



# OPTIMIZING ELECTRICAL PERFORMANCE

OUR GOAL IS ZERO UNEXPECTED DOWNTIME AND LOWER OPERATING COSTS

## Why Volta Insite™

Call us for  
more info



833-227-5888

With Volta Insite's predictive maintenance, customers experience a positive ROI within a few months.

- Reducing equipment downtime.
- Reducing hours of labor for maintenance and diagnostics.
- Reducing costs of equipment replacement.
- Utility Level Power Quality, what's being delivered?
- Back-up Power Quality, what's being generated?
- Compiling a complete understanding of electrical asset behavior.

Volta Insite's engineers support all data interpretation to help our users fully understand the health of their electrical system.

## Industries We Serve

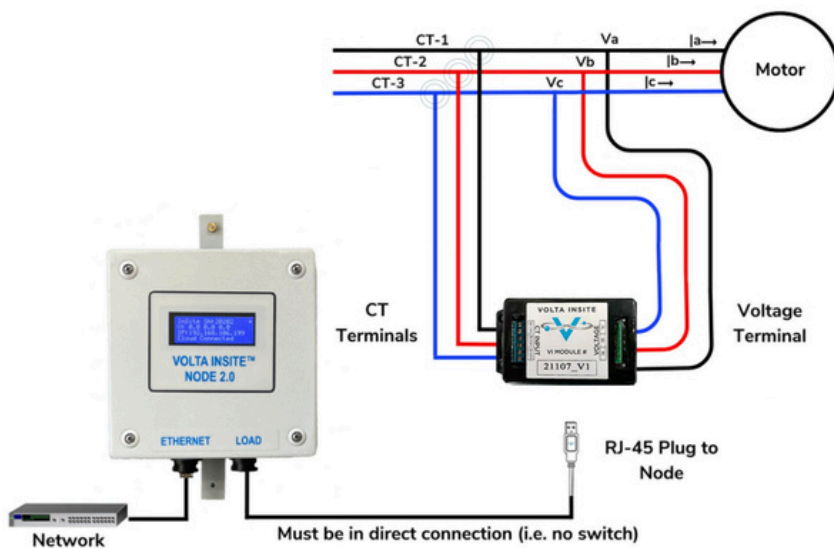
- ✓ Manufacturing Facilities
- ✓ Oil & Gas
- ✓ Steel Mills
- ✓ Healthcare Facilities
- ✓ Commercial Facilities
- ✓ Data Centers
- ✓ Wind Energy
- ✓ Entertainment Venues
- ✓ Waste/Clean Water Treatment



# Volta Insite Hardware

EMPOWERING YOU WITH ELECTRICAL DATA

There are two major hardware components to the Volta Insite solution that require installation:



## Node 2.0

The Node acquires and collects data to perform all computing and measurement functions. The Node reports this input to the cloud and provides information to the user interface upon request. Typically mounted in the MCC room, this device can be placed inside a cabinet if needed, but it is preferable and recommended to be mounted externally to allow for accessibility during operation.



## VI Module 3.0

Each Node comes with a VI-Module which mounts within a cabinet, fused disconnect, MCC bucket or other suitable location. The VI-Module has terminals for connecting current transformers and voltage taps.

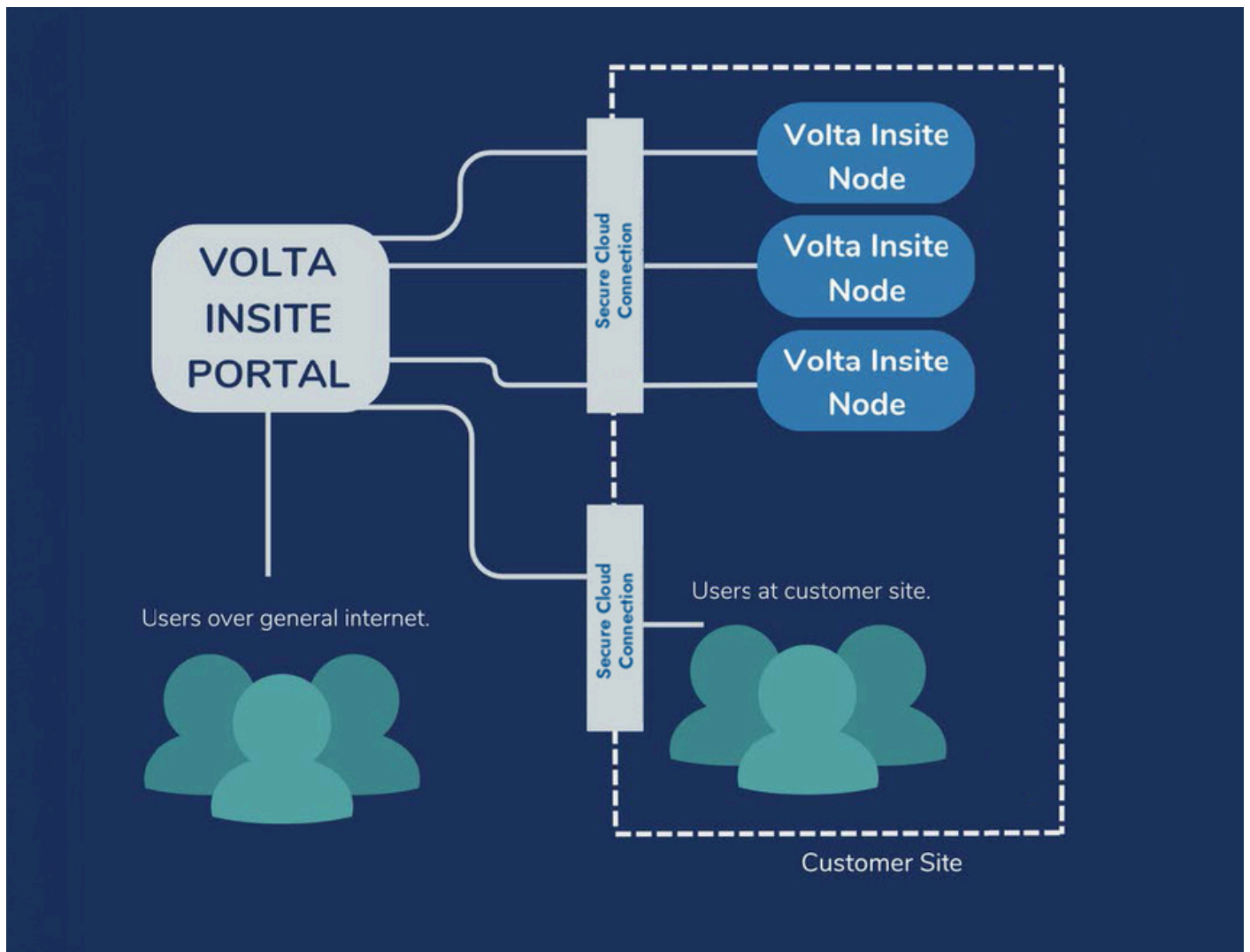
# Connecting to the Cloud

## LEADING THE DIGITAL TRANSFORMATION

Volta Insite Nodes communicate securely with the cloud through a customer's Ethernet network. No additional software is required on-site. If no network is available, a 4G communication module can be used instead. Once data from the Node is uploaded to the Volta Insite Cloud, it is run through the InsiteAI™

(Automated Intelligence) for analysis. If an anomaly is detected, our team of engineers will assess the issue to determine its cause.

Volta Insite's data and analytics can also be integrated with third-party software upon customer request.

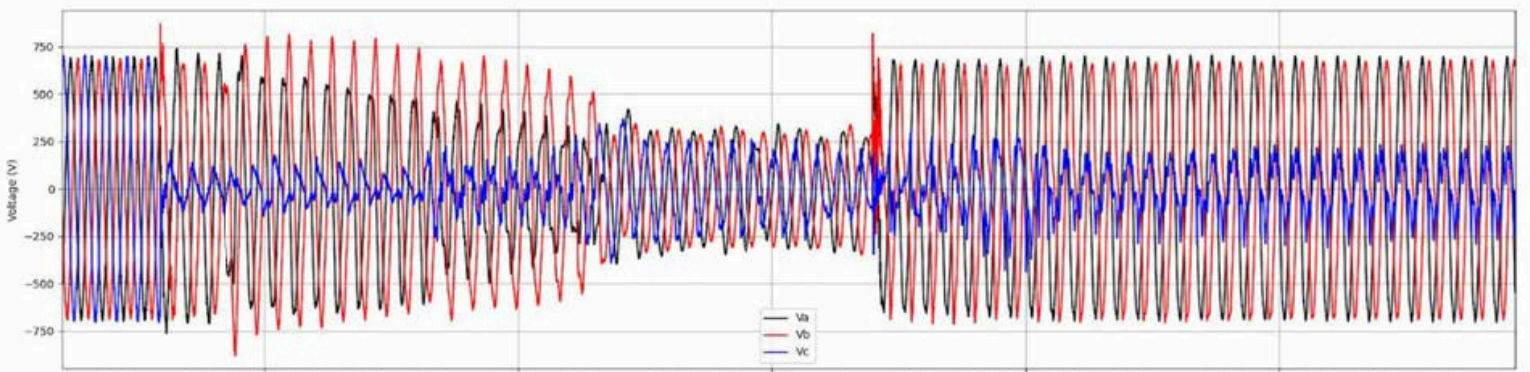


# Power Quality Analysis and Transient Captures

## PREDICTIVE MAINTENANCE WITH REAL-TIME INTELLIGENCE

One of the often overlooked inputs into a facility is the quality of the electrical power. Power interruptions and short duration phase drops causes inconveniences and extends outages due to equipment degradation. This is due to transients associated with switching between utility and back up power. The poorer the power quality, the higher the usage of the back-up generation equipment. This demands increased maintenance and raises operational costs.

Maintenance personnel often use the term 'ghost electrical problems' to describe electrical issues that are difficult to diagnose. In reality, they can be attributed to power quality events or intermittent faults caused by equipment degradation.



**Volta Insite's continuous transient captures provide accurate data for precise analysis and efficient diagnostics, reducing reliance on guesswork. This results in significant cost savings on maintenance and minimizes equipment downtime.**

The ability of Volta Insite's solution to cover multiple components and cross-check simultaneous events across different pieces of equipment sets us apart. This capability not only enhances troubleshooting efficiency and provides a holistic view of

interconnected systems, thereby facilitating swift and accurate issue isolation.

InsiteAI, an integral part of Volta Insite's toolkit, further amplifies the diagnostic capabilities. By leveraging artificial intelligence, InsiteAI enables the rapid and precise identification of various issues, even those that may extend beyond interconnected machinery. This ensures that problems are swiftly identified and addressed, minimizing downtime and maximizing operational efficiency.

☎ 833-227-5888



**VOLTA INSITE**

✉ [info@voltainsite.com](mailto:info@voltainsite.com)

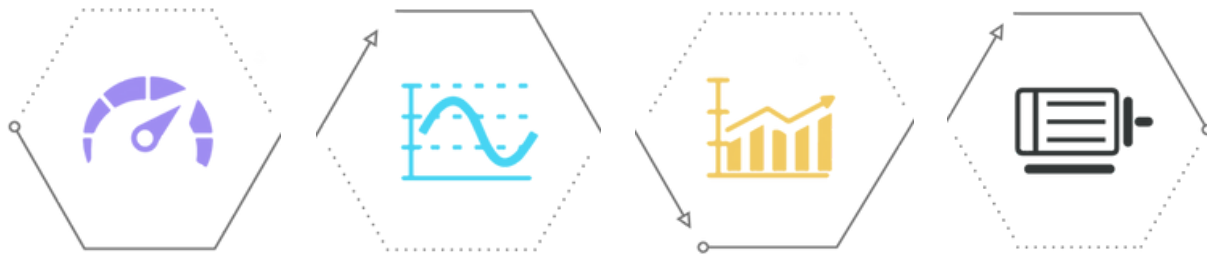
[VOLTAINSITE.COM](http://VOLTAINSITE.COM)

# Electrical Signature Analysis

## NEXT GENERATION TOOL SET FOR OPTIMIZING ELECTRICAL PERFORMANCE

Volta Insite starts by capturing the current and voltage signals of an electrical load or source, utilizing Electrical Signature Analysis (ESA) as a foundation. These captures are graphed in the frequency domain, which reveals a distinctive electrical signature. Baseline numbers are established from the electrical signature, and changes from this baseline can be monitored and reported over time.

Electrical and mechanical problems in a generator or motor will produce harmonics in the voltage and current signals. These harmonics produce unique patterns that can accurately identify the problem. Volta Insite provides customers with access to real-time intelligence, mobile alerts, and a database of equipment history, allowing them to identify and plan for maintenance before catastrophic failures occur.



This proactive approach **reduces costs** and **eliminates unplanned downtime**, ultimately increasing the **reliability** and **longevity** of the motor.

Volta Insite's continuous transient captures enable precise analysis and facilitates expedited diagnostics through data-driven methods, eliminating guesswork. This approach significantly lowers maintenance costs and minimizes downtime, allowing for efficient and

effective equipment management that is simple and comprehensive to use.

ESA data serves as a valuable resource for algorithms that aim to extract increasingly detailed insights into system operation.

☎ 833-227-5888



**VOLTA INSITE**

✉ [info@voltainsite.com](mailto:info@voltainsite.com)

[VOLTAINSITE.COM](http://VOLTAINSITE.COM)



## CASE STUDY

# Tomorrow's Predictive Maintenance - Today

## PREVENTIVE MAINTENANCE

A Volta Insite customer in the lumber industry operates a belt driven circular saw. The customer experienced belt failures at random intervals, leading to unscheduled downtime and production losses. Scheduling belt replacements on a preventative maintenance schedule often resulted in unnecessary replacements before the belts actually needed changing. By implementing InsiteAI monitoring, early signs of belt degradation were detected.

## SOLUTION

With InsiteAI monitoring, early signs of belt degradation were detected, allowing the company to schedule a belt change during the facility's normal closed hours, avoiding any loss of production time.

## AT A GLANCE

### Project Overview

- System analysis
- Volta Insite monitoring
- Early signs of equipment degradation
- Scheduled maintenance during closed hours

## BENEFITS

- Early detection
- Proactive scheduling of repair during non production hours
- Avoidance of unplanned downtime/loss of production time
- Maximized operational efficiency and productivity
- Cost savings by minimizing maintenance-related disruptions
- Enhanced equipment reliability and longevity

📞 833-227-5888



✉ [info@voltainsite.com](mailto:info@voltainsite.com)

[VOLTAINSITE.COM](http://VOLTAINSITE.COM)



## CASE STUDY

# Detecting and Troubleshooting

## RESOLVING CRITICAL VFD ISSUES

Volta Insite was brought in to monitor two critical exhaust fans that had been experiencing frequent service calls due to VFD error codes and parameter settings. Upon connecting to the cloud, InsiteAI software quickly identified an abnormal current imbalance.

## SOLUTION

By investigating further we discovered that one of the motor phases was arcing to the ground, which had been hidden away in the motor junction box. Once the issue was repaired, the exhaust fans resumed normal operation.

## AT A GLANCE

### Project Overview

- Resolved error codes and parameter settings issues
- InsiteAI software identified an abnormal current imbalance, leading to the discovery of a hidden motor phase arcing to the ground
- Repairing the issue restored normal operation, preventing potential downtime and equipment damage

## BENEFITS

- Swift detection and resolution of VFD error codes and parameter settings issues
- Identification of hidden motor phase arcing, preventing potential equipment damage
- Avoidance of unplanned downtime and costly service calls
- Enhanced operational reliability and safety
- Maximization of equipment lifespan and performance

## CASE STUDY

# Investigating and Resolving Motor and VFD Failures

## RESTORING STABILITY

During the commissioning of a new hospital, multiple black-out tests were performed, resulting in incidents of motor and VFD failures on air recirculation fans. Volta Insite was called in to investigate. Concerns were raised about transients and overvoltage conditions due to the presence of numerous harmonic filters in the facility, and their potential impact on the current and voltage of the power distribution system.

## SOLUTION

After conducting an InsiteAI analysis, we confirmed that voltage transients were minimal and not the root cause of the problem. Instead, we discovered that the failure was due to the faulty manufacturing of the air recirculation fan motors.

## AT A GLANCE

### Project Overview

- Investigate multiple motor and VFD failures during black-out tests at a new hospital
- Concerns about transients and overvoltage conditions due to harmonic filters
- InsiteAI analysis revealed minimal voltage transients; faulty manufacturing identified as root cause

## BENEFITS

- Swift identification and resolution of motor and VFD failures
- Elimination of concerns regarding transients and overvoltage conditions
- Prevention of potential equipment damage and downtime
- Enhanced reliability of hospital infrastructure for patient care

📞 833-227-5888



✉ info@voltainsite.com

VOLTAINSITE.COM





CASE STUDY

# Powering Precision: Resolving Generator Voltage Oscillation

## SAVING TIME AND MONEY

VFD and pump operated normally under utility power but would kick off under generator power. Multiple technicians and an electrical contractor recommended to the customer that a \$200,000 power harmonic filter was required to address the problem.

## SOLUTION

Volta Insite was called in to determine the root cause of the issue and with our data captures and continuous monitoring, we were able to capture transient events when utility power switched over to back-up generator power. The transient events on power switch-over showed that the voltage from the generator was oscillating significantly. Solution was instead a small signal filter on the “sense side” of the V-regulator and the system began working correctly.

## AT A GLANCE

### Project Overview

- Data captures and continuous monitoring revealed transient events during power switch-over.
- Voltage oscillations from generator identified as problem.
- Solution: Installation of small signal filter on “sense side” of V-regulator.

## BENEFITS

- Swift identification and resolution of issue.
- Cost-effective solution implemented, avoiding \$200,000 expense.
- Enhanced reliability and functionality of VFD and pump systems.
- Minimized downtime and equipment damage.

📞 833-227-5888



✉ info@voltainsite.com

VOLTAINSITE.COM



## CASE STUDY

# Safeguarding Production: Preventing Catastrophic Failures

## CONTINUING PRODUCTION

750 Ton Hydraulic Press, Motor, and VFD experienced two catastrophic failures, costing \$100,000 each incident, with significant downtime during a critical production run. Volta Insite investigated the cause, utilizing continuous waveform capture during equipment operation. Analysis revealed motor overload across the full seven-second work cycle, leading to overheating and failure.

## SOLUTION

The simple solution to the problem was to slow the work cycle down to nine seconds. This change enabled the motor to cool down to its correct operating temperature, allowing production to continue without any additional failure. The customer fulfilled their contract on time and on budget.

## AT A GLANCE

### Project Overview

- Two catastrophic failures of 750 Ton Hydraulic Press, Motor, and VFD.
- Analysis revealed motor overload across full work cycle, leading to overheating and failure.
- Solution: Slowing work cycle to nine seconds, preventing further failures and enabling uninterrupted production.

## BENEFITS

- Prevention of catastrophic failures, saving \$100,000 per incident.
- Minimal downtime and production delays.
- Cost-effective solution implemented, fulfilling contract on time and on budget.
- Enhanced reliability and functionality of equipment.

📞 833-227-5888



**VOLTA INSITE**

✉ info@voltainsite.com

VOLTAINSITE.COM

# Predictive Electrical Analysis

MADE TO EDUCATE



## Data Collection

Once installed, our Insite Node continuously provides real-time readings of voltage and current.



## Intelligent Actions

Customers can access real-time intelligence, receive alerts, and review a database of equipment history, enabling them to leverage our powerful predictive maintenance technology.



## Scalable

Our architecture enables the networking of additional Insite Nodes, allowing for comprehensive monitoring of entire electrical systems.



## Data Analysis

The collected data is then transmitted to our InsiteAI software for thorough analysis. This software solution accurately diagnoses a motor's electromechanical condition and assesses the quality of power supply.



☎ 833-227-5888



✉ [info@voltainsite.com](mailto:info@voltainsite.com)

VOLTAINSITE.COM



**We would like to learn more about your operations and discuss how we can create a custom solution for you.**

**WE MONITOR 24/7 - 365 TO GIVE YOU PEACE OF MIND.**



**833-227-5888**



**info@voltainsite.com**



## **GETTING STARTED IS EASY**

### **ASSESS YOUR CRITICAL ASSETS**

**1**

Determine which of your equipment is vital to your operations.

### **INSTALL & ACTIVATE**

**2**

Our nodes can easily be installed by your system operators during regularly scheduled downtime.

### **MONITOR**

**3**

Once installed, your data will be directly available on your devices for constant monitoring.