Thermal cameras monitor the assets of South African solar farms

Solar power is hot in South Africa. With the construction of two new solar farms in the Northern Cape Province in 2012, PV specialist Tenesol started another of the many renewable energy projects that are popping up in South Africa. To protect its valuable solar panel assets against unwanted intruders, Tenesol called upon security specialist TeleEye, a firm believer in the benefits of thermal imaging technology for surveillance applications.

FLIR's SR series of surveillance cameras, offer high-quality thermal imaging in any night- or daytime environmental conditions.

Solar country

South Africa is a country that is destined to make solar energy flourish in the years to come. The warm and dry climate, as well as the country's geographical vastness, makes it ideal for the development of solar farms. In its 20-year plan for renewable energy, the South African government aims to achieve energy production consisting of 8,400 MW wind power, 8,400 MW solar power and 100 MW concentrating solar power energies. Ambitious goals, which have been set to meet the country's ever increasing demand for power.

Late 2012, Tenesol, a SunPower company, announced the construction of two South African ground-mounted solar power projects totaling 33 megawatts (MW). Both projects are located near Douglas, South Africa in the Northern Cape Province.

Tenesol is specialized in the engineering, design, manufacturing, installation and operation of solar energy systems. Its services cover systems that produce or consume the energy they generate (off-grid sites, electricity grid connected, solar water heating) for customers around the globe. In January 2012, Tenesol was acquired by US-based SunPower Corp.

Perimeter protection

Solar power plants are unmanned sites and require real-time monitoring day and night in order to efficiently avert unwanted intruders and prevent damage or terrorist attacks. TeleEye South Africa (Pty) Ltd,

Philip Smerkovitz, Managing Director at TeleEye South Africa: "Next to their very accurate optics and image quality, the robustness of FLIR cameras is beyond compare."

the South African division of Hong Kong based company TeleEye, has many years of experience in securing public utilities sites. The solutions provided by TeleEye South

Africa enable 7 days a week, 24 hours a day standalone and remote operation with real-time monitoring and recording. TeleEye has been a strategic distributor of FLIR thermal cameras since 2010.

For the two solar plants, TeleEye, along with system integration partner, Stallion Security, provided Tenesol with a complete perimeter surveillance solution, including thermal cameras, video analytics and alarm management. The two solar plants have perimeters of 5 and 8 km, and have been secured with thermal imaging cameras from FLIR Systems and electric fencing. TeleEye video analytics seamlessly integrates with the FLIR thermal imaging security cameras and is able to generate a wide range of alerts for intrusion detection applications.

Robust technology

Philip Smerkovitz, Managing Director at TeleEye South Africa, explains why FLIR thermal cameras were the number one choice: "Next to the very accurate optics and image quality we get from FLIR technology, the robustness of these cameras is beyond compare. This is no luxury, because the harsh temperatures that these cameras need to withstand almost every day is enormous." The two solar farms are located in South Africa's Karoo region. The Karoo heartland contains vast desert plains and majestic mountains. In the summer it is hot and dry and daytime temperatures of 40°C are not uncommon. "FLIR's experience from

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mission-critical systems is invaluable here, because the company has years of built-up expertise in the development of robust technology, which can stand extreme environments and extreme heat."

Seeing in the sun

FLIR thermal cameras allow you to see day and night. So, without any additional lighting, it is possible to detect intruders approaching the perimeter at night. "But equally important for this project was the ability to see in bright sunlight conditions," comments Philip Smerkovitz. "Sunlight can obviously be very bright in the Karoo desert. Thermal cameras are not hampered by that at all, and provide a clear image even if they are directed towards the sun." Glare from the sun – whether it's shining directly into the camera or reflecting off wet roads – blinds conventional video cameras, effectively hiding vehicles, people, and animals. Since thermal cameras need no light to operate, they ignore this glare,

and only respond to the heat signatures they detect.

Cost-effective

In comparison to traditional video cameras, thermal imaging cameras can cover a larger viewing distance, which means that fewer cameras are needed to efficiently monitor the perimeter. In addition, with thermal cameras, there's no need to invest or to maintain expensive lighting infrastructure. For the two solar parks near Douglas, 5 and 11 cameras were installed for the 5 and 8km perimeter respectively. TeleEye used different configurations of the SR series, with different lenses in order to efficiently monitor the odd shaped perimeter.

FLIR tools

TeleEye was responsible for the entire specification of the surveillance project, including the definition of the camera technology, video analytics and alarm management. In order to calculate the correct camera viewing distances, TeleEye used FLIR Raven software, the thermal security site planning tool. With FLIR Raven, you can conveniently display both range and location for each camera specified. The software shows you the area of detection coverage, allowing you to plan which cameras you need to have installed and where.

FLIR SR-Series thermal imaging security camera

TeleEye opted for FLIR's SR series of security cameras. The high performance SR-Series thermal imaging cameras are affordable, easy to install and when combined with good analytics software they provide excellent intruder detection performance.

Features incorporated in the FLIR SR-Series are:
- Different detector configurations available: 640x480, 320x240 or 160x120 pixels
- Wide variety of optics
- Digital Detail Enhancement (DDE)
- Rugged housing (IP66)
- Easy integration: serial control and analog composite video output

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

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