



CASE STUDY:

Real-time Battery Health Monitoring

Safety * Compliance * Digitalization

SUMMARY:

Batteries provide uninterruptible electrical energy in case of an emergency in plants. Whether used in a UPS system or diesel engines, reliability of batteries to be maintained. Batteries should provide sufficient power whenever required, therefore, on-line monitoring is necessary to ensure the health/state-of-charge of battery cells. Conventional capacity testing of batteries requires expensive instruments and can only be performed under special conditions.

Vadict has developed different models for cell voltage unbalance calculation, anomaly detection, and remaining useful life estimation. This provides users the detailed insights of health of a battery and battery banks.

Engine batteries



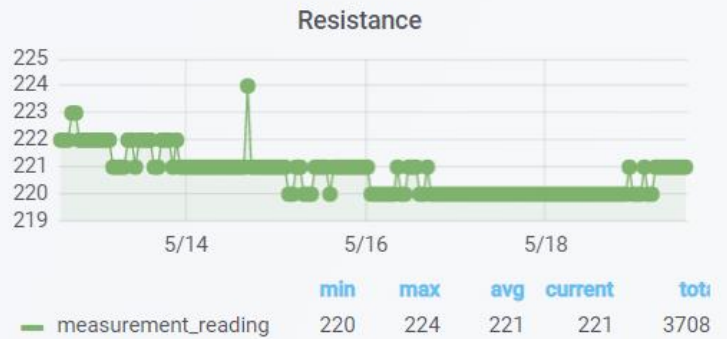
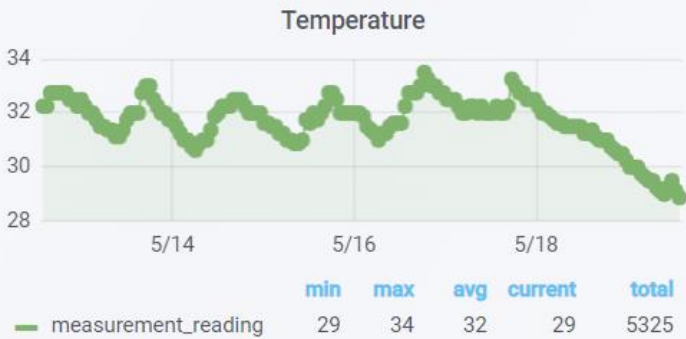
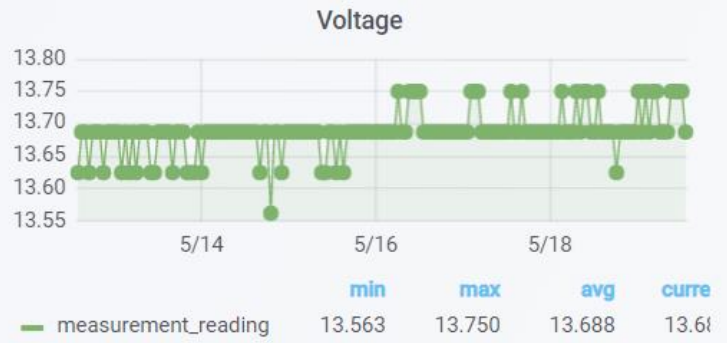
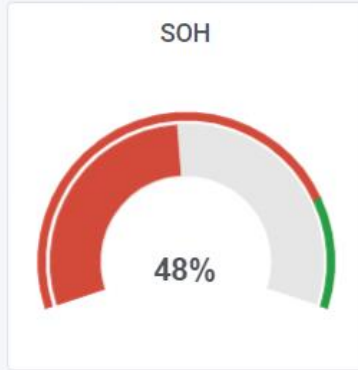
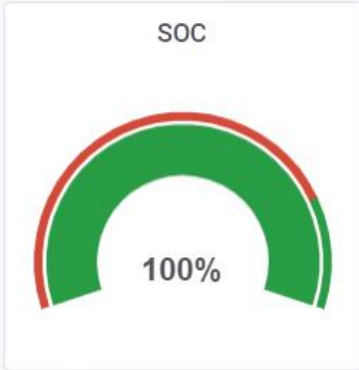
UPS batteries



DEPLOYMENT:

Vadict online battery health monitoring solution was deployed at two of the sites of a Fortune-500 Oil & Gas Company to monitor health of UPS and diesel engine batteries. A total of about 400 battery sensors were deployed including both the sites. Time-based maintenance (mainly replacement) and OEM's recommendation were used in their previous maintenance strategy.

Online battery health monitoring system has been designed to capture key battery parameters to assess its health. Sensors are installed for each battery and for each string; battery sensors provide voltage, resistance, state of charge, state of health, and temperature. String sensors provide current, string voltage, state of charge (which is the lowest state of charge of the battery within that string). Internal resistance defines battery's capability to handle load, and it also characterizes its state of health. Above-mentioned parameters are used to estimate health and charge state of an individual battery or a battery pack.



OUTCOMES:

- Real-time battery health monitoring for plant safety
- Early indication of battery degradation for optimal scheduling and planning
- Identify bad batteries in a battery bank
- Availability of parameters like cell unbalance and RUL for better and informed decision on maintenance
- Avoid early (time-based) replacement of healthy batteries, and hence, cost saving