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BATT-TRAC

THE LAST LINE OF DEFENCE

Battery monitoring system

Why Batt-trac?

Ensuring that the heart of the system never fails, has always been the biggest challenge faced by facility owners and concerned officials.

BATT-TRAC is an innovative Real Time battery monitoring system for different scale technology installations where power and system availability are critical to successful signaling & telecom operations/networks. It is a powerful tool for mitigating and preventing costly downtime due to unexpected system failure.

Daily power glitches and outright power failures are a fact of life and the key consideration that drives your investment in mission critical UPS/IPS power conditioning & backup systems.

As the world continues to move into extreme advancement in technology where there is a heavy reliability on computers for the most minute tasks and many of our daily operations rely on stronger networks, greater bandwidth and most important of all – Reliable Power. You can be sure your batteries will work to support vital applications, systems and networks during the many everyday power disturbances and outright power failures that each operation is almost certain to experience.

Applications that rely on technology for their day-to-day operations cannot afford to risk even a split second of downtime, let alone an extended outage. To keep operations running smoothly, one has to take a close look at their power infrastructure to identify vulnerabilities and take action to prevent costly downtime. Most failures occur because proper battery maintenance programs were not followed. This is applicable regardless of industry; Railways, Defence, Finance, IT, Medical, Government Sectors, Telecommunication, Public Transportation, Datacenters etc.

BATT-TRAC Battery Monitoring Systems are designed in accordance with IEEE Battery maintenance recommendations. This allows you to maintain a safe and secure system with Real-time monitoring, which will minimize the probability of a failure and optimizethe service life of the battery.

BATT-TRAC not only monitors the batteries, but also the external parameters which could affect the performance of the system, providing added security.

Batt-trac Monitors

Early detection + Optimized External Parameters = Optimized Service Life

 **Voltage**

 **Current**

 **Internal Resistance (IR)**

 **Ambient Temperature**

 **Battery Temperature**

 **Inter-Connector Resistance**

 **Power Outages**

 **Charge/Discharge Cycles**

 **Capacity**

 **Smoke Detection**

 **Mains Fail**

BATT-TRAC can help:-

- PREDICTIVE MAINTENANCE INSTEAD OF MANUAL MAINTENANCE.
- STAND-BY BATTERIES PROVIDE LAST LINE OF DEFENCE AGAINST POWER FAILURE.
- COST SAVINGS THROUGH DATA ANALYSIS AND CONSEQUITIVE REMEDIAL ACTION FOR INDIVIDUAL CELLS AND BATTERY BANKS.
- REPLACEMENT OF BATTERIES BASED ON CONDITION OF BATTERY BANK AND NOT TIME BOUND.
- GET THE FAILURES BEING INDICATED/ALARMED/NOTICED BEFORE CAUSING DISCRUPTION TO ANY SIGNAL/TELECOM NETWORKS.
- VERIFY THE INTEGRITY OF THE INSTALLATION.
- DETECT UNEVEN POWER DISTRIBUTION BETWEEN MULTIPLE STRINGS.
- AVOID THERMAL RUNAWAY.
- DETECT VARIATIONS IN AMBIENT TEMPERATURE.
- ASSURANCE OF UPTIME.
- PREVENT PREMATURE DETERIORATION OF THE BATTERY.
- EARLY DETECTION OF FAULTY BATTERY CELLS.
- DETECT DEAD BATTERY EARLY TO PREVENT ANY FAILURE OR ACCIDENT.

Monitoring Parameters

Voltage

Measures voltage of individual batteries which helps in determining the performance of the batteries.

BATT-TRAC continuously monitors the battery terminal voltage from 1.2V to 16V in order to account for rapid changes of power consumption.
It is important to measure volts across the battery or electrical potential of the battery. This is a measure of the force with which the electricity is pushed by a battery into an electrical load. In most cases, the amount of volts.

Current

Measures the amount of current which is flowing through each battery bank during float/charge/ discharge mode.

An increase in current beyond the specified limit could indicate a problem.
BATT-TRAC measures the charge/discharge current per string which helps optimize the current flow in the syst

Internal Resistance(IR)

Measures internal resistance of individual batteries which helps predict the health of the battery.

In most multi battery systems today, the battery monitoring system is considered to be of great economical importance. Several methodologies exist, but the ability to read the state of health of a battery remains a challenge.
To a large extent, the internal resistance determines the health and runtime of a battery. High IR curtails the flow of energy from the battery to the equipment. While a battery with low IR can deliver high current on demand, a battery with high IR collapses with heavy current.
BATT-TRAC is an intelligent device which not only keeps track of IR values but also records and feeds information for preventive maintenance.

Ambient Temperature

Measures the ambient/room temperature at any given 2 points per system.

VRLA batteries are designed to work at a temperature of 25°C. Batteries operate on a basic principle of oxygen recombination. As a result of high temperature, the rate of reaction increases, leading to electrolyte dry-out and thermal runaway. For every 8°C to 10°C increase over 25°C, the service life of a battery deteriorates by about 50%.
BATT-TRAC helps to prevent premature failure by ensuring that ambient temperature does not exceed 25°C.

Battery Temperature

Measures the individual battery temperature to prevent thermal runaway and overheating.

There are a number of internal/external influences which can lead to the increase of the internal temperature of a battery.
BATT-TRAC monitors the individual battery temperature during various stages of the battery's performance.

Inter-Connector Resistance

Measures the resistance of the inter-cell connector which helps to verify the integrity of the installation.

During the initial installation or over the course of the service life of the battery, loose connections may occur at the terminals due to improper installation or wear and tear of the inter-cell connectors. This will cause resistance to increase and lead to poor performance of the entire battery bank in spite of the batteries being healthy.
BATT-TRAC not only monitors the resistance of both inter-cell and inter-tier connectors but also verifies the integrity of the battery installation.

Capacity

Measures the capacity of the battery bank which helps us to determine the amount of electric charge it can store.

The capacity of a battery depends on the discharge conditions such as the magnitude of the current (which may vary with time), the allowable terminal voltage of the battery, temperature, and other factors.
The available capacity of a battery depends upon the rate at which it is discharged. If a battery is discharged at a relatively high rate, the available capacity will be lower than expected.

Smoke Detectors

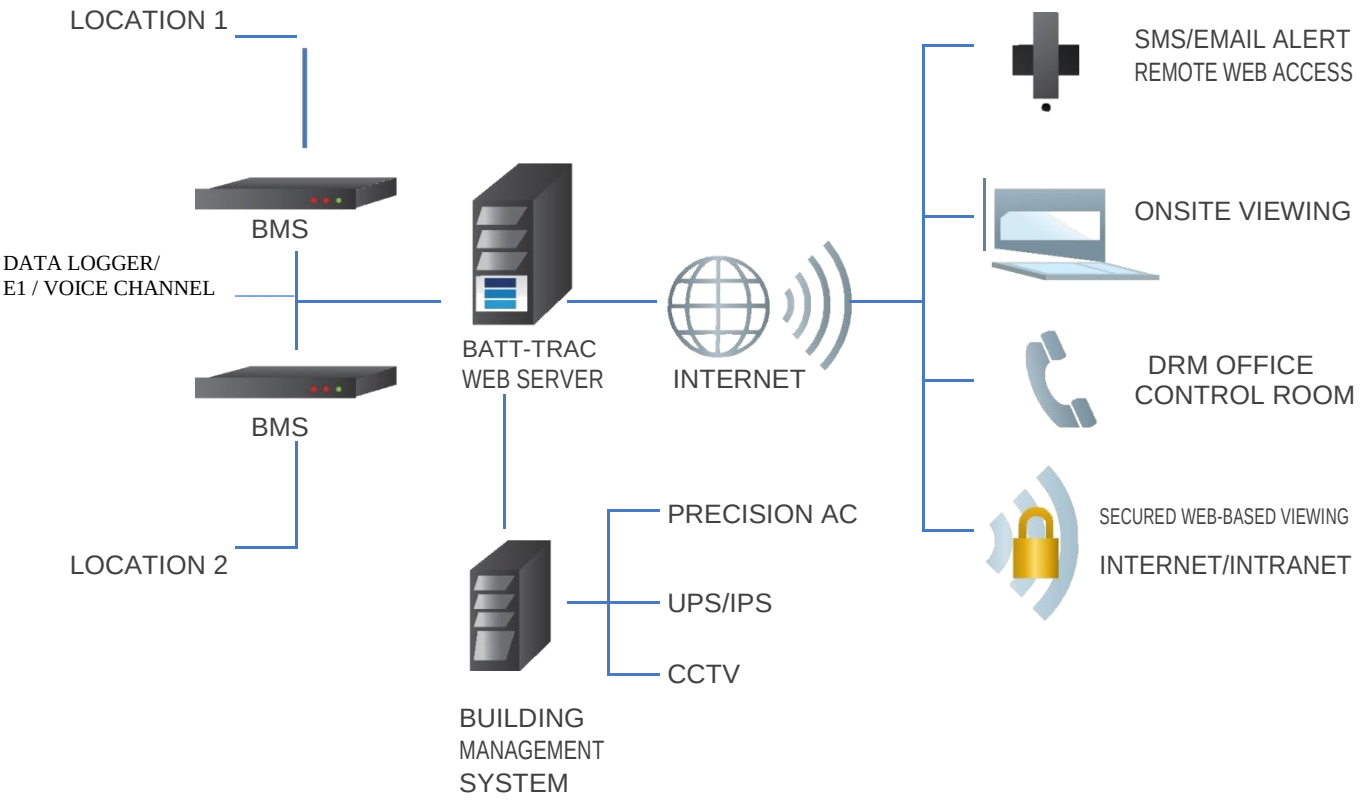
Detects the smoke within the battery room due to any short circuiting or failure which helps us to identify the incident wherever it might have occurred.

Smoke detection is done by either of this two methods, one by optical method or by ionization method.
An optical detector is a light sensor. When used as a smoke detector, it includes a light source (incandescent bulb or infrared LED), a lens to collimate the light into a beam, and a photodiode or other photoelectric sensor at an angle to the beam as a light detector. In the absence of smoke, the light passes in front of the detector in a straight line. When smoke enters the optical chamber across the path of the light beam, some light is scattered by the smoke particles, directing it at the sensor and thus triggering the alarm.

The radioactive isotope americium-241(produces ionization in the air) in the smoke detector emits ionizing radiation in the form of alpha particles into an ionization chamber that is open to the air and a sealed reference chamber. The air molecules in the chamber become ionized and these ions allow the passage of a small electric current between charged electrodes placed in the chamber. If any smoke particles pass into the chamber the ions will attach to the particles and so will be less able to carry the current. An electronic circuit detects the current drop, and sounds the alarm.

Accessibility

How it works:-



Batt-trac Supports	Communication Protocol	Communication Port
BUILDING MANAGEMENT SYSTEMS	MODBUS	RS 232
SCADA SYSTEMS	SNMP	RS 485
UPS / IPS / BATTERY BANK (ANY)	TCP/IP	E1 CHANNEL
THIRD PARTY HARDWARE & SOFTWARE		VOICE CHANNEL
		SMS

Technology

Outsource your battery maintenance to us.

With state of the art monitoring facilities with our specialised and dedicated system continuously monitoring various parameters of batteries and external parameters, monitoring through website/web server/software for remote monitoring is also available as depicted below to assure that the application is always been under observation.

UPS: S4 | SUMMARY | FLOAT MODE

Data updated at: 13:10
Next refresh at: 13:15

Bank 1 - Normal

String Voltage : 48V
Highest – 2.51V | Lowest – 2.01V

Highest – 5.89ohms | Lowest – 4.9ohms

Temperature – Point 1 – 22.1 Degree
Point 2 – 23.3 Degree
Current – 1.2 Amp

UPS - Battery Configuration

120KVA – BANK 1 - 24 Nos of ESC 100-12
BANK 1 - 24 Nos of ESC 100-12

Back up Time – 15 min

Date of installation: 12th Jan,11

Bank 2 - Normal

String Voltage : 48V
Highest – 2.51V | Lowest – 2.10V
Highest – 5.89ohms | Lowest – 4.9ohms
Temperature – Point 1 – 22.1 Degree
Point 2 – 23.3 Degree
Current – 1.2 Amp

Summary

Last Discharge : 25TH December 2011
% of Discharge : 10% : Time : 4 Min – 4 Seconds
Cut off – 44V

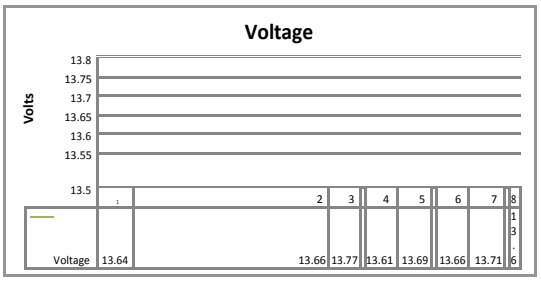
10th Jan. 2012: 13:12:30

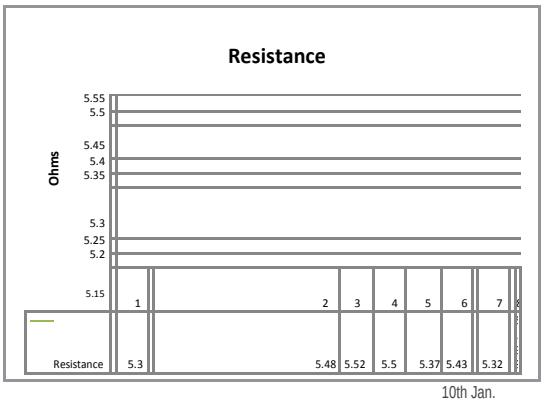
UPS: S4 | BANK 1 - Normal | FLOAT MODE

Data updated at: 13:10
Next refresh at: 13:15

Individual Battery details:

Battery ID	Voltage (Volts)	Resistance (Ohms)
1	2.24	5.20
2	2.04	5.80
3	2.74	6.02
4	2.20	5.50
5	2.75	5.04
6	2.10	5.25
7	2.86	5.27
8	2.96	5.11





10th Jan. 2012: 13:12:30

Specifications

Environmental

Operating temperature	-5°C~50°C, 5%~90%RH
Storage temperature	-10°C~70°C, 5%~90%RH
Power Requirements	85~264V AC, 100V~370V DC input or 36~72V DC input
Protection	Test load and power paths are fused Reverse polarity Over voltage protection for power input

Measurement Range & Accuracy

Bank voltage	20~600V
Cell voltage	1.2~2.5V
	7~16V
Internal resistance	100~65535μΩ
Intercell resistance	100~65535μΩ
Temperature	-10°C~70°C
Bank current	0~500A(optional)
Communication Interfaces	RS232, RS485 ports Ethernet 10/100 Mbps MODBUS protocol
Insulation	1000V AC
Digital Signal	3 Potential free contact, 220V DC/1A

Weight

DC Module (kg)	2.3
Load Module (kg)	2.7
Control Module (kg)	2.5

Dimensions (DC/Load/Control Module)

Width (mm)	482
Height (mm)	45
Depth (mm)	166

DC Module

Control Module

Load Module

Current Module