Generator rotor cooling fan blades

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 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.

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.

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.

How does a rotor cool a generator?
Cooling air is circulated in a closed cycle,in a way that after passage of air through rotor,it is heated and exhausted from top of the generator,which then passes through a cooler,which would cool it down using water flow.

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).

The rotor is connected to the fan blades, so its rotation creates the desired air flow. ... These motors can provide better airflow, faster cooling, and more precise control over fan speed. ...

This chapter talks about inspection of the rotor, mostly while removed from the stator. It aims to serve as a guide to learning the specific problems and failure mechanisms, and their ...

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 five times in our...

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It"s quite difficult to do, but the fan is attached to the Rotor. I haven"t checked to see if it"s removable. That fan moves at the same speed as the motor. 3600RPM I cant imagine the CFM that this design produces, but computer fans and pull ...

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Cooling and rejection of the heat in generators are usually realized by air, which is circulating in a closed cycle in the generator set. As shown in Fig. 1, the air produced by the ...

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, 2004]. In some cases, fracture of blades causes short ...

Motor and Generator Coolers; Fan Cover; Fan Blade; Rotor Motor. External Rotor Motor; Internal Rotor Motor; ... The fan blades in cooling towers are designed to handle large volumes of air and dissipate heat efficiently. Cooling tower fan ...

Download scientific diagram | An illustration of fan blade. from publication: Failure analysis of gas turbine generator cooling fan blades | Since the optimum operation of a generator is highly ...

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 ...

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, ...

rotor fan exits radially from the ducts provided between the stator plates after passing the rotor parts (i.e. poles, etc.) and is sucked again into the generator by the rotor fan after being cooled ...

Visual inspections were taken on the generator parts especially on the fan blades and the effect of accident on them was studied. Three kinds of blades were found in the turbine casing after the accident: ...

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...

towards rotor and by use of fans, which are installed on retaining ring at the generator sides, is blown around the rotor. Each fan is comprised of 11 blades, which have been separated by ...

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