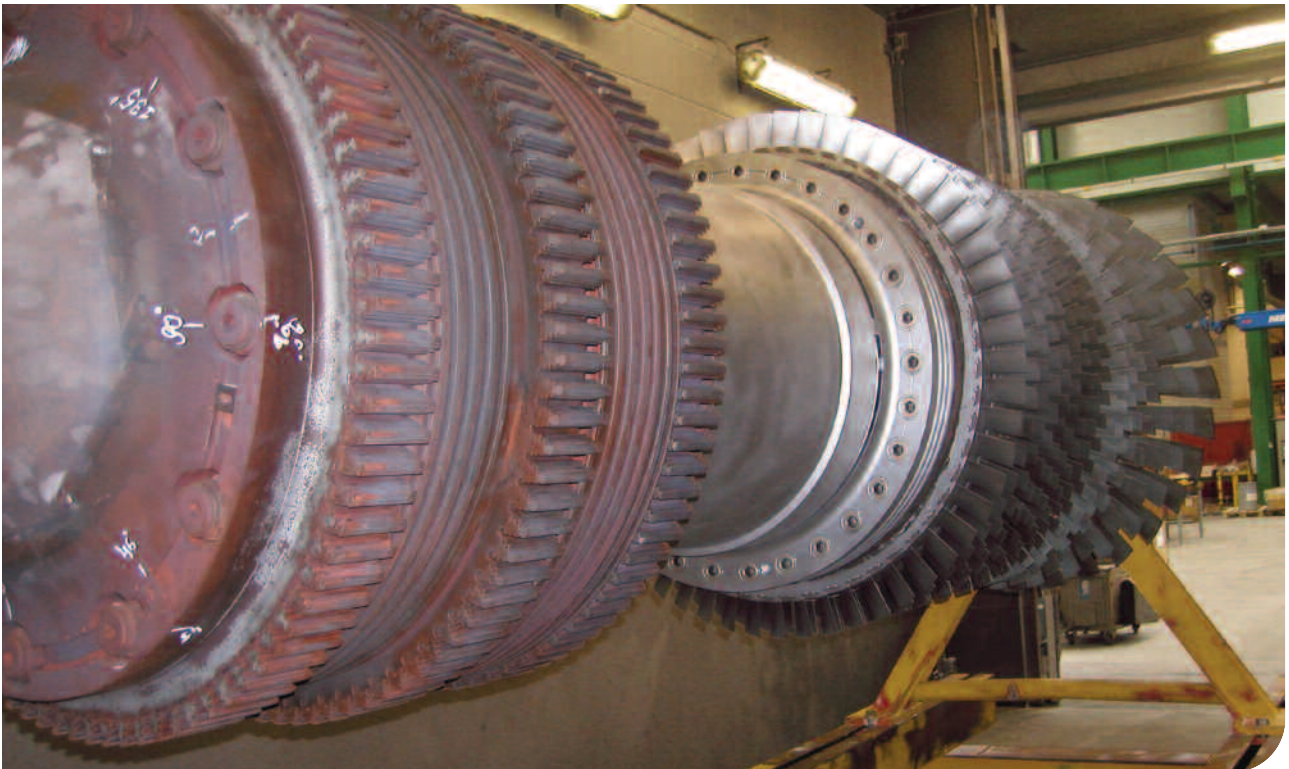


COMB.

Non-destructive inspection of gas turbine rotors.



Background

Gas turbine rotors may be susceptible to life limitations due to creep and/or fatigue. This may (eventually) lead to critical cracking and catastrophic failure. Assessment of critical areas

is necessary to determine opportunities for continued operation. KEMA can perform this assessment and inspect rotors non-destructively with high reliability and at low cost.

Service

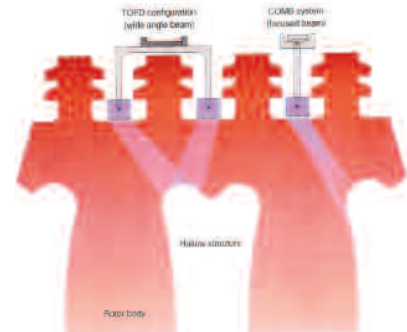
The non-destructive inspection method applied is ultrasonic scanning with multiple piezo-crystals and/or phased array technology. The array of crystals, transducers, provides a wide coverage of the regions of interest in the rotor



body with focused beams indeed “combing” the area. The ultrasonic transducers are manipulated automatically with a mechanized system, resulting in a highly reproducible scanning of the rotor body. The method is very suitable for “trending” data, in other words: for monitoring flaw

indications —once detected— over longer periods! With phased array technology there is only one transducer necessary to produce all selected angles automatically. In addition, Time Of Flight Diffraction (TOFD) transducers are utilized to cover specific areas.

Combining fracture mechanics expertise including computer modeling and non-destructive inspection methods, it is possible to pinpoint the precise location of “regions of highest interest”. The COMB system can be adjusted optimally in advance: optimal focusing! Detected flaw indications are evaluated instantly with these modeling techniques even before the inspection job has been finished. This results in a Fitness-for-Purpose (FFP) evaluation, yielding advice on replacement, refurbishment or continued operation. Lifetime analysis and inspection interval planning based on operating conditions is an additional possibility.



Benefits

- Independent assessment as to continued operation with a gas turbine rotor
- Reliable non-destructive inspection results: less uncertainty, improved decision making on the subject “run/replace/repair”
- Cost savings: decrease of direct cost through cheaper inspection method; lifetime extensions of the rotor, deliberate postponement of investments
- One-stop shopping for both non-destructive inspection and Fitness-for-Purpose evaluation.

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