



Case Study: IoT Battery Monitoring Saves Network Providers and their VARs Time & Money

Situation:

J&M Shaefer (JMS) installs and maintains DC power systems and batteries for MIDTEL's Central Offices.

Much of the maintenance activity requires skilled technicians who provide critical and highly technical power systems support.

JMS's service contract with MIDTEL requires two preventative maintenance (PM) visits a year to each site.

Site work encompasses battery impedance tests along with cleaning terminals of any corrosion and replacing worn cables. Technicians then prepare a status report for MIDTEL.

Travel typically involves a round trip to each CO or visiting several COs on the same trip. In MIDTEL's territory, travel time to each site can be more than an hour each way.

On-site testing and maintenance can run 2-6 hours depending on the work being performed. Additional time is required for the technician to complete a condition report.

At prevailing labor rates, battery PM activity becomes a large but necessary expense for MIDTEL.

Between scheduled visits, however, both JMS and MIDTEL lack visibility into the battery status at each site.

When a local utility power outage occurs, MIDTEL's Network Operations Center (NOC) is alerted to a 'Battery on Discharge' (BOD) alarm and possibly Major (MJ) or Minor (MN) alarms from the DC power plant controller.

At that point, the NOC must decide whether to dispatch a JMS crew to check on one or more sites affected by the outage.

Solution:

JMS and MIDTEL staff worked together to install, test and evaluate the IoT battery monitoring system (IoT-BMS) from LABRA Technology.

LABRA's IoT-BMS comprises three basic devices: the primary Black Box IoT Voltage sensor (4 Voltage Inputs, GPS & Shock Sensor, Bluetooth enabled, NB-IoT Cellular or Wi-Fi gateway), an optional Bluetooth Voltage sensor (Temperature sensor, 4 Voltage Inputs for Apps > 60V, Current Transducer Interface, 24 VDC Supply to Energize the CT) and, an optional Current Transducer (4/12/20 mA (0 to +/- Full Scale), powered from Bluetooth Sensor)

Middleburgh Telephone Co. (MIDTEL)

- Middleburgh, NY
- Independent telephone company (ITCo)
- Established in 1897, provides Internet, Wi-Fi, telephone, and cable TV via fiber-to-the-premise (FTTP).
- Serves over 7,000 customers from 13 central offices (COs) located throughout 330 square miles of Schoharie County and parts of western Albany County.
- Typical CO DC power plants sized for up to 200 A @ -48 VDC capacity with 8-hour battery reserve using flooded lead-acid or VRLA batteries.

J&M Shaefer (JMS)

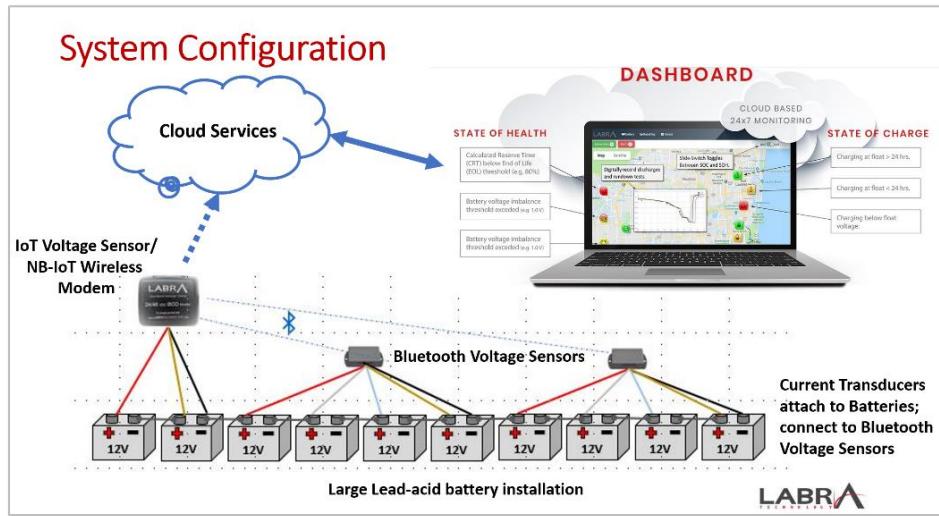
- East Syracuse, NY
- Value-added Reseller (VAR) - DC power specialist, since 1963
- Sells and services full line of DC power systems: industrial batteries, rectifiers, inverters, UPS systems, monitoring equipment.
- Services include site audits, design, engineering, installation, consulting, management, and tailored Preventive Maintenance (PM) programs.
- Supports: ITCos, local utilities, national telephone and cable companies, and commercial enterprises.
- Select battery PM programs: 2-4 site visits per year, 1 visit per year; 0 visits- wait for batteries to be replaced.

The IoT-BMS monitors the battery plant and provides status on six different parameters: Battery on Discharge (BOD), Time to Empty (TTE), Calculated Reserve Time (CRT), End of Life (EOL), State of Health (SOH), and State of Charge (SOC).

Battery status data are transmitted via a wireless connection to the cloud where data are stored and analyzed, then presented on an interactive GUI dashboard.

The dashboard presents battery status across the network with the ability to drill down into individual sites.

The dashboard can be shared among multiple parties via a web browser on a variety of devices including desktop computers, laptops, tablets and smart phones.



In this case, JMS and MIDTEL were able to track the same battery status in near real time at each of MIDTEL's COs that were equipped with the LABRA IoT-BMS. JMS and the NOC together were able to formulate an appropriate response when any out-of-normal conditions occurred.

Outcome:

MIDTEL gained a better understanding of its battery status at all sites at all times.

Greater visibility supported better decision making for either allowing batteries to remain in service longer than originally planned or scheduling replacements only when necessary thus saving capital expenditures (Capex)

JMS was able to optimize its field force utilization for PM visits, and by adopting a 'dispatch-on-demand' model for remedial maintenance.

Both scenarios helped MIDTEL reduce its operating expenses (Opex).



About LABRA Technology

LABRA Technology, based in Delray Beach, FL, is an Internet of Things (IoT) service provider and developer of a specialized voltmeter for battery backup and energy storage applications.

With our design partner, InventureTrack Systems, we developed the IoT voltmeter for use in remote sites that otherwise have no remote monitoring.

The complete IoT battery monitoring system (IoT-BMS) provides:

- Battery capacity analytics using a Bell Labs-developed algorithm
- Non-invasive, reduced wire count overlay with wireless connectivity
- Cloud-based stakeholder collaboration and real-time data sharing with GUI dashboard display

For more information: www.labratechnology.com ° (561) 328-6859

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