ELECTRIC UTILITY

SOLUTIONS FOR POWER GENERATION, SUBSTATION/TRANSMISSION, AND DISTRIBUTION APPLICATIONS

www.flir.com/utilities
FLIR ELECTRIC UTILITY SOLUTIONS

Save time and ensure equipment sustainability with FLIR’s powerful, high-tech tools. Whether it’s your responsibility to maintain uptime at electric power generation stations, keep the power flowing through distribution networks, or troubleshoot failures at the residential and commercial level, FLIR offers a complete range of thermal imaging, gas detection and test equipment that will help you diagnose potential problems before they turn into expensive failures.
Steam Turbine Inspections

Locating carbon dioxide (CO2) leaks on turbine generators can be time consuming when using traditional methods. A small leak left undetected can become a big, costly problem—as well as a serious safety concern. But these problems are not always obvious to the naked eye, making you more vulnerable to unnoticed leaks and unexpected downtime. Using a combination of inspection tools such as optical gas imaging, thermal cameras, and electrical test equipment can help you visualize gas in real time to localize small leaks, verify repairs, and avoid shutdowns.

Maintain and Inspect Bushings

Bushing failures can cost your company millions of dollars in lost revenue, downtime, repairs, and overtime pay for workers required to take the system out of service. Traditionally, inspection methods, including Micro-ohm tests or power factor measurements, are labor-intensive and require you to take the system out of service. By incorporating the FLIR E53, real-time imaging technology into your inspection routine, you'll collect temperature data in real time, pinpoint hotspots on bushings before a failure occurs, and avoid unnecessary shutdowns.

Solar Inspections and Diagnostics

Routine solar panel inspections are an essential part of operational efficiency. They can prevent future breakdowns, manage warranty claims, and ensure the contractual performance and yield guarantees. A UAS solution with onboard thermal imaging technology is a key to inspecting large panel areas and inspect solar panel problems from the air. Once the problems are detected with infrared, a digital multimeter or clamp meter can help you diagnose electrical issues and keep the panels running at the highest degree of efficiency. Incorporating thermal inspections into your routine maintenance plan will reduce your inspection times, help you work more safely, and improve your overall efficiency.

Wind Power Preventive Maintenance

Wind turbine components are susceptible to wear, which can break down. When this happens, the end-result may be costly downtime or a bad accident. That's why preventive maintenance and periodic inspections are so important. Traditional imaging technologies allow you to inspect electrical and mechanical components of your wind farm from a distance in real time. By using thermal imaging technology, you can detect potential problems before they turn into potentially life-threatening situations.
Inspections of Load Tap Changers (LTC)

If a LTC fails, the entire transformer will shut down. Transformer failures can cost your utility millions of dollars, adding overtime pay for workers and additional expenses to expedite repair. This outage will adversely affect numerous distribution circuits and the remaining power grid due to the need to reroute the load to supply the affected circuits.

A thermal image sensor is a valuable tool for recording or monitoring temperatures in real-time. Using fixed thermal imagers for regular condition monitoring can help you understand the temperature trends of a LTC and make critical decisions on the health of the transformer before it fails.

Electric Substation

Insulator Inspections and Diagnostics

When an insulator fails, it may cause a widespread outage. There’s a good chance it will affect multiple components in the transmission system — not only in the area around the insulator problem but also in areas on either side of it. Higher temperatures monitor using a combination of thermal imaging cameras network reduces the likelihood of a high temperature before they occur. Using a thermal camera, you can easily identify temperature variations and hot spots to locate the problem area and diagnose the issue. This technology is ideal in environments where products are located high up out of reach.

Using regular temperature monitoring using thermal imaging cameras can help identify potential problems early, allowing you to take corrective action before the problem escalates. This technology can help you improve customer satisfaction by ensuring no loss of electricity.

Electric Transmission

Inspecting Connections in Electrical Transmission

If an electrical connection isn’t working properly, your transmission system may operate inefficiently or safely. It’s important to regularly inspect connections to ensure that the connection works and breaks the current efficiently. Every system has a lot of small connections, and they are often located high up and out of reach. Conducting regular surveys of substations and transmission towers using thermal imaging cameras can help identify potential problems early. Using a thermal camera, you can easily scan for temperature differences and hot spots to locate the problem area and diagnose the issue. You’ll establish a safer work environment, increase productivity efficiencies across the system, and improve customer satisfaction by ensuring no loss of electricity.

Inspections of SF6 Circuit Breakers

When you suspect that there’s a gas leak in a SF6 breaker, it’s crucial to locate and fix it immediately to prevent downtime and revenue loss. It’s not always easy to use the standard optical gas detection methods such as sniffers or soap bubble tests. The longer a leak is left unattended, the more revenue lost, and the greater the carbon footprint on the environment. By using a portable, non-contact optical gas imaging camera, you can identify SF6 and other gas emissions without the need to shut down operations. You can also quickly assess the condition of the breaker and take action to prevent further problems. Doing so will also help reduce emissions to your company can meet environmental regulations and avoid potential fines.

For more information about FLIR Electric Substation/Transmission solutions, or to schedule a product demonstration please visit www.flir.com/substation-transmission
ELECTRIC DISTRIBUTION

Distribution Transformer Inspections
If a transformer overheats and fails, it can be devastating to the utility. A widespread outage might disrupt power to thousands of customers, and the cost to repair or replace equipment is expensive. Regular temperature monitoring using advanced diagnostic thermal imaging systems can help you identify, inspect and monitor the temperature distribution on the transformer and its associated equipment or determine potential failures before they occur. It will show you what the naked eye can’t — high spatial resolution and thermal payloads can help you detect potential problems quickly and effectively, enabling you to prevent failures before they occur, reducing the cost of customer service and repairs.

Distribution Powerline Inspections
If you don’t catch distribution powerline problems early, you may end up dealing with a major outage that disrupts power to thousands of customers. That’s why regular inspections are necessary. With FLIR’s comprehensive line of thermal imagers, you can inspect small components such as insulators, connectors and splices to ensure that they’re not hot spots. Regular thermal surveys on distribution powerlines can give you a full picture of potential problems. Today’s power transmission systems are complex and are necessary. You’re likely to face issues that you can’t detect before they occur, including the cost of customer service and repairs.

For more information about FLIR Electric Distribution solutions or to request a product demonstration please visit www.flir.com/power-distribution

COMMERCIAL/RESIDENTIAL

HV Electrical Distribution Panel Inspection
Without power, factory operations can quickly grind to a halt. That’s why regular scheduled maintenance is important to ensure your electrical consumer panels are in working order. A thermal imager can help you detect hot spots in your distribution system before an outage occurs. Since the source of the problem is identified, a clamp meter can help you diagnose electrical issues in your facility and determine the proper course of action. You’ll avoid downtime, unnecessary maintenance or repair costs, and lost profit.

Electrical Panels Inside the House
As an electrician or service provider, it’s crucial that you find and fix electrical problems before they become a bigger issue. FLIR’s pocket-portable thermal imagers and test instruments to investigate failing power inlets, transfer switches, and fuses. Inexpensive thermal imaging cameras can help you locate problems, point them out to customers, and prove they’ve been repaired. Clamp and digital multimeters enhanced with thermal imaging offer a two-in-one advantage by helping you find the source of a problem and collect the data you need to fix it.
Thermal Imaging Value

The greater your knowledge of thermal imaging, the greater the dividends you’ll realize for your company and your career. That’s why the Infrared Training Center (ITC) offers classes for utility industry applications—from free, online courses to advanced certification training.

ITC courses include:
- Level I, II, and III Thermography Courses
- Electrical Inspection and Level I Electrical Thermography Courses
- Optical Gas Imaging Certification Courses

FLIR INFRARED SOFTWARE AND MOBILE APPS

FLIR helps you work more efficiently and boost productivity through software suites and mobile applications for Android and iOS devices.

SOFTWARE

FLIR ToolsTM for PC or Mac OS is designed to make it easy to create inspection reports on your computer. With FLIR Tools, you can change image settings, add new temperature points, and create standardized reports. This free software is available for download from flir.com.

FLIR Tools+ offers the addition of cartridgeicature controls for grading images, linearing radiometric parantheses, recording video, and creating personalized inspection reports. This software comes included with FLIR T-Series cameras, or can be downloaded for free as a 30 day trial from flir.com.

APPLICATIONS

The FLIR Tools mobile app for Android and iOS offer the same great software in a mobile app in the palm of your hand or on your smartphone. This app is available for download from the Apple App and Google Play stores.

FLIR Co™ In-Plant Inspection Management Application is a professional software tool aimed at streamlining inspections and improving confessed accuracy and reporting. Use this application to plan and prepare for inspections, collect inspection data, and deliver them remotely to your team or clients through a secure portal.

The FLIR Training Center

FLIR Software Development Solutions

FLIR Software Development Kit (SDK) allows companies to use their own Computerized Maintenance Management Systems (CMMS) to support real-time thermal measurements, as well as one of METALINK™, APL, GPS, and other important parameters embedded within the image.

THE INFRARED TRAINING CENTER

FLIR Software Development Kit: FLIR’s SDK allows companies to use their own Computerized Maintenance Management Systems (CMMS) to support real-time thermal measurements, as well as one of METALINK™, APL, GPS, and other important parameters embedded within the image.

World-Class Infrared Training

ITC thermography certification courses help prepare you to take leadership roles in infrared inspection programs. Level I confirms that you know how a thermal imager works and how to use it. Level II cranks up your credibility with more in-depth concepts and intensive labs. Level III asserts that you have the knowledge and skills to develop and maintain your company’s thermography program. These certifications offer a strong validation to support the work you do as a thermographer.

ITC offers classes at the training center in Nashua, NH, at locations around the country, or in your facility. On-site training is encouraged if your company needs to certify a group of 10 or more. ITC’s onsite training courses are the best way to accommodate a large group on a limited budget. Our instructors will travel directly to your facility to limit your travel costs by keeping staff onsite, reducing downtime and short staff issues.

Visit https://flir.com/ITC-onsite-training for more information about on-site training.

For a complete list of courses and a current schedule, visit infraredtraining.com or call 1-866-TrainIR (866-872-4647).

FLIR InSite™ Inspection Management Application is a professional workflow tool aimed at streamlining inspections and improving confessed accuracy and reporting. Use this application to plan and prepare for inspections, collect inspection data, and deliver them remotely to your team or clients through a secure portal.

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