



# Generator Rotor Dovetail Inspection

Generator tooth cracking is a condition that can result in the failure of your rotor or generator. GE has identified the potential for cracked rotor teeth in large steam turbine generators that have been in service for more than 10 years, experienced a negative sequence event, or have an operational history including extensive start-stops. GE's Technical Information Letter TIL 1292 describes this cracking potential and provides recommendations for inspection and repair. To help assess the condition of your generator rotor, GE Energy offers two solutions.

## Eddy Current Inspections

The eddy current inspection examines the entire rotor dovetail area, and can be performed during an outage after the retaining rings and slot wedges have been removed. The test employs eddy current coil arrays on both sides of a specially designed probe, built to specific rotor dovetail dimensions, to provide complete coverage of the slot dovetail geometry. This probe configuration and the equipment utilized allows the entire length of the slot to be inspected with a single scan. The data acquired is then analyzed to provide an accurate assessment of the rotor dovetail condition.



Eddy current inspection

When ET inspection is performed in conjunction with the recommended repair modifications described in TIL 1292, no further dovetail inspection is required unless a negative sequence event occurs.

## Ultrasonic Inspection

If the wedges will not be removed, an ultrasonic inspection can be performed at the wedge butt joint locations where fretting and crack initiation typically occurs. This test can be performed without removal of the retaining rings or wedges.

If no detectable indications are found, GE will recommend an inspection interval based on the individual unit operating history.

## Benefits

The advantages of a GE inspection include:

- Improved unit availability
- Enhanced equipment life
- Decreased risk of forced outage and catastrophic failure
- Access to GE design criteria



Ultrasonic Inspection

## Applicability

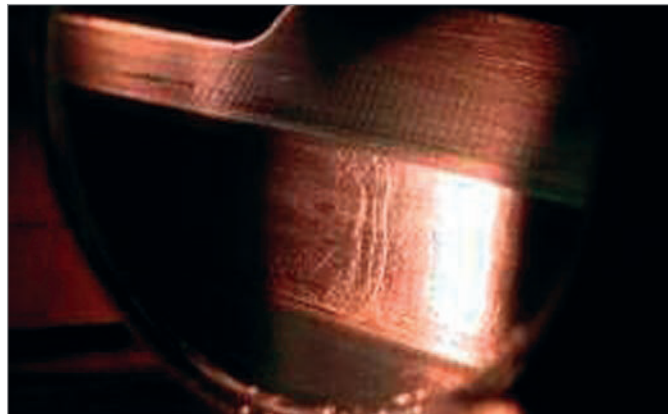
The generator rotor dovetail inspection is applicable to GE large steam turbine generator rotors and select 324 generator rotors.

Certain conditions may increase the risk of generator rotor tooth cracking. Contact us for details if your unit experiences:

- Negative sequencing
- Change in rotor vibration characteristics
- Extensive start stops (>1000)

## Additional Benefits

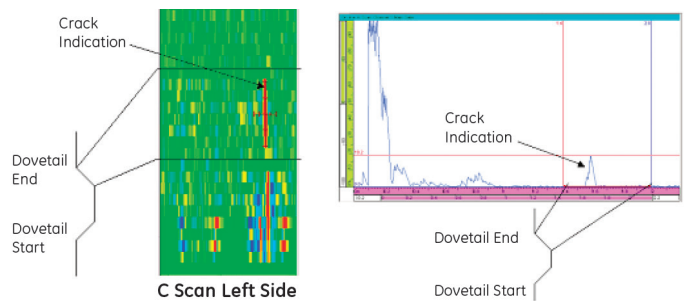
- UT test designed to reduce potential for false indications due to fretting damage
- UT inspection can be used to minimize operational risk until rotor is scheduled for wedge removal
- Inspection data is used to aid in developing repair options and to ensure indications have been completely removed during the repair process



Eddy current inspection

## Additional Benefits

	ET	UT
Inspection Time	2 to 3 shifts (all slots)	1 shift (#1 slots only)
Detectability	> 0.005"	> 0.03"
Retaining Rings and Wedge Removal	Required	Not required
Special Preparation Required	Tape off windings and clean dovetail surfaces	No



ET and UT images of the same crack

To learn more about this offering, contact your GE sales representative or visit [powergen.gepower.com](http://powergen.gepower.com).