

APPLICATION NOTE

Infrared inspection for oil and gas applications

Unscheduled downtime can cost millions. Professionals who work in the oil and gas industry know it is critical to maintain stable, continuous operations without sacrificing safety. They also know that regular maintenance, quick diagnosis of potential problems, and clear documentation are key to keeping production going smoothly and meeting regulatory requirements.

A multipurpose monitoring and troubleshooting tool for oil and gas applications

Thermal cameras offer the versatility, accuracy, and usability to address a wide variety of inspection and troubleshooting activities in the oil and gas industry. Whether used onshore or offshore, upstream or downstream, thermal imagers allow you to capture two-dimensional representations of the apparent surface temperatures of a wide variety of equipment and processes. You can collect heat signatures for process equipment, as well as for leaks in pipes and tanks, without touching those surfaces and without interfering with the process. The images and measurements from that inspection can help you quickly identify problems at an early stage.

However, not all thermal imagers are created equal. The new Fluke TiX560 and TiX520 thermal imagers—part of the Fluke Expert Series line—are ideal for oil and gas applications because they allow you to collect significant information from a safe distance. That means you can often use these cameras to inspect equipment or trouble spots without interrupting production.

The standard lens and optional 2x and 4x telephoto lenses produce high resolution images with a crisp level of detail so you can quickly pinpoint temperature anomalies.

Expedite inspection and troubleshooting

Oil and gas production environments can be extremely challenging. The hazardous nature of the products, the hot, moist, dusty and corrosive conditions, and less than optimal lighting, drive inspectors to complete their tasks quickly and leave the area. You need to have confidence that the thermal imager you're using can identify potential problems at an early stage, because you don't want to have to make a second trip, or deal with the fallout of imprecise imaging.

That's why the new Fluke Expert Series thermal cameras with their 180° articulating lens and high resolution, thermal sensitivity, advanced focus system and the large 5.7 inch LCD are well suited to this environment. The optional telephoto lenses allows you to work from a safe distance and get high resolution images that provide detailed diagnostic

information and allow you to inspect areas that you wouldn't be able to get close enough to see without shutting down production.

Here are just some of the inspection areas where these cameras can save you time, energy, and downtime:

Top TEN

Oil and gas inspection applications for Expert Series thermal cameras

1. Remote sites/compressor stations
2. Towers, stacks that are burning, and air scrubbers
3. Steam traps, leaks, cat cracker degradation
4. Horizontal flares on offshore rigs
5. Top drives
6. Tank level
7. Electrical systems
8. Equipment monitoring
9. Motors and drives
10. Bearings



Fluke TiX560 and TiX520 thermal cameras provide the first line of defense

The new Fluke TiX560 and TiX520 Expert Series Thermal Cameras provide a unique set of capabilities to help you quickly identify potential issues and keep you up and running.

- 1 **Ergonomic 180° articulating lens** gives you maximum flexibility and makes it easy to navigate over, under, and around objects so you can see the image before you capture it. It allows you to verify that the image is in focus before you record it, unlike a pistol-grip camera that can be very difficult to focus when you're in an awkward position. This allows technicians to work in more ergonomically agreeable positions for all day use.
- 2 **The only 5.7 inch responsive touchscreen** in its class¹ delivers 150%² more viewing area to make it easy to see even subtle changes and details right on the camera. Quickly finger scroll through saved thumbnail images on the screen, zoom in and out, and access shortcuts to save time and increase productivity.
- 3 **Enhanced image quality** and temperature measurement accuracy allow you to increase 320 x 240 images to 640 x 480 in SuperResolution mode to find subtle anomalies faster.
- 4 **LaserSharp® Auto Focus** at the touch of a button takes the guesswork out of precision focus. The built-in laser distance meter calculates the distance to your designated target and then automatically focuses to produce the optimum image.
- 5 **Filter mode** achieves Noise Equivalent Temperature Difference (NETD) as low as 30 mK to detect very slight temperature differences.
- 6 **Hot and cold spot markers** highlight the hottest and coldest pixels on the image and displays their temperature values at the top of the screen for quick identification of anomalies.
- 7 **On-camera storage, editing, and analysis** allow you to store thousands of images in memory and bring them up in the field to edit, add digital images, text or voice annotations, and analyze right on the camera.
- 8 **Fluke Connect®** wireless compatibility enables you to see, save, and share live video, still images, and measurements with team members who have the Fluke Connect™ mobile app on their smart phones. Just push the shortcut button to connect.

¹Compared to industrial handheld thermal cameras with 320 x 240 detector resolution as of October 14, 2014.

²Compared to a 3.5 inch screen.

- **Remote sites/compressor stations.** These remote sites are linked to regional operational centers via freeway and cellular towers that constantly transmit data on their operating conditions. Rather than having to climb 180-foot towers to check for loose connections and other weak links, technicians can use a 4x telephoto lens to examine these areas from the ground, quickly, safely, and accurately.
- **Towers, stacks that are burning or steaming, and air scrubbers** can be easily scanned from the ground to evaluate their performance.
- **Steam traps, leaks in hard-to-reach areas such as cement kilns, or degradation of fluid catalytic crackers “cat crackers”.** You can point these thermal cameras at hard to reach targets and rotate the 180 degree articulating lens allowing you to easily see your target.
- **Horizontal flare inspection on an offshore rig.** With the 4x telephoto lens, you can inspect an offshore flare either from the rig or from a helicopter. The high frame-refresh capabilities, helps you spot sudden rapid temperature changes, that might indicate that the flare is about to burn out.
- **Top drive inspection.** Rather than have to climb up an oil drilling rig, you can inspect the top drive from the ground using the 4x telephoto lens.
- **Tank level inspection.** Using a wide angle lens, you can quickly scan tank levels. You can use these Expert Series cameras at a distance to scan the pipes.

In addition to long distance exterior inspections, you can use these Fluke TiX series thermal cameras to troubleshoot the standard equipment in a refinery from a safe distance.

- **Inspecting electrical systems.** These thermal imagers help pinpoint potential problems with loose and corroded connections, electrical imbalance, failing transformers and switchgear and faults in motor control centers. You can clearly view the image in less than optimal light conditions on the large 5.7-inch backlit display.
- **Monitoring.** Helps identify problems in refractory-lined equipment, heaters, boilers, furnaces, heat exchangers, steam lines and traps, process and safety valves, steam turbines, process lines and mechanical rotating equipment—both in the plant and in the field.
- **Checking motors and drives.** You can use these Fluke TiX thermal imagers for regular inspections to:
 - See if the motors and associated panels and controls are operating too hot
 - Track down specific failed components
 - Check for phase imbalance, bad connections, and abnormal heating on the electrical supply
- **Inspecting bearings.** Capture two-dimensional high resolution infrared images of bearing and housing temperatures, to compare current operating temperatures to benchmarks and detect potential failures in time to prevent them.





Multiply your resources with Fluke Connect® wireless capabilities

With the Fluke Connect® mobile app you can transmit images and measurements from Fluke Expert Series thermal cameras in real-time to any smart phone that has the Fluke Connect® mobile app. That makes it easy to share results with team members because everybody on the ShareLive™ video call can see the same images and measurements remotely that you're seeing on site. That can help you get questions answered or get approvals on the spot and expedite repairs.

You can also save images and measurements from your smart phone to EquipmentLog™* history in secure Fluke Cloud™ storage for easy access by all authorized users. In that way you can compare real time measurements to baseline data to identify problems and make better decisions faster.



You can also use SmartView® software included with all Fluke thermal cameras to document your findings in a report that includes thermal images, visible light images, and blended images to communicate problems you find and to suggest repairs.

Fluke Connect® is not available in all countries.
 *Within providers wireless service area.

See what you're missing

The common requirements for all of these applications are clear image resolution, temperature detail and accuracy, speed, and flexibility to get images in areas that may be hard to reach. Those are the very capabilities that set these Fluke thermal cameras apart.

To find out more about how these versatile, high resolution, high accuracy cameras can help you keep your production processes moving smoothly, consult your Fluke sales representative for more information.

Fluke. *Keeping your world up and running.®*

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