professional manufacturer of many kinds of axial fan blades, cooling fan blades, such as engine axial fan blades, generator axial fan blades, air compressor cooling fan blades, fog cannon machine axial fan blades, cooling tower axial fan blades, diesel engine cooling fan blades, generator set cooling fan blades, internal ...

Sameezadeh et al. [4] investigated a damaged fan blade of a rotor-generator and according to their reports, high cyclic fatigue mechanisms induced to final failure with the large second particles ...

The fan blades from the special type of rotor generator of Iran Montazer-Ghaem-Unit6 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.

Cut off the remaining blades of your fan hub. Grind down the stubs so you get the fan hub as round and balanced as possible. Measure the diameter of your fan hub in mm, add 0.5 for a bit of clearance, and specify that in hub_d.; Measure the ...

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It is obvious that the fan blade has effective factors on the generator performance. In some cases, fracture of blades can cause short circuit between rotor and stator and consequently

In the 8-blade fan, a severe separation exists in a region with a length of ~0.53 blade length near the blade tip,

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whereas in the 12-blade fan, the length of this separation zone is 0.4 blade length. ... It should be noted that the vortex generator's height is almost equal to or lower than the local boundary layer thickness.

Gas Turbine Major Components and Modules. Claire Soares, in Gas Turbines (Second Edition), 2015. Fan Blade. The hollow, wide-chord fan blade allows higher flow, higher efficiency, and is quieter than its predecessor, the snubbed blade. A snubbed blade consists of a solid aerofoil, which has two appendages, or snubbers, attached at right angles to the aerofoil span at about ...

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Taking the fan blades of the thermal power unit generator as the research object, an eddy current experiment is carried out on them. By searching the parameters such as detection frequency, lift-off effect and scanning direction, the suitable detection technology is used to replace the traditional penetration detection. The experimental results show that the effective detection ...

Abstract The failure analysis of a generator rotor fan blade was investigated by mechanical analysis and metallurgical examination of fracture surface. Fracture took place at the airfoil root, surface examination showed that the blade had cracked by a high cycle fatigue mechanism. However, there was no evidence of material defect. A series of analytical, finite ...

Diesel generator set fans generally have the characteristics of large air volume, good cooling effect and low noise. Different specifications of fans can be used according to different models and rated power of diesel generator ...

When installing the fan, do not install it in reverse, otherwise the non-pressure air surface of the fan blade will become the air pressure surface, which will affect the fan air volume and reduce the heat dissipation effect of the radiator. Diesel generator set is a kind of sophisticated mechanical equipment.

Employing a fan as a cooling system for the generator at the end sides of its rotor is a practical method [Montazer Ghaem Gas Turbine Power Plant. Gas turbine generator ...

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Fatigue Fracture and Life Evaluation of Generator Rotor Fan Blades of a Thermal Power Plant, MSc thesis, Islamic Azad University, South Tehran Branch, Iran Bleier, F.P. (1997). Fan Handbook ...

the fans that are set up on the Retainin g Ring, is blown in two sides of rotor. Fig. 1. Generator diagram At each of two sides of generator sets up 11 blades as an axial fan that separates with 11 spacer pieces. Position and arrangement of blades and spacer pieces on Retaining Ring is shown in figure 2.

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