Generator rotor fan blade

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.

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 hoursprior 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 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 its necessary to do an exact failure analysis. It this paper,a mechanical analysis was performed with the metallurgical examinations for competent analysis of blade failure.

What happens if a rotating fan fails in a generator?
Failure of a rotating fan inside a generator will cause extensive damage. The stored rotational energy in a fan that lets loose will typically destroy the stator winding,sometimes damage the stator core and cause damage to other rotor components such as retaining rings,the rotor winding and possibly even the rotor forging (Moore,2002).

Can a cooling fan blade be fractured?
Since fracture in cooling fan blades has been occurred five timesin our case study,in this research,the emphasis has been placed on failure analysis and preventing methods from the fracture in this generator's fan blades.

Are gas turbine fan blades broken?
Failure report for gas turbine fan blades,1997]. Metallurgical and structural analyses on the failed blades have not shown any microstructure degradation. Studies on the ruptured surfaces using scanning electron microscope (SEM) have shown that fracture has been happenedas a results of high cycle fatigue (hcf).

In gas turbine power plants, a fan is used as a cooling system to dissipate generated heat in coils (copper conductors) and generator electric circuits at the end sides of ...

A wind turbine turns wind energy into electricity using the aerodynamic force from the rotor blades, which work like an airplane wing or helicopter rotor blade. When wind flows across the blade, the air pressure on one side of the blade ...

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 ...

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development of future rotor blades: 1. The weight of wind turbine rotor blades increases progressively with increasing blade length. For future blades, the gravitation loads will exceed ...

The rotor of this hydro generator is designed similar to a centrifugal fan, in which the air is sucked upward and exits from the periphery. ... Mcdonald C. Redesigning the rotor ...

The rotor is connected to the fan blades, so its rotation creates the desired air flow. The speed of the motor can be controlled by adjusting the electrical input or by incorporating additional ...

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 manual, Iran, ...

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 ...

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