

## European Solar and Energy Storage Solutions

# How to check defects in generator blades



## Overview

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How to detect damage to gas turbine blades?

The external forms of damage to the gas turbine blades may be detected with a reliable and effective non-destructive visual method with the support of an optoelectronic device (video scope, borescope) without the need to dismantle the engine [1,5,7, . .

Why do gas turbine blades need to be inspected?

These blades face continuous thermal stress, making rigorous inspection essential to catch any flaws early. The multifaceted role of turbine blades in gas engines underscores their use to identify potential defects, which could impair performance or compromise safety. Blade integrity is fundamental to a gas turbine engine's safe operation.

What are the failures of gas turbine blades?

A detailed summary of the above discussed gas turbine blades failures is presented in Table 1. Table 1. Failure analysis survey of gas turbine blades. Separation of a blade at the top firtree. Impact induced by the separation of the first blade. Materials poor quality. Removal of scale and coating due to high rates of erosion.

Can AI detect a gas turbine blade?

However, the range of defects that can be detected is still limited. Typically, neu- ]. However, they require significant There exist several commercial AI software for inspection of gas turbine blades. Some focus on borescope inspection [ ]. They all use Deep Learning AI, which is perhaps feasible tive blade images.

How do you ensure quality turbine blade inspections?

Ensuring quality turbine blade inspections involves selecting suitable NDT methods, skilled inspectors, and precise equipment calibration. Understanding

potential defect types and adhering to standard procedures is essential. Leveraging advanced technologies and keeping abreast of new methods also improves inspection outcomes.

Do Ni-based gas turbine rotor blades fail?

Kumari et al. analysed the failure of four Ni-based gas turbine rotor blades, as displayed in Fig. 7a and 7b, that are strengthened with  $\gamma'$  phase ( $\text{Ni}_3(\text{Al,Ti})$ ). At creep temperatures ( $>0.4 T_m$ ), microstructural changes such as directional growth of  $\gamma'$  and coarsening, formation of carbide films along the grain boundaries do take place.

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### 8 Common Angle Grinder Problems & How To Fix

A curved segment can be the result of the blade not being properly stored, transported, or used. Thus, you should keep it somewhere safe. 12. Segments are glazed Glazed segment on a diamond blade. Segments are glazed ...

### Automated Defect Detection and Decision-Support in ...

Aim--This research sought to develop methods (a) to automatically detect defects on the edges of engine blades (nicks, dents and tears) and (b) to support the decision-making of the inspector



### Learning to Identify Drilling Defects in Turbine Blades with Single

We propose a model based on RetinaNet to identify drilling defects in X-ray images of turbine blades. The application is challenging due to the large image resolutions in ...

### (PDF) Root Causes and Mechanisms of Failure of Wind Turbine Blades ...

blade in the flapwise direction with an intact blade, and a blade with debonding cracks of different lengths (0.2 and 1 m) between the web and the spar cap. While the small ...



## Reliability Analysis of Wind Turbines

With the rapid development of wind power industry, the reliability of wind turbines has become a hotspot in wind power research. The failure modes and research progress of wind turbine reliability both at home ...

## Gas Turbine Blade Inspection Methods Explained

Radiographic techniques, including X-rays and CT scans, can reveal various internal turbine blade defects. They identify voids, cracks, and other anomalies inside blades, crucial for evaluating blade structure and integrity.



## Common Generator Problems (with Troubleshooting ...

The most common generator problems are: Generator won't start; Generator starts and then dies; Generator is leaking gas; Generator bogs down under load; Take caution when performing repairs. Always remove the spark plug wire ...

## 8 Common Generator Problems & Their Causes

A generator may at times experience fuel, coolant, or oil leaks, but the good news is that these can usually be prevented by performing regular maintenance checks. With a periodic inspection of your unit, you'll be able to notice these issues, ...



## Automated Defect Detection and Decision-Support in Gas Turbine Blade ...

Background--In the field of aviation, maintenance and inspections of engines are vitally important in ensuring the safe functionality of fault-free aircrafts. There is value in ...

## AI-driven method helps improve quality assurance for wind turbines

Faulty wind turbine blades can incur huge costs for the companies that operate them, especially if the defects go unnoticed until it's too late. That's why quality assurance is ...



## Image Recognition of Wind Turbines Blade Surface Defects

with the blade defect category and the probability of belonging to this category. The mask area represents the general outline of the blade defect. In this paper, in order to improve the ...

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## Sample blade defects: (A) nick on leading edge, (B) dent on ...

Download scientific diagram , Sample blade defects: (A) nick on leading edge, (B) dent on trailing edge, (C) nick on leading edge, (D) teared-off corner, (E) dent on leading edge. from ...



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