

POWERED BY
365mesh

Intelligent AI & IoT Monitoring, Protection & Optimisation for Power Utilities

**Connected IoT sensors powered by
real-time AI analytics.**

Continuous monitoring of substation perimeters, access points, and internal zones

What it is

An integrated IoT security network enhanced by AI for threat detection that monitors substation perimeters and high-risk zones in real time. It identifies genuine threats instantly, cutting false alarms and enabling fast, targeted response. AI is continuously re-trained with site patterns to reduce false alarms over time.

Why it matters

Unmanned substations are prime targets for theft and sabotage. Continuous, intelligent monitoring stops incidents early, protects critical infrastructure and workers, and strengthens compliance, without the overhead of manual surveillance.



Customer story

A regional electricity distribution utility experienced repeated copper theft at unmanned substations, resulting in service disruptions and rising repair costs. The utility deployed an AI-driven intrusion detection solution across priority sites, combining fence sensors, gate and door monitoring, and video analytics.

When a perimeter breach occurred, the system generated verified alerts within seconds, automatically providing visual context to the security operations team. This enabled rapid intervention before intruders could access live equipment. Within months, attempted thefts and successful intrusions dropped materially, outages were avoided, and the utility gained greater confidence in the security of its unmanned assets.

Key outcomes



Faster detection and response to breaches



Reduced theft, vandalism, and outages



Improved safety for crews and contractors



Fewer false alarms than traditional CCTV



Stronger resilience of critical infrastructure

Transformer Condition Monitoring

What it is

A real-time transformer condition monitoring solution that tracks key health indicators, like temperature, vibration, oil condition proxies, ambient conditions, and load behaviour. IoT sensors collect real-time data, while AI models establish adaptive baselines, detect anomalies, and flag early signs of degradation well before traditional inspections.

Why it matters

Transformer failures often develop unnoticed and can lead to major outages, safety risks, and costly replacements. Early detection enables predictive maintenance, extending asset life, improving reliability, and reducing unplanned maintenance costs.



Customer story

A municipal electricity utility deployed surface temperature and vibration sensors across a group of high-risk distribution transformers to improve visibility into asset health. Over time, the system identified abnormal heat patterns and increasing vibration on one unit, deviating from its normal operating baseline.

The analytics flagged the issue weeks before any visible signs of failure. AI-based anomaly detection identified deviation weeks earlier than threshold systems. Further investigation revealed a developing cooling system fault. Maintenance was scheduled proactively, preventing a transformer failure that would have caused an unplanned outage impacting thousands of customers. The utility avoided emergency repair costs and gained greater confidence in its ability to predict and prevent

Key outcomes



Early detection of issues before failure



Fewer unplanned outages and emergency repairs



Longer asset life and higher ROI



Improved safety and environmental protection



Smarter, data-driven maintenance planning

Transformer Tamper & Access Detection



What it is

Connected IoT sensors with AI-powered tamper pattern recognition that detects unauthorised access or tampering of transformers using sensors and real-time analytics. Validated alerts are sent instantly to security or operations teams for rapid response.

Why it matters

Transformer tampering can cause outages, safety risks, and regulatory impacts. Continuous monitoring enables faster response, reduced downtime, and stronger compliance, while informing risk-based security planning.

Customer story

After repeated vandalism and unauthorised access incidents at pad-mounted transformers, a regional utility deployed tamper-detection sensors across high-risk sites. Sensors tracked door openings, shocks, and tilt events, sending immediate alerts to the central operations centre.

Analytics identified patterns correlating incidents with specific times of day and certain environmental conditions. This insight allowed security teams to optimise patrol routes and timing, targeting the areas most at risk. Within months, incidents of tampering dropped significantly, preventing potential outages and protecting the safety of both assets and personnel.

Key outcomes



Real-time tamper and access alerts



Fewer outages and service disruptions



Improved worker and public safety



Stronger compliance and risk control



Smarter, data-driven site security

Load & Current Monitoring (Non-Invasive)

What it is

Non-invasive, clamp-on current sensors provide real-time visibility of load, imbalance, and abnormal draw across feeders, transformers, and critical circuits, without outages or service disruption. AI models analyse IoT data streams to predict overload risk.

Why it matters

Limited visibility into network loading increases the risk of overloads, asset degradation, and unplanned costs. Continuous, non-invasive monitoring enables proactive network management, better planning, and more efficient capital investment.



Customer story

A regional utility sought to manage transformer and feeder loading in rapidly growing suburban corridors. By deploying clamp-on current sensors, the utility gained continuous visibility into peak load periods, current imbalances, and areas of emerging demand.

Analysis of the monitoring data allowed engineers to identify specific transformers and feeders at risk of overload and plan targeted capacity upgrades. Rather than a costly, blanket infrastructure replacement, the utility could prioritise investments, optimise expenditure, and maintain reliable service. This proactive approach also reduced the risk of unplanned outages and extended the life of critical assets.

Key outcomes



Real-time load visibility with no outages



Early detection of imbalance and overloads



Targeted upgrades and optimised capex



Fewer unplanned outages and maintenance costs



Data-driven network planning and reliability

Remote Site Power Availability Monitoring

What it is

A remote power monitoring solution that tracks mains availability, generator status, battery health, and remaining runtime. IoT power telemetry combined with AI-driven predictive health scoring highlight potential power issues before services are affected.

Why it matters

Unmanned, remote sites can lose power without warning, leading to outages and safety risks. Continuous monitoring enables early intervention, protecting service continuity and operational reliability.

Customer story

A transmission operator implemented remote power monitoring across its network of repeater and communication sites. The system tracked battery charge levels, backup generator readiness, and mains availability, generating alerts when deviations from normal operating conditions were detected.

When early signs of battery degradation were detected at multiple sites ahead of an approaching storm, maintenance teams were able to replace batteries proactively. This prevented service interruptions, maintained critical communications, and avoided costly emergency deployments during severe weather. The operator gained greater confidence in the reliability of remote sites and improved overall network resilience.

Key outcomes



Continuous visibility of power at unmanned sites



Early detection of battery and backup issues



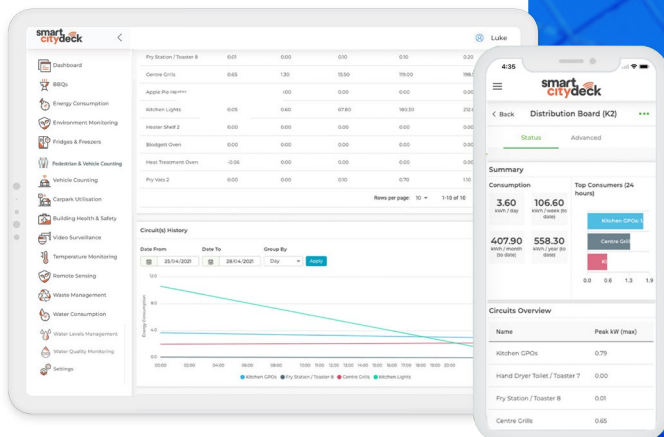
Fewer unplanned service interruptions



Reduced emergency callouts and costs



Stronger resilience of critical infrastructure



Solar, Battery & Hybrid Power Monitoring

What it is

A monitoring solution that provides real-time visibility into the performance and health of solar, battery, and hybrid energy systems. IoT sensors capture system data, while AI optimises performance and sizing.



Why it matters

Unattended energy systems can degrade without warning, reducing reliability and asset life. Continuous monitoring enables proactive optimisation, ensures reliable power to critical assets, and maximises the ROI of renewable and hybrid investments.

Customer story

A rural utility deployed solar and battery systems to power telemetry and communications sites in remote locations. Initial operations showed inconsistent uptime, but the underlying cause was unclear. By implementing continuous monitoring of solar output, battery health, and system load, the utility identified several underperforming solar arrays caused by suboptimal panel orientation and insufficient battery capacity.

Corrective actions, adjusting panel orientation and resizing battery banks, resulted in improved energy availability and significantly increased site uptime. This proactive approach avoided future outages, reduced emergency maintenance trips, and ensured critical infrastructure remained powered reliably.

Key outcomes



Real-time visibility of solar, battery, and hybrid systems



Early detection of underperformance and degradation



Optimised system utilisation and sizing



Higher uptime for critical remote assets



Lower maintenance costs and fewer emergency interventions



Longer asset life and improved ROI

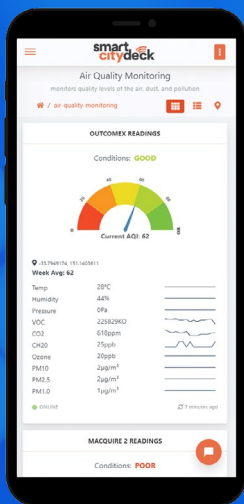
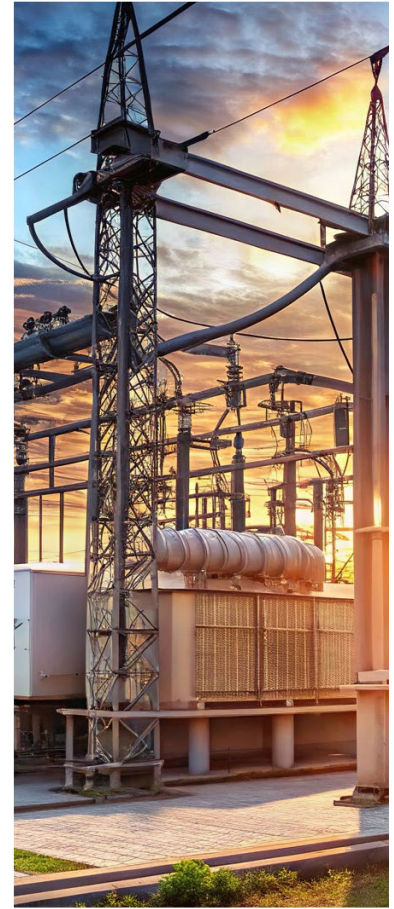
Environmental Monitoring at Utility Assets

What it is

Continuous monitoring of environmental conditions, like temperature, humidity, dust, noise, and hazardous gases, across utility assets, including unmanned and remote sites. Connected sensors provide real-time visibility into conditions that affect equipment and worker safety.

Why it matters

Environmental conditions directly impact asset performance, lifespan, and safety. Proactive monitoring identifies risks early, helping prevent failures, improve safety and compliance, and optimise maintenance based on actual site conditions. AI correlates environmental stressors with asset degradation patterns.



Customer story

A utility operating in a coastal region faced recurring issues with corrosion-related failures at its substations due to high humidity and salt-laden air. By deploying environmental sensors to monitor humidity levels and corrosion risk in real time, the utility gained actionable insights into which sites were most vulnerable. Maintenance cycles were adjusted dynamically, protective measures were prioritised where needed, and premature equipment failures were significantly reduced, resulting in improved asset reliability, lower maintenance costs, and safer working conditions for field teams.

Key outcomes



Fewer corrosion-related failures and longer asset life



Reduced outages and unplanned maintenance



Condition-based maintenance and smarter resourcing



Improved crew safety in high-risk environments



Lower lifecycle maintenance costs

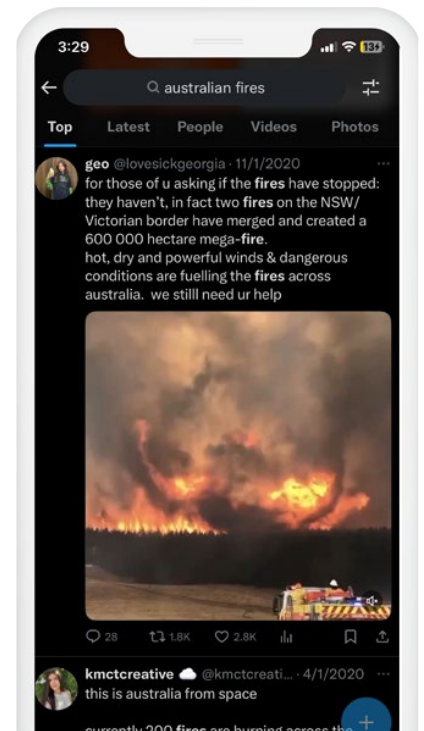
Fire & Thermal Risk Detection

What it is

Early detection of abnormal heat, smoke, and environmental conditions that increase fire risk around electrical assets. Thermal sensors, visual analytics, and environmental monitoring provide near real-time awareness across substations, pole-mounted equipment, and rights-of-way.

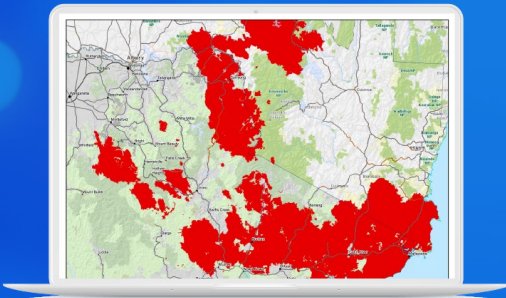
Why it matters

Utility fires threaten lives, infrastructure, and the environment, and carry significant regulatory and legal risk. Early detection enables proactive intervention, helping prevent incidents, protect communities, and maintain network resilience during high-risk condition AI risk modelling dynamically adjusts fire risk thresholds based on conditions.



Customer story

A regional network operator serving a high bushfire-risk area implemented continuous monitoring of vegetation density, ambient conditions, and thermal anomalies around substations and adjacent assets during peak fire season. By integrating thermal imaging and environmental data, the operator was able to identify abnormal heat signatures and elevated fire-risk conditions well before ignition thresholds were reached. This intelligence enabled crews to carry out targeted vegetation management and asset inspections, preventing escalation during extreme weather events.



Key outcomes



Early detection of thermal and fire-risk conditions



Fewer fire incidents and near misses



Targeted vegetation and risk-based interventions

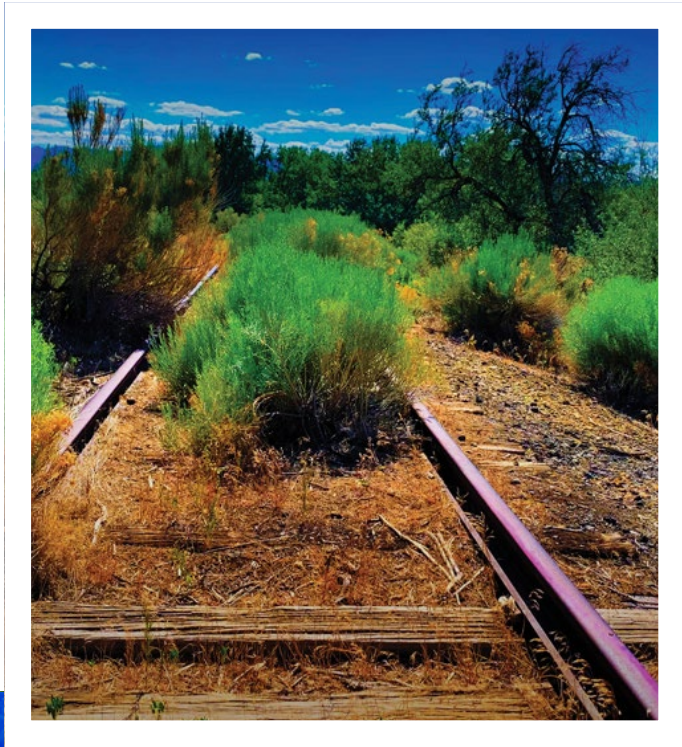


Stronger fire-safety compliance



Improved community safety and reduced regulatory risk

Vegetation & Asset Encroachment Monitoring

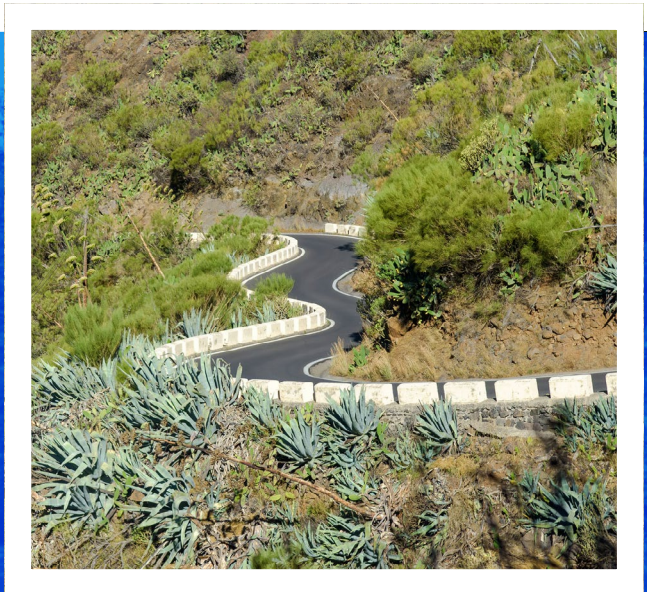


What it is

Continuous monitoring of vegetation growth and physical encroachment near utility assets using sensors, cameras, and analytics. Provides real-time visibility of clearance risks between manual inspections, including in remote or high-growth areas.

Why it matters

Vegetation contact is a major cause of outages and fires. Proactive monitoring enables risk-based vegetation management, improving reliability, reducing fire risk, supporting compliance, and lowering operational costs. AI prioritises interventions using risk-based scoring.



Customer story

A distribution utility operating across mixed urban and rural areas deployed monitoring solutions to track vegetation growth and asset encroachment near overhead lines and substations. By analysing movement patterns, growth rates, and proximity thresholds, the utility was able to identify which locations posed an actual risk to asset clearances. Vegetation management activities were then prioritised only where intervention was necessary, rather than applying blanket trimming schedules.

Key outcomes



Fewer vegetation-related outages and fire risks



Lower costs through targeted, risk-based clearing



Better deployment of crews and contractors



Stronger clearance and fire-prevention compliance



Continuous visibility of encroachment risks

Remote Cabinet Monitoring

What it is

Remote monitoring of roadside cabinets and field enclosures, tracking access, temperature, humidity, and power status to detect tampering, environmental stress, or equipment faults, especially at unmanned sites. AI trend analysis detects gradual degradation beyond static thresholds.

Why it matters

These small, widespread assets are a common source of faults and outages. Early detection reduces failures, truck rolls, and reactive maintenance, improving reliability and lowering operating costs.



Customer story

A utility experienced recurring failures across multiple roadside cabinets during warmer months. By deploying remote monitoring, the utility identified a pattern of abnormal internal temperature increases caused by blocked or degraded ventilation. With real-time alerts and historical trend data, maintenance teams were able to address ventilation issues proactively before equipment reached critical failure thresholds.

Key outcomes



Fewer repeat cabinet failures



Lower maintenance and replacement costs



Reduced emergency truck rolls and faster resolution



Improved reliability of distributed assets

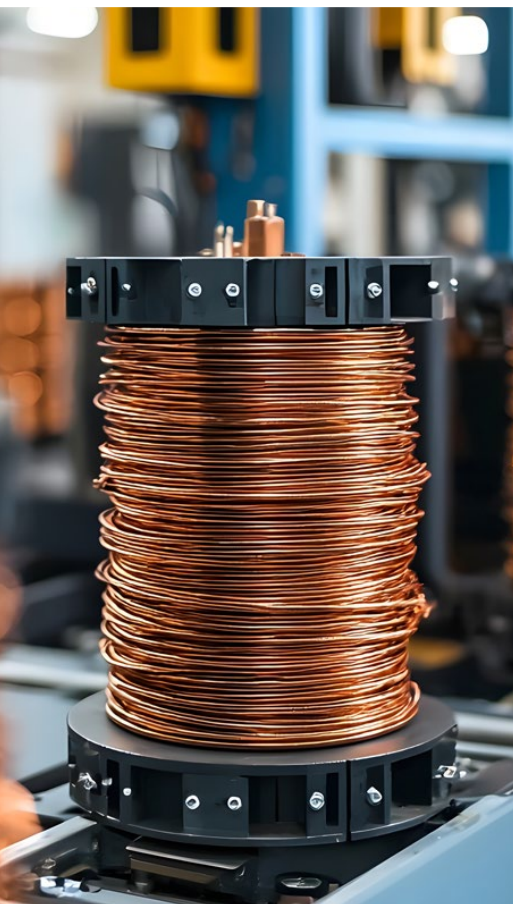


Greater visibility and control across unmanned sites

Theft Prevention (Copper, Fuel, Equipment)

What it is

Monitoring that detects intrusion, vibration, and unusual activity at high-risk utility sites using tamper sensors and real-time alerts, enabling rapid response at unmanned or after-hours locations. AI distinguishes between environmental vibration and intrusion attempts.



Why it matters

Theft drives outages, safety hazards, and rising costs. Early detection reduces losses, protects critical assets, and helps maintain service continuity and compliance.

Customer story

A utility experiencing repeated theft incidents at several high-risk substations deployed tamper and vibration sensors across targeted locations. These sensors provided immediate alerts when abnormal activity occurred, allowing security teams to respond quickly and deter further attempts. Over the first quarter of operation, the utility observed a marked reduction in successful theft incidents and improved situational awareness across vulnerable sites.

Key outcomes



Fewer theft incidents at monitored sites



Faster detection and response to intrusions



Lower repair, replacement, and outage costs



preventing exposure to live equipment



Stronger protection of high-value asset

Workforce Safety: Man-Down & Incident Detection

What it is

Automated man-down and incident detection using wearables, sensors, and location-aware alerts to identify falls, inactivity, or hazardous exposure. Real-time alerts enable rapid response for workers in substations, corridors, and remote sites. AI interprets motion and context to differentiate inactivity from normal pauses.

Why it matters

Field crews often work alone in high-risk, isolated environments. Faster incident detection reduces injury severity, improves safety outcomes, and helps utilities meet worker protection obligations.



Customer story

A transmission maintenance team responsible for inspecting remote assets implemented man-down alerting during routine and emergency inspections. The system monitored worker motion and activity levels and automatically triggered alerts when a fall or prolonged inactivity was detected. Supervisors received immediate notifications with location details, enabling rapid coordination of emergency response when required.

Key outcomes



Faster emergency response to field incidents



Improved safety for lone and remote workers



Rapid incident escalation to supervisors and control rooms



Stronger workplace health and safety compliance



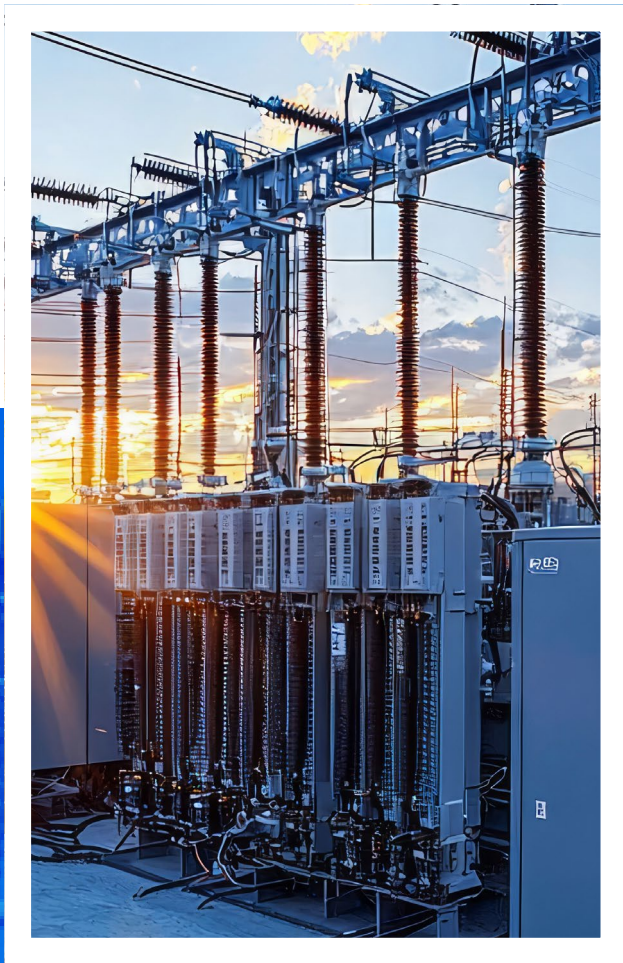
Greater confidence for crews in high-risk environments



Exclusion Zone & Hazard Area

What it is

Real-time monitoring of personnel movement around exclusion zones and high-risk areas using location sensors and automated alerts. Detects unauthorised or accidental entry, particularly during dynamic works and site changes.



Why it matters

Exclusion zone breaches around live equipment can cause serious injury. Active monitoring adds a critical layer of protection beyond procedures and signage, helping prevent incidents, protect workers and contractors, and maintain safety compliance.

Customer story

During a major substation upgrade, a utility introduced exclusion zone monitoring to protect contractors working alongside live assets. The system generated real-time alerts when individuals approached or entered restricted areas, enabling supervisors to intervene immediately. This approach was particularly effective for contractors unfamiliar with live substation environments, helping maintain safety throughout the project without slowing work progress.

Key outcomes



Fewer breaches of live and restricted zones



Improved safety for contractors and temporary personnel



Faster response to exclusion zone breaches



Stronger electrical safety and access compliance



Safer execution of complex works and upgrades

IoT Data & AI Asset Health Intelligence

What it is

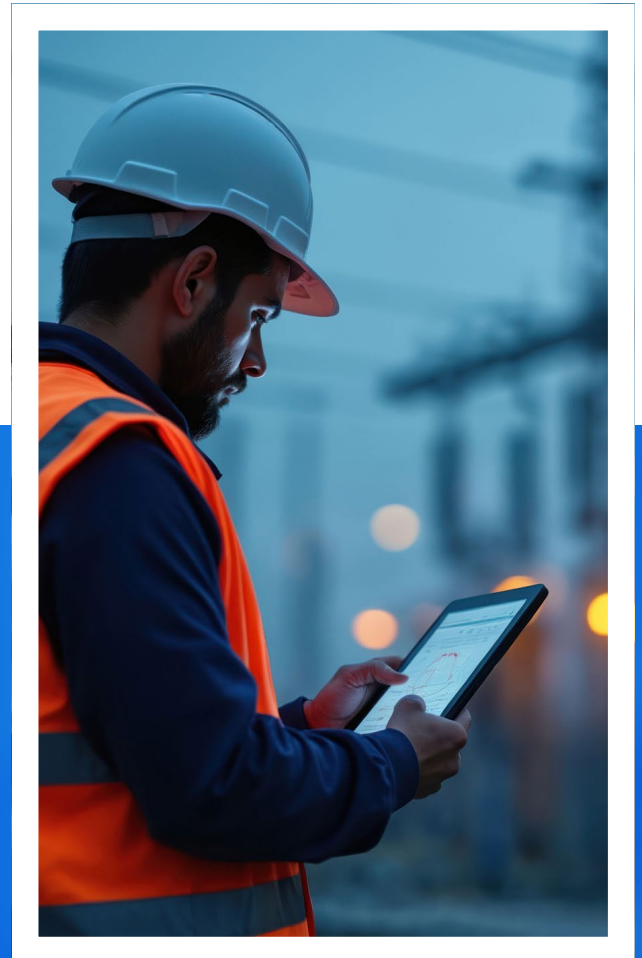
Long-term analysis of operational and environmental data, like temperature, vibration, and load, to identify gradual asset degradation. Trend analytics establish normal baselines and highlight emerging issues missed by point-in-time checks.

Why it matters

Many failures develop slowly and go undetected until they cause outages. Trend analysis enables predictive maintenance, reducing risk, avoiding emergency repairs, and extending asset life.

Customer story

A utility implemented long-term monitoring across a fleet of power transformers, analysing trends in temperature, vibration, and loading conditions. By correlating subtle changes over time, engineers were able to identify slow-moving degradation patterns that would not have triggered immediate alarms. This insight enabled proactive maintenance planning and targeted remediation well in advance of failure.



Key outcomes



Extended asset life through early degradation detection



Fewer unplanned outages and emergency repairs



More accurate replacement and capex forecasting



Predictive, condition-based maintenance



Improved long-term network reliability

AI-Driven Correlation & Root Cause Intelligence



What it is

A unified view that correlates environmental, load, asset condition, and access data to identify the root causes of faults, outages, and abnormal behaviour, supporting faster diagnosis during and after incidents.

Why it matters

Most faults have multiple contributing factors. Correlated insights reduce investigation time, speed service restoration, and strengthen operational, regulatory, and post-incident reporting.

Customer story

Following repeated feeder outages at a regional substation, a distribution utility implemented correlated analysis across environmental, power, and access data streams. During one event, engineers were able to link a brief access event and elevated cabinet temperature with a spike in load and a subsequent protection trip. This multi-factor insight revealed that unauthorised access had restricted ventilation, leading to thermal stress under peak demand, something that would not have been identified through power data alone.

Key outcomes



Faster fault diagnosis and restoration



Clear root-cause identification across contributing factors



More accurate regulatory and post-incident reporting



Fewer repeat faults through targeted fixes



Deeper operational insight across assets and environment

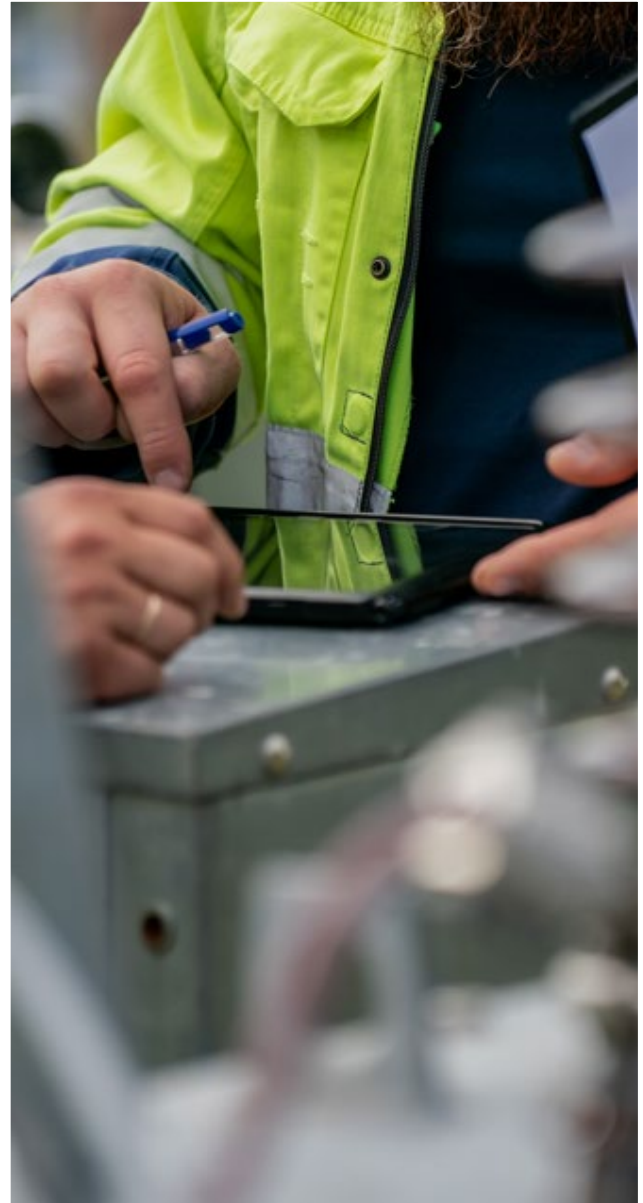
Regulatory & Compliance Reporting

What it is

Automated collection and reporting of safety, environmental, and operational data across utility assets, generating accurate, time-stamped, auditable compliance records without manual effort.

Why it matters

Manual reporting is slow, error-prone, and risky at scale. Automation improves accuracy and consistency, reduces admin burden, and supports confident regulatory and audit responses.



Customer story

A utility responsible for managing a large network of substations implemented automated environmental monitoring and reporting to meet regulatory compliance obligations. Data relating to temperature, humidity, and environmental thresholds was captured continuously and consolidated into standardised compliance reports. This removed the need for manual data collation and significantly streamlined internal audit preparation processes.

Key outcomes



Faster audit preparation and reporting



More accurate, consistent compliance records



Reduced risk of non-compliance



Confident, timely audit and regulatory responses



Lower administrative burden for teams

Temporary & Mobile Monitoring

What it is

Rapidly deployable, temporary monitoring for short-term works, investigations, or changing site conditions, installed without permanent infrastructure and redeployed as needed.

Why it matters

Some situations need short-term visibility, not permanent systems. Temporary monitoring provides fast, flexible insight during outages, upgrades, and incidents, reducing risk without long-term cost or complexity.



Customer story

A utility undertaking a transformer replacement project deployed mobile monitoring units to provide temporary oversight of the site throughout the works. The rapidly deployable system monitored environmental conditions, access activity, and asset temperatures while the permanent transformer and associated infrastructure were offline. This approach enabled the utility to maintain safety and security controls during the project without the cost or complexity of installing permanent monitoring systems. Once the replacement was completed, the mobile units were removed and redeployed to other sites.

Key outcomes



Continuous safety and security visibility during works



No permanent infrastructure for short-term projects



Faster deployment and removal



Reduced risk during critical asset replacement



Reusable assets for future temporary works

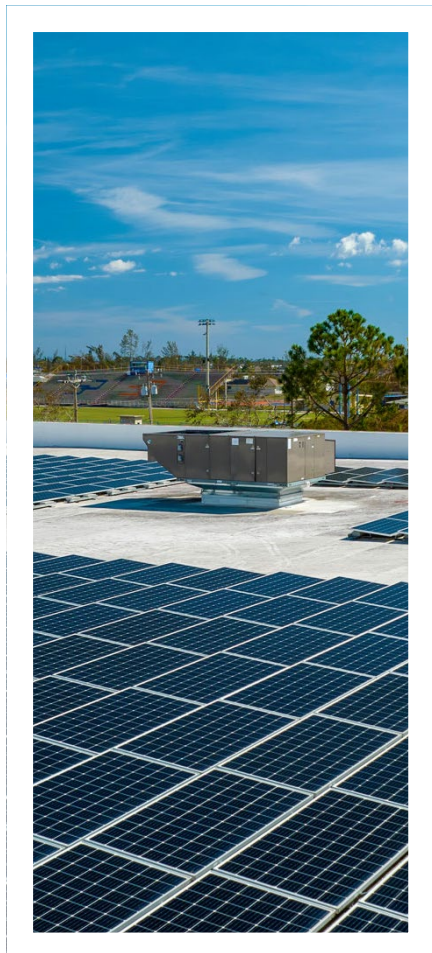
Remote & Off-Grid Asset Monitoring

What it is

Continuous monitoring of remote, off-grid utility assets using solar, battery, and satellite or low-power connectivity to track asset health, environment, and security.

Why it matters

Critical remote assets are hard and costly to access. Monitoring reduces reliance on site visits, detects issues earlier, and enables faster, safer response to outages and incidents.



Customer story

A transmission utility responsible for maintaining communications repeater sites across remote regions deployed off-grid monitoring solutions powered by solar and battery systems. These sites, located hundreds of kilometres from the nearest town, had no fixed power or connectivity. By leveraging satellite communications, the utility maintained continuous visibility into site conditions, power status, and access activity without the need for frequent field visits.

Key outcomes



Continuous visibility of remote critical assets



Fewer costly site visits



Faster fault and access-event response



Improved transmission and communications reliability



Safer operations with reduced travel to hazardous sites

Integration with Existing

What it is

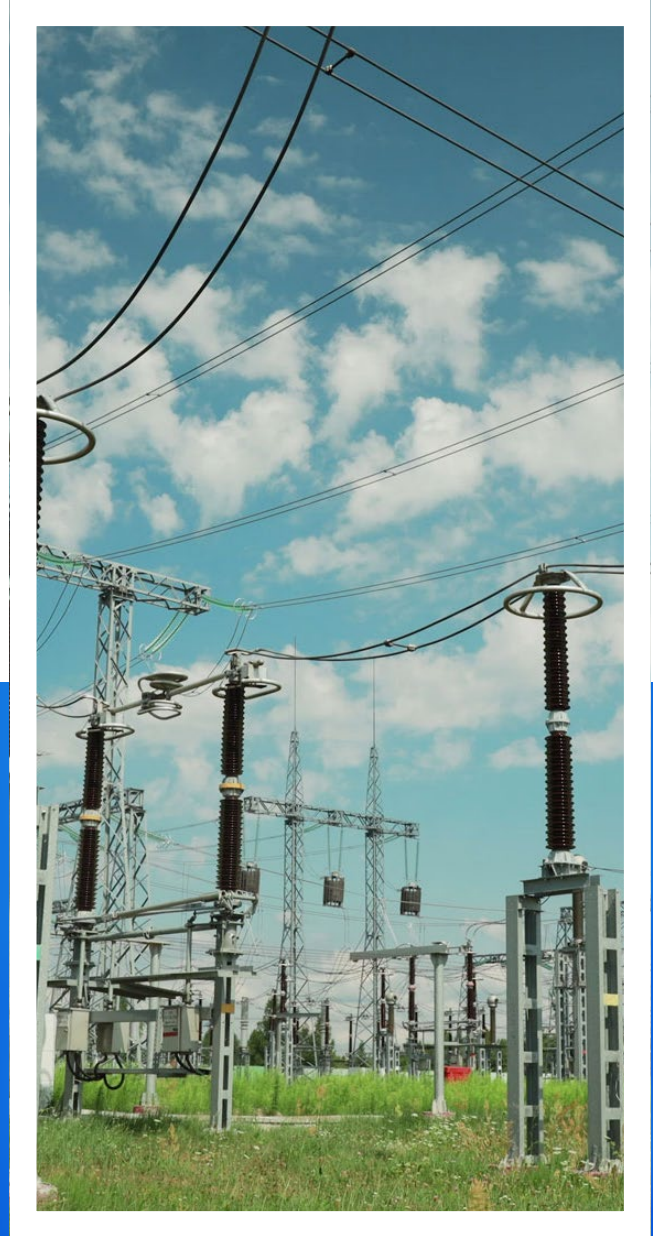
Seamless integration of monitoring and sensor data into existing utility platforms such as SCADA, OMS, GIS, and asset management systems, delivering insights within the tools teams already use. AI insights are embedded directly into SCADA and OMS workflows.

Why it matters

Disconnected data limits operational value. Integration improves situational awareness, speeds decision-making, and ensures monitoring insights are actionable across operations, maintenance, and planning, while protecting existing system investments.

Customer story

A distribution utility integrated its asset and environmental monitoring data with existing SCADA and OMS platforms to support fault response and outage management. When abnormal conditions were detected at field assets, alerts and contextual data were automatically surfaced within the control room's existing workflows. Asset condition insights were also linked to the utility's asset management system, enabling maintenance teams to prioritise work based on real operating conditions rather than static schedules.



Key outcomes



Unified, real-time operational visibility



Faster fault diagnosis and outage response



Less manual data handling and system switching



More effective condition-based maintenance



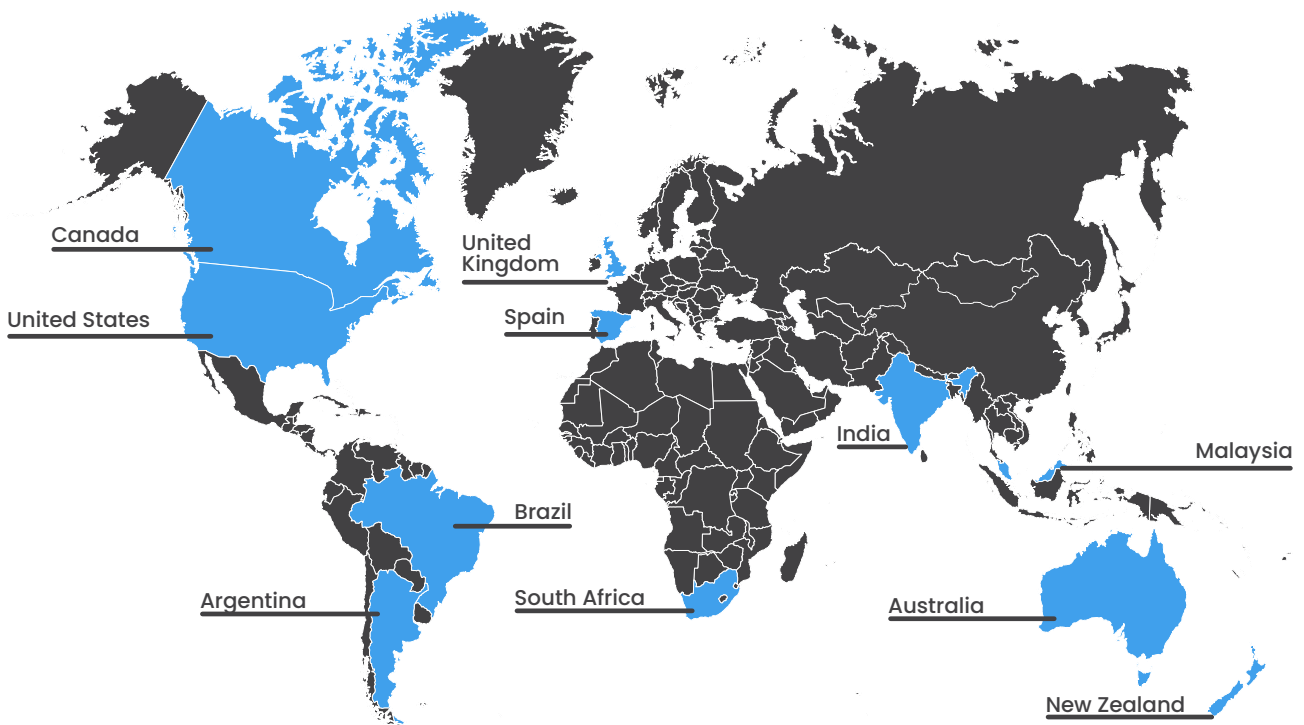
Higher ROI from existing utility systems

**CONNECT.
MONITOR.
ANALYSE
WITH AI.
OPTIMISE.
AUTOMATE.**

Gain real-time visibility over your power Utilities operations and resources with the 365mesh IoT portal.

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