

CORONA, TRACKING, AND ARCING

GUIDE TO ELECTRICAL INSPECTION WITH ULTRASOUND TECHNOLOGY

Using ultrasound technology to inspect electrical systems and diagnose potential problems is a technique that should complement traditional IR inspection.

Ultrasound can also be used to monitor the condition of bearings, equipment

lubrication, steam traps, as well as to find compressed air leaks.

Opening energized electrical components is risky. Your techs should be using ultrasound to detect corona, tracking, and arcing faults to save time while improving safety.

When examining electrical systems, it's best to employ ultrasound periodically between annual infrared scans – relying on one technology makes it much easier to overlook problems.

THERE ARE THREE MAJOR FAULTS

THAT CAN BE DETECTED AND THEN ANALYZED BY RECORDING THE ULTRASOUND SOUND FILE.

CORONA DISCHARGE

Occurs in conductors carrying over 1,000 volts.

★ This is the ionization of air surrounding an electrical connection above 1000 volts.

Corona typically begins when contaminants build up around the contactors, which attracts moisture and starts the ionization process. It does not produce heat, but does produce high frequency sound detected by the Ultraprobe.



Ultrasound inspection allows safer measuring of conditions.



Infrared can't detect corona below 240 kV.

TRACKING

Can occur at all voltages (including 480 volts).

★ A less dramatic form of arcing: electrical discharge across damaged insulation or across loose connections.

ARCING

Occurs at all voltages, can affect both power supply and damage to equipment.

★ A sudden burst of electrical discharge from insulator to ground. You can only hear the actual moment of burst, sudden starts and stops of the discharge.

ULTRASOUND INSPECTION OF ELECTRICAL ISSUES BEST PRACTICES



Use high-quality, reliable ultrasound equipment.



Perform an ultrasound inspection before opening any cabinet or enclosure where you suspect there to be the potential for corona, tracking, or arcing.



Record the sound and analyze in spectrum analysis software to diagnose the fault. Corona, tracking, and arcing all have signature characteristics that will show in either the FFT view or Time Wave Form view.