



# APPLICATION STORY



FLIR SR-Series thermal imaging cameras produce crisp thermal images on which intruders can be detected regardless of lighting and weather conditions.

## French solar park protected with 110 FLIR thermal imaging cameras

Solar power is becoming increasingly popular and more and more solar power plants are installed every year, but solar panels are a costly and vulnerable commodity. Good security is therefore a must, but more often than not these parks are located in isolated areas, making perimeter protection a challenge. To protect their investment many solar park owners opt for a security system based on thermal imaging cameras.

One solar park that is secured with FLIR thermal imaging cameras is located on a mountain top in the South of France in sight of the snowy tops of the French Alps. With a total surface of over 60 hectares (600.000 m<sup>2</sup>) the solar park has a challenging perimeter to protect. That daunting task is the responsibility of the French security company Telem - ONET SECURITE. "This is a difficult environment for perimeter protection systems", says Reza Righi, security surveillance expert at Telem - ONET SECURITE. "Out here in this isolated location there is no lighting and installing such lighting would not only be costly, it would also require the use of a lot of electricity in order to keep the lights burning every night."

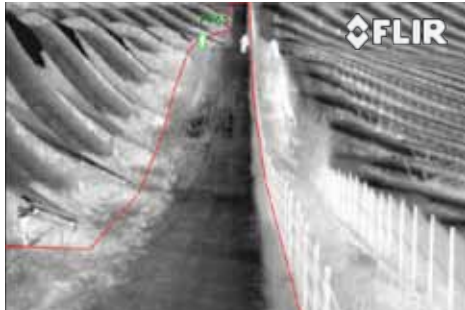
That is one of the many reasons why Telem - ONET SECURITE chose a perimeter protection system based on thermal imaging cameras. "Thermal imaging

cameras provide crisp high contrast video footage regardless of lighting and in all weather conditions", explains Righi. "This ensures a high detection performance in all possible situations."

### Thermal imaging

Thermal imaging cameras are similar to regular video cameras, but where regular video cameras record visible light images a thermal imaging camera records infrared radiation. All matter emits infrared radiation as a function of its temperature. Thermal imaging cameras record the intensity of infrared radiation and produce a thermal image. Because thermal imaging cameras rely on thermal contrast instead of visual contrast they need no light whatsoever to produce crisp thermal images, making them ideal for day and night monitoring.

All around the premises fences have been installed, but fences alone are not enough,



The thermal contrast between a person and his surroundings is generally much bigger than the color contrast, even during the day, so the video analytics software can detect intruders from a longer range.



Due to the hilly terrain several cameras with different focal lengths were needed to cover the entire perimeter of the solar park.







All along the perimeter a combination of fencing and thermal imaging cameras protects against intruders.



A fence alone is not enough to keep intruders out. Fences can be climbed quite easily. Thermal imaging cameras will help detect intruders before any property is damaged.

according to Righi. "Fences can be climbed rather easily. Even barbed wire or electric fences will not keep out all intruders. We therefore needed to make sure that we had a complete and reliable intruder detection system." With a perimeter of 10 km, ground and fence sensors were out of the question. "The infrastructure needed for protection of the entire perimeter was quite costly and we'd still need a surveillance system as well besides the sensors to visually confirm alarms."

### Cost effective solution

Regular CCTV cameras are of limited use however, according to Righi. "Obviously there is no lighting here and installing lighting along the entire perimeter was out of the question, so we needed a solution that would work night and day, so to me thermal imaging cameras were obviously the best possible choice. Not only do thermal imaging cameras produce crisp high contrast thermal images regardless of lighting, they are also very cost effective. Provided that you use high quality thermal imaging cameras, fewer cameras are needed to secure the perimeter when

compared with CCTV cameras. This helps keep the overall costs of the project to a minimum, without compromising on the detection performance."

FLIR delivers a full range of high quality thermal imaging cameras with wide variety of different optics. For Righi the choice for thermal imaging cameras from FLIR Systems was therefore an obvious one. "The thermal imaging cameras from FLIR Systems provide unparalleled image quality, no other thermal imaging camera manufacturer delivers the same quality, in my opinion, but another important reason for me to choose FLIR is the fact that it is the only thermal imaging camera supplier that offers a wide variety of different optics. Due to the hilly terrain we needed lenses with different focal lengths to cover the perimeter of the solar park."

### FLIR SR-Series thermal imaging camera

For the solar park perimeter protection system Telem – ONET SECURITE installed 110 thermal imaging cameras of three different models from the FLIR SR-Series. All three models contain a Vanadium Oxide (VOx) microbolometer detector that produces thermal images with a resolution of 320 x 240 pixels, but they have different optics: the FLIR SR-348 has a 9 mm lens that delivers a field of view of 48°, the SR-334 has a 13 mm lens that delivers a field of view of 34° and the SR-324 has a 19 mm lens that delivers a field of view of 24°.

The live thermal footage of all 110 thermal imaging cameras is transported over glass optic fiber cables to a local encoder and transported over a local network to a server in the control room that runs Evitech video analysis software. The thermal footage is analyzed in real time and when a breach of the perimeter is detected an alarm goes off in the control room and the guards present in the park at that time will be notified.

For the installation of the thermal imaging cameras Telem – ONET SECURITE cooperated with FLIR products distributor AlphaPhotonics. Founded in 2003 AlphaPhotonics has many years of experience in the installation of optoelectronic systems, including thermal imaging camera based security systems such as this one.



From left to right Telem - ONET SECURITE security expert Reza Righi, AlfaPhotonics sales manager Jean Beguin and Telem - ONET SECURITE technician Frederic Champoussin.

Thanks to its extensive experience in video security systems and the combination of thermal imaging cameras with software analytics, AlfaPhotonics was able to support Telem with the system design, camera locations and analytics settings, taking into consideration the minimum pixels on target, atmospheric conditions, field of view, range performance and dead zones.

### Thermal imaging and video analytics

Thermal imaging cameras generally combine better with video analytics software than CCTV cameras, according to Righi "The thermal contrast between a person and his surroundings is generally much bigger than the color contrast, even during the day, so the video analytics software can more accurately detect intruders based on thermal footage compared to CCTV camera footage."

The higher thermal contrast also helps reduce the unwanted alarm rate, according to Righi "The high contrast thermal footage allows the analytics software to more accurately distinguish between actual intruders and other types of movement. This lowers the amount of unwanted alarms to a minimum. A CCTV based perimeter protection system would generate much more unwanted alarms. However, it does take a bit of fine tuning to get the settings right, in order to let the system ignore wildlife without letting intruders go undetected."

These thermal images are taken with a FLIR SR-324 thermal imaging camera, which has a 19 mm lens and a field of view of 24°. The distance at which these thermal images were taken is approximately, from left to right, 110, 40 and 10 meters.



For more information about thermal imaging cameras or about this application, please contact:

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