

Thermal Imaging Cameras

The thermal imaging camera is a tool that can help us do our job better. When TIC's first became more mainstream in the fire service having one was a privilege not many departments had. As the technology advanced, TIC's have become tools that are extremely beneficial on the fire ground. Unfortunately, training with these tools is often lacking, and pulling the TIC off of the truck is sometimes an afterthought. The TIC's abilities to provide us with information is often underutilized because we lack frequent training.

The Basics

We all know that a TIC can provide a magical eye when it comes to searching a smoke filled environment. Whether it be a down firefighter or an occupant, we know that the TIC can help speed up our search. We also know that a TIC is a helpful tool when the fire is knocked down and we are overhauling a structure. Both of these examples are great uses for the TIC, but there is so much more that we can use them for.

The first step is getting the TIC off of the truck. Every engine in the district is equipped with a TIC. This is a great thing and something we should all be grateful of. Unfortunately this tool is often left in the charging base stored safely on the truck. The only way that this tool can help us is if we put it into action. When you pull up to a working fire, get it off the truck. Make sure that you take the time to know how the TIC works. They are very simple, and learning how it functions only takes a few minutes. These two things are easy to master and should be practiced during your regular drills.

Size-Up

As we arrive at a fire scene, we should be

conducting a thorough size-up of the scene. We can normally see smoke, and sometimes fire, but we cannot get a detailed picture of what is going on inside. Using a TIC as part of your size-up and 360° walk around can provide you with key information about the location and intensity of the fire. Having this additional knowledge will assist in tactical decision making. Using the TIC during your size-up can be helpful but it is important to use it as a tool and not a replacement for your eyes. Add the use of the TIC to your routine but don't forget to look where you are going and what you have outside the small screen.

On Attack

If your tactics lead you to an offensive interior attack, your TIC can provide you information that we have traditionally used our senses for. Monitoring heat as you advance has always been important and plays a huge role in your safety. Advances in PPE have made detection of heat changes less obvious and now when those changes are noticed it can be too late. Our cameras are equipped with a thermometer and the temperature is displayed on the TIC screen. This allows you to get a rough idea of what you have as you move throughout a structure, and more importantly whether it's getting hotter or cooler. Monitoring temperature lets you know if fire conditions are worsening and should prompt you to start cooling the environment if it is. Catching early signs of flashover or simply dangerous levels of heat can help protect you as you work on confining and extinguishing a fire.

Search

As mentioned before, using a TIC to conduct searches for fire victims or downed firefighters is a huge advantage the TIC can provide. When the TIC

is used during training evolutions, this use is often the most practiced. It is important to keep training for this purpose but it is important to train correctly. When we use a TIC during search training we often do so in an environment that is the same temperature as the ambient air that surrounds us. As we work in 50-90 degree temperatures, observing a human through the TIC is pretty easy. A defined white blob of person appears on our screen and we know what we see is what we are looking for. As we apply the same techniques in real life searches it is easy for a firefighter to expect to see the same pronounced image of a human forgetting that the temperatures that we are operating in are often higher than that of a human. The human body may also be closer to the air temperature that surrounds it making the image of the victim not so obvious. TIC technology has improved and image quality is a big part of a camera's quality. The reason for that is we want to be able to clearly see objects because simply going off of the temperature is not as reliable.

Training to see images in a fire environment is also difficult to achieve. The best way to prepare firefighters for this is through TIC usage techniques. Simply going through the motion of lifting the TIC to your face piece and looking for the obvious color difference is not sufficient. Train to look at the TIC screen and quickly identify objects before moving on with your search. We do not have a lot of time during a search so practice and developing good muscle memory is vital.

The TIC can also be used for searches outside of structures. In years past, TIC's have been used in outdoor searches. This is especially helpful at night if you have a large open area that you are searching to locate a missing person. Much like TIC use during size-up the TIC should be used as a tool



and not replace your eyes and a flashlight. Holes, fences, tree limbs, etc. may not be seen as clear through the TIC and you should use other means to make sure you protect yourself from injury.

Overhaul

The TIC has become a useful tool when we overhaul a fire or are trying to locate overheated equipment. Following extinguishment of the obvious fire, we are tasked with making sure that we aren't overlooking a hidden fire. Hidden fires can be located behind walls, above ceilings, attic and crawl spaces, and any other place we cannot see. Using the TIC to locate areas of heat helps get us in the right area to overhaul. Firefighters can easily over-overhaul an area if they rely completely on the TIC for direction. Remember that the area you are overhauling was subjected to high levels of heat during the fire. Items like walls and ceiling will retain heat for some time after the fire is extinguished. The TIC gives you a good idea of areas to focus on but remember to use basic skills and instinct to determine the amount of overhaul and damage you need to create.

Summary

The thermal imaging camera is a wonderful tool that we have at our disposal. It is a tool that is often underutilized and maybe underestimated. To improve its functional ability, firefighters must understand how the tool works and how they can apply it to their situation.

One of the most important things to remember is that the TIC is a tool that should be used in conjunction with other tools and experience. A TIC is not a one-stop, catchall solution to every problem you might run into. This training minute covers great ways to implement the TIC into your operation but its uses are up to you and your training. Make sure you know how the TIC on your truck works and be ready to use it on scene.