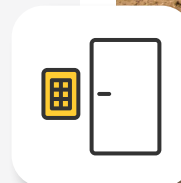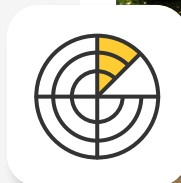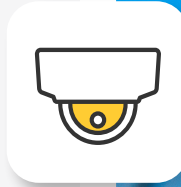# Axis solutions for solar farms

SECURE YOUR SITE.
OPTIMIZE PRODUCTION.
PROTECT YOUR PEOPLE.

AXIS®
COMMUNICATIONS

There's no better way to secure the value of your solar farm investment than with Axis cameras and devices for network surveillance.

Superior surveillance capabilities and smart analytics enable trend monitoring and early alerts, which set you up to be proactive when it comes to protecting physical assets, safeguarding productivity, and ensuring the well-being of staff and visitors. Axis solutions pair advanced sensors with visual confirmation and audio intervention possibilities, so you can effectively monitor both extensive perimeters and critical assets from remote locations – often with the same device playing multiple roles.
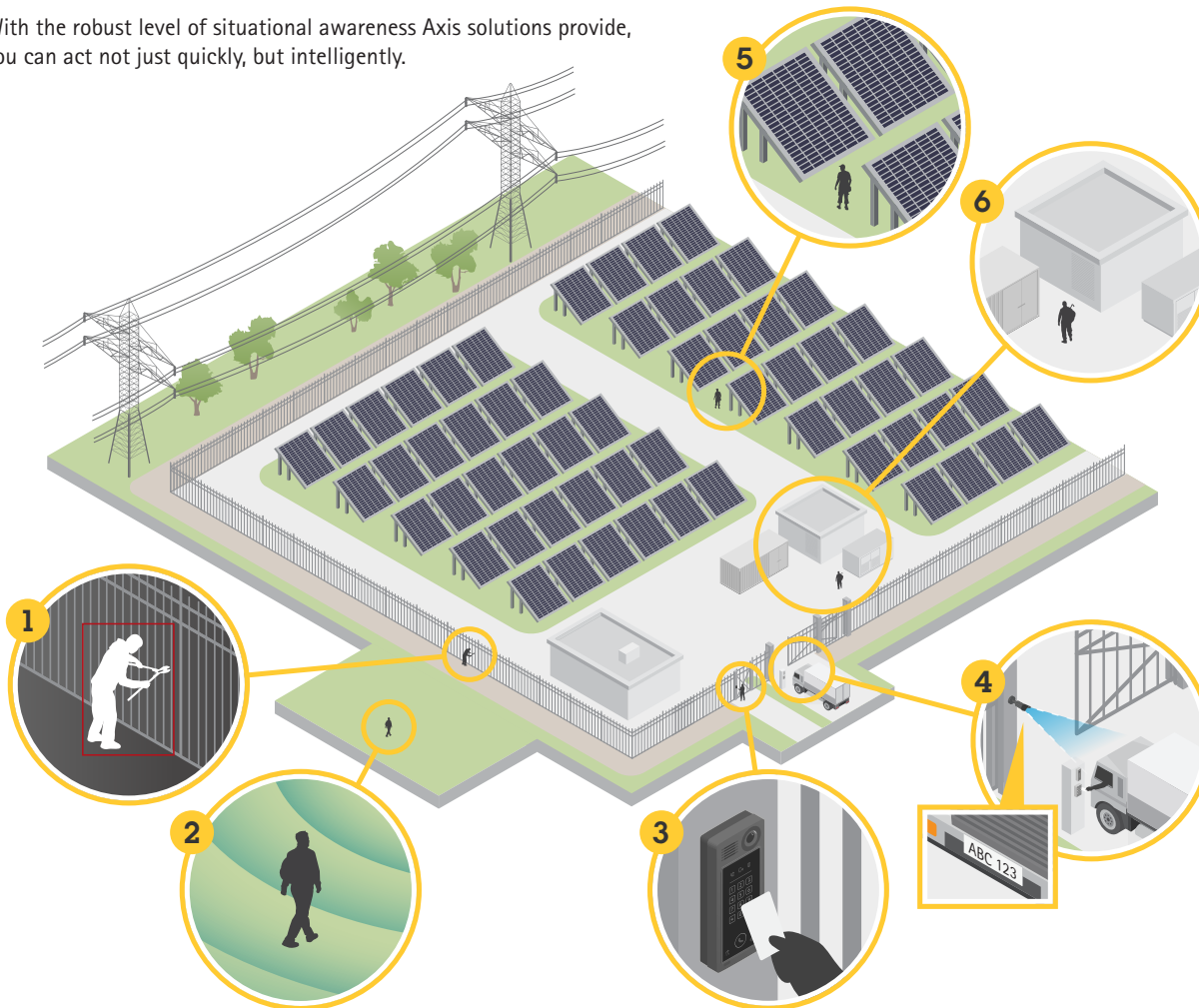
A single Axis system can address every aspect of protecting solar farm activities. Meanwhile, the reliable, proven quality of Axis products means you spend less on maintenance and repairs. The result is a productive solar farm that offers a swift return on your investment.

Secure your site.

An Axis network surveillance system pairs world-class hardware with powerful analytics to protect your site and prevent outages. Comprehensive Axis security solutions ensure perimeters and sensitive physical assets are secure, despite the fact that solar farms are often staffed with a remote or skeleton crew. Advanced analytics, network audio for real-time communication, and forensic-quality video help you detect, verify, classify, identify, track, and deter intruders, with fewer falses alarms. Even during challenging lighting and weather conditions.

With the robust level of situational awareness Axis solutions provide, you can act not just quickly, but intelligently.

USE CASE EXAMPLES

1. Detect, verify, and classify potential threats around the perimeter of your site using **thermal cameras** with **AXIS Perimeter Detection analytics**. Then, fenceline **PTZ cameras** (pan, tilt, and zoom cameras) with **auto-tracking analytics** allow you to visually confirm, identify, and automatically track those threats. In the event of suspicious activity, deterrents including alarms, pre-recorded or live voice messages (via **horn speaker**), or lights can be triggered automatically or manually.

2. Scare off potential intruders before they get close by including **radar** in your solution. Paired with **PTZ cameras** and deterrents such as alarms, lights, or voice messages, radar makes for a cost-effective standalone solution. However, radar can also be used as a complement to your thermal fenceline cameras to create an earlier alert, earlier deterrence buffer zone beyond the traditional perimeter. Radar with built-in analytics has a low false alarm rate, especially when combined with thermals, and can accurately detect, classify, and track people and vehicles...even providing valuable details about their exact distance and speed.

3. Control site access and maintain a visual record of people entering your site with **network intercoms**. Forensic-quality footage means you can investigate incidents after the fact and gather evidence for criminal prosecutions.

4. Manage and automate vehicle access. Cameras equipped with **license plate recognition** analytics allow you to automatically approve vehicle access, be aware of time spent on site, and maintain a record of visitors.

5. Maintain comprehensive situational awareness with strategically placed **visual cameras.** Axis offers an extensive catalog of camera types and mounting possibilities, ensuring you have visual coverage of your entire site.

6. Monitor the security of specific high-value or high-risk areas such as batteries, transformers, and exit cabling with **visual cameras.** These cameras keep eyes where they are needed most.
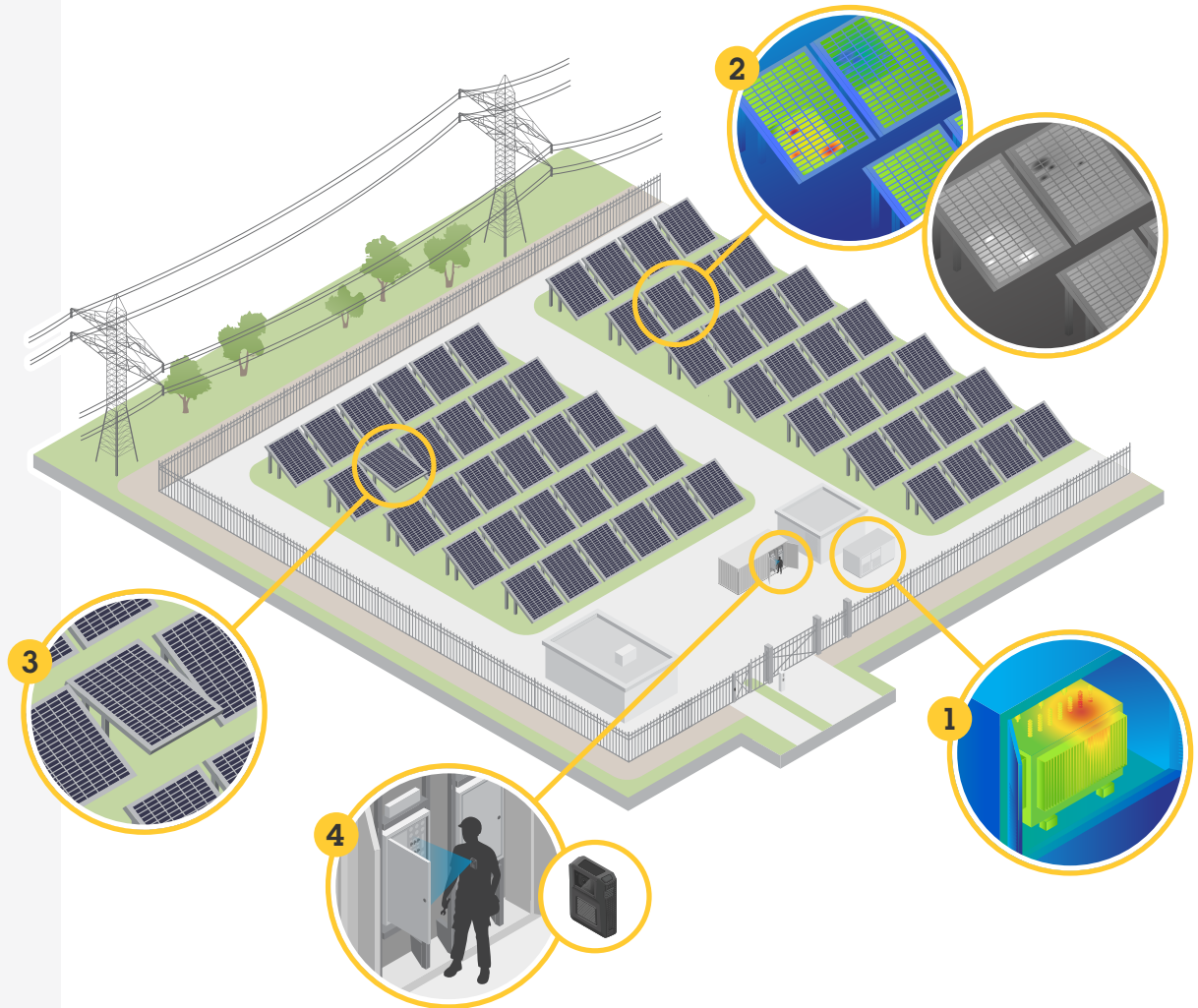
Optimize production.

Axis network solutions with intelligent analytics support timely repairs and predictive maintenance, all while reducing equipment downtime. With Axis systems providing continuous situational awareness, the need for costly on-site spot checks at remote locations decreases, improving your bottom line. Axis solutions also help you ensure that maintenance work is conducted correctly and on time.

By optimizing output and ensuring equipment is efficiently maintained, you can more reliably reach and maintain the production goals for your farm.

USE CASE EXAMPLES

1 Monitor and maintain the health of your plant with **thermometric cameras** that identify overheating equipment such as batteries and transformer stations, minimizing fire risks and enabling a prompt response.

2 Identify maintenance needs early and keep productivity high by using **thermometric cameras** for automated temperature alerts or **thermal cameras** for a manually controlled inspection. By locating unexpectedly warm or cool areas on the solar panels, these cameras help diagnose problems such as equipment wear leading to end-of-life, lowered efficiency due to dirt, or damage after a significant weather event such as a hailstorm.

3 Leverage **PTZ cameras** you're already using for other tasks to get the high-quality visuals you need for timely, cost-efficient maintenance and repairs. For example, review the position of moving panels – either via a manual process or with smart analytics on the camera for an automated solution – so you always know when to send a maintenance crew to ensure optimal performance.

4 Verify work is done when and how it should be by issuing **body worn cameras** to maintenance crews. Later, those recordings can be used for cost- and time-efficient internal trainings that reflect the wearer's point of view.
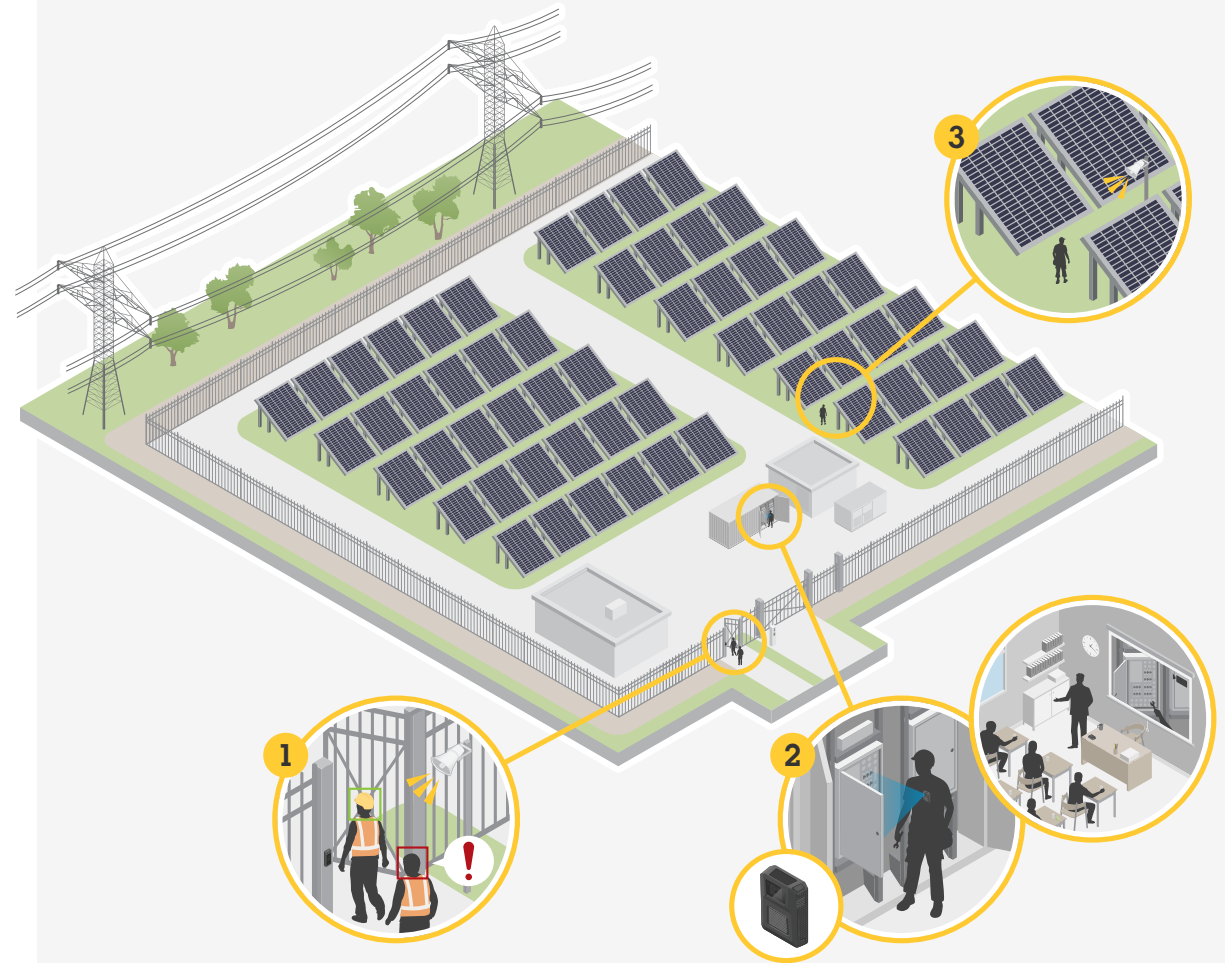
Axis solutions for solar farms

Protect your people.

Protect the health and safety of your personnel and follow regulations using Axis network solutions and intelligent analytics. Axis solutions continuously observe on-site activity and provide early alerts of potentially dangerous situations, which a remote operator can visually confirm and then address in real time. Using two-way communication options, operators can speak directly to those on site to ensure safety compliance or deliver emergency instructions. After an incident, high-quality video capture allows you to effectively analyze the event so you can enhance trainings or improve safety policies.

Taking a proactive stance towards safety also protects your bottom line, since non-compliance that puts staff at risk can easily cost you time and money. By functioning as your on-site eyes and ears and leveraging smart analytics to support a remote operator, Axis solutions for solar farms don't just improve safety in the here and now, they raise the bar for the long-term health and profitability of your solar farm.

USE CASE EXAMPLES

1 Establish and maintain a culture of safety with **PTZ cameras** and **smart analytics** that confirm the presence of required PPE (personal protective equipment). When staff or visitors are out of compliance with safety regulations, issue live or pre-recorded reminders with **horn speakers**.

2 Verify that maintenance and repair personnel follow safety procedures when performing work on-site, thanks to **body worn cameras**. Later, those recordings can be used for cost- and time-efficient internal trainings that reflect the wearer's point of view.

3 Ensure your human assets are as secure as your physical assets by using **PTZ cameras** to track staff movement around the site. Using **horn speakers**, issue pre-recorded safety messaging or guidance, or enable real-time communication between remote operators and on-site staff in the event of emergencies or other safety incidents.

Axis solutions for solar farms

What's in an Axis solution for solar farms?

Axis solutions consist of IP-based visual and thermal cameras, radar, access control, and audio equipment. They're equipped with intelligent analytics and connected in a network. Axis products support open industry standards and interfaces, so they're easy to integrate with other IP systems, and they're both scalable and future-proof.
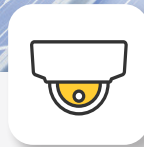
Thermal cameras and radar

Thermal cameras and radar are both powerful and cost-effective solutions for perimeter and area protection. They accurately detect unwanted activity in complete darkness or other challenging conditions such as strong sunlight, fog, or smoke. Thermal cameras also feature Axis Zipstream technology for an average of 50% lower storage and bandwidth requirements.

Visual cameras

IP-based visual cameras from Axis include pan, tilt, and zoom (PTZ), fixed box, dome, and body-worn. Axis cameras are rugged enough to withstand punishing environments, and they provide excellent image quality in challenging conditions. Axis Lightfinder technology delivers high-resolution, full-color video with a minimum of motion blur even in near darkness. And our Zipstream technology lowers bandwidth and storage requirements by an average of 50%.

Network audio

Use Axis network solutions to warn off intruders and deliver instructions to maintenance workers. Each speaker is a complete audio solution that includes both hardware and software, and the pre-configured digital signal processing ensures a clear, understandable voice every time. The devices plug into standard IP networks and feature Power over Ethernet (PoE) for fast and simple installation. And they're based on open standards for easy integration with our cameras and other systems.

Intelligent analytics

Axis analytics give you easy access to actionable insights based on video, audio, and other data. They're based on open standards, so they're compatible with all major video management systems. And our flexible ACAP platform makes it easy for our many partners to deliver applications tailored to your specific needs.

Access control

Axis access control solutions help you monitor entrances and exits so you can let the right people in and keep the wrong ones out. Solutions range from basic identification and entry control to license plate recognition to advanced access management.

The Axis advantage

- Remote control and monitoring of multiple sites from a central location

- Unmatched image-processing for high-quality, usable images and forensic detail

- Powerful edge-based processing enabling artificial intelligence without massive bandwidth and storage requirements

- Axis Zipstream technology to save even more on bandwidth and storage

- Focus on cybersecurity in design, development, and testing, with specially designed enhanced-security chips

- World-class, dependable devices for lower operating and maintenance costs

- Multiple connection possibilities from PoE to fiber optics for long-distance connection

- Open platform for easy integration with other systems

- Scalable, future-proof solutions

- Choice of an end-to-end solution from Axis, a system from one of our trusted partners, or your current system

- Global partner network ensuring speedy, problem-free integration and support

End-to-end

Axis solutions are built using open platform standards that integrate easily with other systems, so you always have the flexibility to combine our products with your current system or a system from one of our partners. However, when time is of the essence and a wrinkle-free implementation matters, an Axis end-to-end solution is unmatched. With an Axis end-to-end solution, you get a trusted, innovative solution from a single vendor – a validated system that meets your needs. Just as importantly, you get responsive support. The core of our end-to-end solutions is AXIS Camera Station or AXIS Companion video management software, which are both optimized to work with Axis products. They provide powerful and intuitive video surveillance and access management, making it easy to protect your people, property, and premises.

Sustainability

Axis devices already have the reputation of being tough and built to last, even in harsh conditions, but our emphasis on sustainability runs much deeper. By choosing Axis, a solar farm has a unique opportunity to show their customers an authentic commitment to better ways of doing business. Remote control and monitoring of multiple sites from a central location doesn't just save money – it also conserves resources and decreases fuel consumption. Powerful edge-based processing decreases hardware needs and cuts down on bandwidth and storage requirements, especially when combined with Axis Zipstream technology. Axis also offers cost-effective, environmentally sound solutions for low-light or no-light conditions, so your surveillance solution demands less energy and limits light pollution.

That's just the beginning. With a focus on phasing out hazardous substances and minimizing waste in product design, and a conscious effort to prioritize eco-friendly forms of goods and transport, Axis is constantly working to minimize the environmental impact of its products...all the while delivering exceptional quality and functionality.

Cybersecurity

Axis systems are built with cybersecurity in mind, all the way from the design process through day-to-day operations support. And when it comes to Axis software, cybersecurity best practices are at the forefront. Our ARTPEC® chips are designed in-house, sealing back door entry points, and network devices include a variety of built-in enhanced security features. You receive up-to-date cybersecurity advisories, news, and updates directly from Axis, and with the AXIS Device Manager tool, managing all major installation, security, and maintenance tasks is straightforward and cost-efficient. Finally, our global partner network is always close at hand when you need support.

www.axis.com/solar-farms

About Axis Communications

Axis enables a smarter and safer world by creating network solutions that provide insights for improving security and new ways of doing business. As the industry leader in network video, Axis offers products and services for video surveillance and analytics, access control, intercom and audio systems. Axis has more than 3,800 dedicated employees in over 50 countries and collaborates with partners worldwide to deliver customer solutions. Axis was founded in 1984 and has its headquarters in Lund, Sweden.

For more information about Axis, please visit our website www.axis.com