Our goal is zero unexpected downtime and lower operating costs

VOLTA INSITE

WHY VOLTA INSITE™

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.

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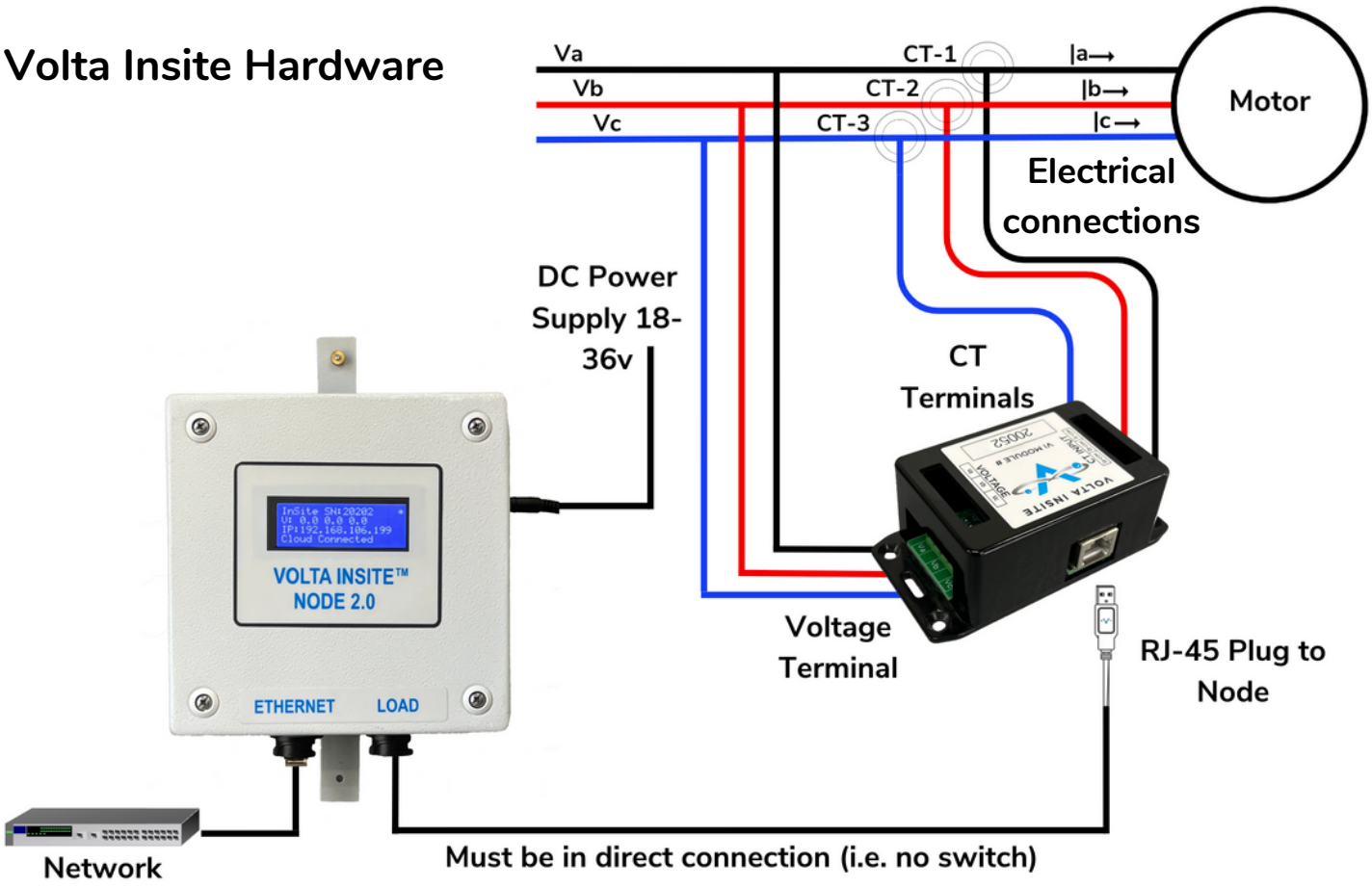
Volta Insite Hardware



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.

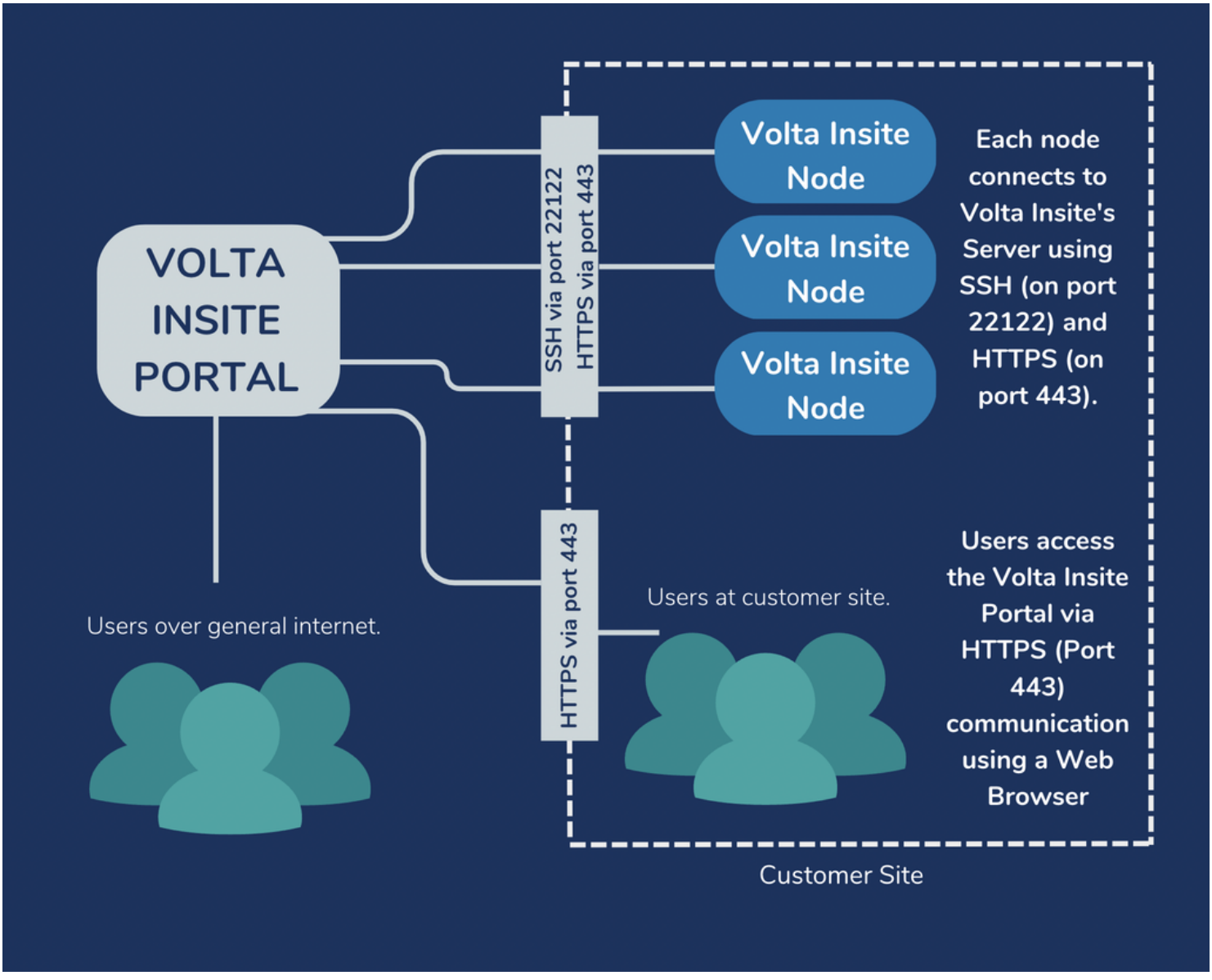
VI Module 3.0

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

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.

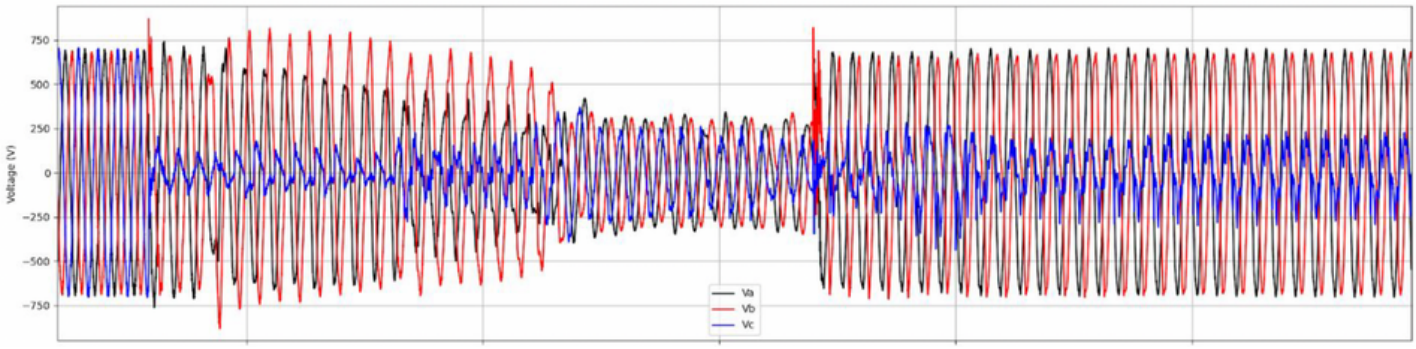
Volta Insite's data and analytics can also be integrated with third-party software upon customer request.



Power Quality Analysis and Transient Captures

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.

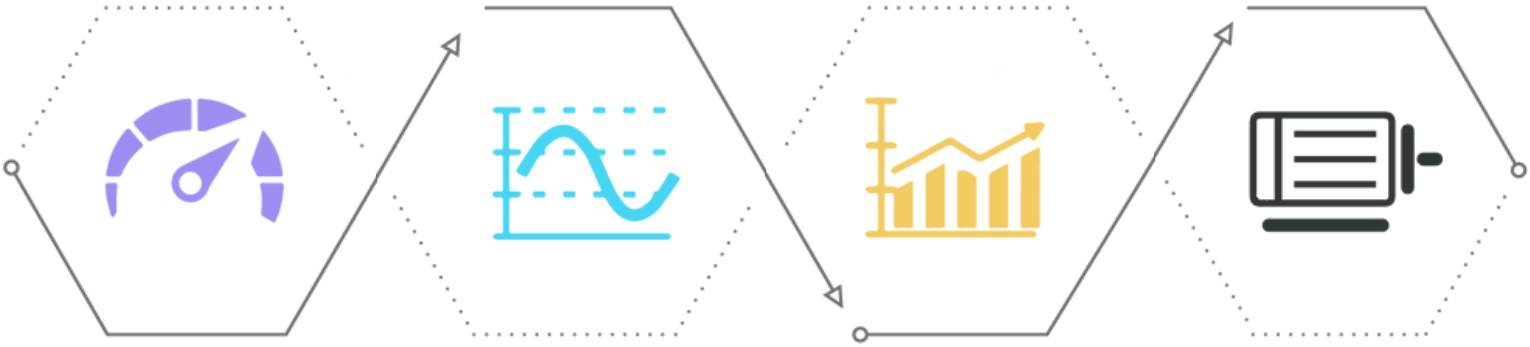


Volta Insite's continuous transient captures provide accurate data for precise analysis and efficient diagnostics, reducing reliance on guesswork. This results in significant cost savings on maintenance and minimizes equipment downtime.

Volta Insite is a pioneer in distributed electrical signature analysis (ESA) and specializes in techniques that focus on the physical correlation of data. Our instruments cover multiple components and can cross-check events that occur simultaneously on different pieces of equipment. With our InsiteAI, we can isolate various issues to quickly and accurately determine if problems exist beyond interconnected machinery.

Electrical Signature Analysis

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.

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Case Studies

We Saw A Solution

Volta Insite has a customer who uses a raw cutter machine to convert hardwood timber into lumber. The machine features a 2500-hp 480-V three-phase 6-pole induction motor that is powered by a system of pulleys and a belt, which drives a large circular saw blade. The belt operates at a frequency of approximately 3 Hz, and any increase in the spectral peak at this frequency can indicate a problem with the belt's operation. With Volta Insite's ESA 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.

It Was Just A Phase

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. We investigated further and 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.

Insite Heals a Hospital

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. 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. Volta Insite identified and resolved the issue, thus solving the problem.

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

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.

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.

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