

STIRLINGX

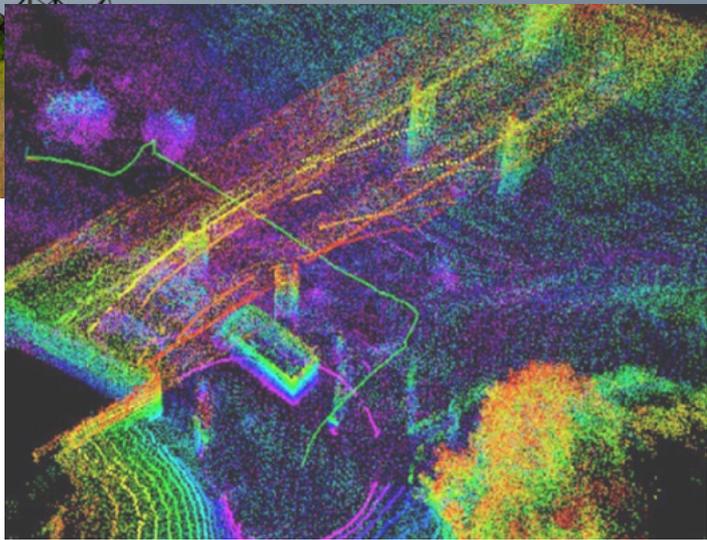
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CRITICAL

< ENERGY & UTILITIES >

Reduce Operational Risk with Real-Time Infrastructure Insight

Unified Infrastructure Intelligence
& Advanced Drone Operations



Executive Summary

Energy operators are under sustained pressure to deliver safe, reliable, and cost effective operations while navigating ageing infrastructure, workforce constraints, regulatory scrutiny, and increasing exposure to environmental and security risks. Decisions are often made with incomplete, delayed, or fragmented data.

StirlingX provides a data intelligence approach that integrates aerial data capture, secure data pipelines, and operational analytics into a single decision environment. Rather than focusing on drones as an end product, StirlingX focuses on how high fidelity site data can be collected, governed, analysed, and turned into practical operational insight.

This paper outlines how StirlingX's approach supports energy operators across risk reduction, cost control, and operational outcomes without disrupting existing systems or processes.

Operational risk rarely arrives as a single catastrophic event.

< SECTOR CHALLENGE >

Operational Risk in Energy Infrastructure

Energy operators manage high-consequence assets in complex, regulated and hazardous environments. When something goes wrong, the cost is measured not only in money, but in safety incidents, environmental impact, regulatory sanction, reputational damage and service disruption.

Operational risk rarely arrives as a single catastrophic event. It accumulates through:

- + Small defects missed during periodic inspections
- + Delayed reporting between engineering, asset management and operations teams
- + Inconsistent data formats that prevent meaningful comparison over time
- + Incomplete visibility across geographically dispersed assets
- + Manual interpretation of fragmented, unconnected information

Risk Factors:

 Asset Aging & Degradation Critical infrastructure ages while demand grows. Traditional inspection cycles cannot keep pace, pushing operators into reactive maintenance and unplanned outages.	 Regulatory & Compliance Pressure Requirements for asset integrity, vegetation management and safety documentation are tightening. Manual approaches are slow, inconsistent and difficult to audit.
 Inspection Safety Routine monitoring routinely puts people at risk - working at height, accessing energised equipment, operating offshore or in confined spaces.	 Operational Efficiency Operators face pressure to reduce costs while improving reliability - an equation that cannot be solved without better data and faster decision cycles.

A Secure Intelligence Layer for Infrastructure Networks

StirlingX unifies drone and operational data into a single, secure intelligence layer, giving engineering and operations teams the visibility they need to detect issues earlier, reduce human exposure, and manage risk before it escalates.



Single Operational View

Asset condition, security events, inspection records and project data are unified in one governed environment, accessible to every authorised team, from engineering to executive leadership.



Secure by Design

Encrypted data transfer and storage, segregated environments, controlled access and permissions, and full auditability. Built for nationally significant and regulated infrastructure.



Structured Capture-to-Insight Pipeline

An end-to-end workflow from multi-sensor drone deployment through AI-driven analytics to role-specific dashboards, eliminating the latency between observation and action.



Continuous Monitoring, Not Periodic Inspection

Repeatable, automated flights enable trend comparison over time, turning inspection from a scheduled event into a continuous awareness capability.

Four Ways StirlingX Reduces Operational Risk

01 Earlier Detection, Before Escalation

Traditional inspection regimes create time gaps between observation and action. During those gaps, risk accumulates. Subtle degradation becomes structural failure, and minor faults become unplanned outages. StirlingX enables continuous, high-fidelity site capture with structured analytics, allowing operators to compare asset condition over time, identify trends, and prioritise interventions based on evidence rather than assumption.

This continuity is supported by operational permissions most drone providers do not hold. StirlingX is certified to fly beyond visual line of sight and operates under extended flight authorities, enabling longer missions across larger, more complex asset footprints. Monitoring is not constrained by the access limits that restrict conventional inspection. Earlier detection reduces emergency call-outs, prevents unplanned outages, and shifts maintenance from reactive to proactive across the full asset base.

02 Eliminating High-Risk Physical Access

Energy infrastructure often requires inspection in high-risk conditions such as working at height, near live electrical assets, offshore, or in confined spaces. By shifting assessment and routine monitoring to aerial and remote capture, StirlingX significantly reduces the need for rope access, scaffolding, repeat mobilisation, and prolonged on-site exposure.

This capability is comprehensive rather than partial. Beyond visual line of sight certification,

extended endurance operations and full regulatory authorisation across complex environments allow StirlingX to inspect remote infrastructure, offshore structures, and long transmission corridors. Assets do not need to be de-energised, substations can be assessed live, and transmission lines surveyed under load, with fewer personnel exposed and no loss of generation revenue.

03 A Shared Operational Picture Across Teams

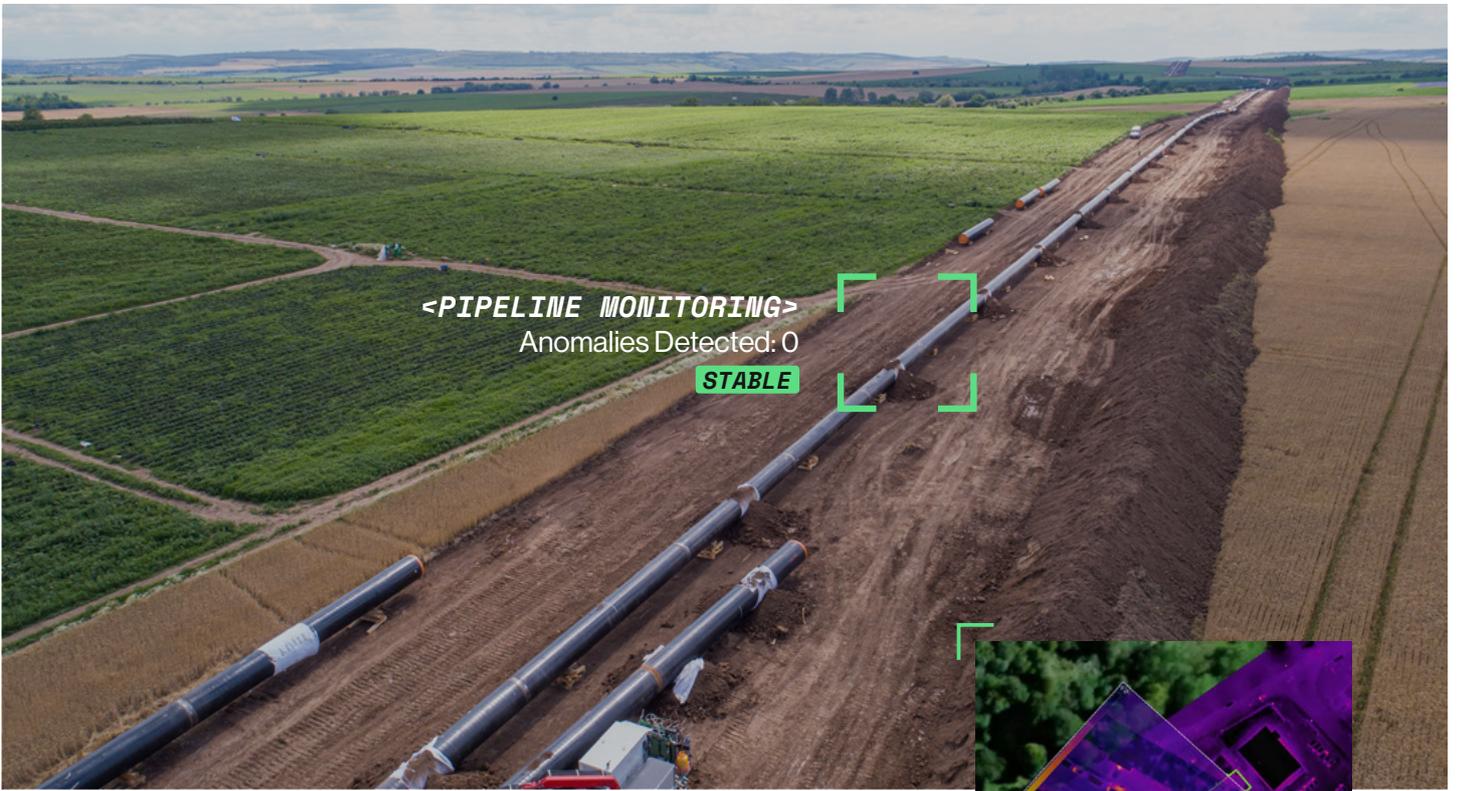
Operational risk is often organisational as well as technical. When engineering, asset management, construction and security teams rely on different datasets, blind spots form between functions.

StirlingX unifies drone imagery, sensor data, inspection records and project data into a single governed source of truth. The result is shared visibility, faster escalation, clearer decision ownership, and robust audit trails for regulators and assurance teams.

04 Shorter Decision Cycles, Fewer Surprises

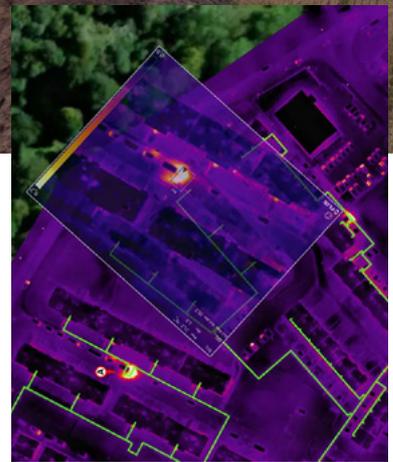
Delayed insight increases exposure. Slow handoffs from capture to modelling to reporting introduce latency into risk management. StirlingX structures this pipeline end to end, reducing the time between observation, analysis, decision and intervention.

Emerging issues are addressed earlier. Leadership gains real-time visibility into asset risk. Operational disruption is minimised. Fewer surprises. Greater resilience.



< INTELLIGENCE ACROSS ENERGY INFRASTRUCTURE >

Operational Applications



StirlingX is deployed across the full spectrum of energy and utility infrastructure, from offshore wind and transmission networks to substations, district heating systems and generation facilities. Each deployment is aligned to the operator's specific risk profile, safety requirements and data governance standards.



Asset Inspection and Condition Monitoring

Visual, thermal and structural data is captured across power, utility and renewable assets. Defects are identified early to support condition-based maintenance. Substations, cooling towers, transformers and generation assets can be assessed without shutdowns.



Linear Infrastructure and Corridor Monitoring

Transmission and distribution networks are surveyed at up to ten times the speed of ground-based methods. Vegetation encroachment, insulator faults, structural deterioration and overheating connections are identified before failure occurs, across hundreds of kilometres of corridor.



Security and Perimeter Monitoring

Persistent situational awareness for critical energy sites. Automated detection of unauthorised access, encroachment and anomalous activity across substations, generation sites and linear corridors, integrated directly into existing security workflows.



60–70%

Reduction in inspection costs
vs traditional methods



< MEASURABLE IMPACT >

Operational Risk, Quantifiably Reduced

By unifying capture, governance and analytics into a single infrastructure intelligence platform, energy operators achieve risk reduction that is demonstrable, auditable and commercially defensible - not as a by-product of process, but as a direct outcome of better visibility.

Safety

- + Elimination of high-risk personnel activities - rope access, tower climbs, confined space entry
- + Safer approach to energised equipment and hazardous areas
- + Reduced incident risk and associated liability exposure

Governance & Compliance

- + Improved contractor accountability through objective, time-stamped records
- + Stronger regulatory defensibility through comprehensive audit trails
- + Faster incident response with aerial assessment capability within 24 hours

Asset Integrity

- + Earlier detection of structural and environmental risk factors
- + Fewer reactive maintenance events and unplanned outages
- + Condition-based maintenance extending asset operational life

Operational Efficiency

- + 60–70% reduction in inspection costs versus traditional methods
- + Simultaneous operations across multiple sites without additional headcount
- + API integration with existing CMMS, GIS and SCADA platforms

Safer Inspections. Safer Decisions. Fewer Surprises.

Energy operators already invest heavily in inspection, monitoring and modelling. The missing component is unified, role-specific intelligence that transforms raw data into real-time operational clarity.

StirlingX provides that clarity through a secure intelligence layer that connects drone and operational data into a single trusted source of truth.

Visit stirlingx.io or book a sector consultation to explore how StirlingX can be deployed across your energy infrastructure portfolio.

STIRLINGX

A unified intelligence platform turning multi-sensor drone data into decisive insight.

stirlingx.io