

Power Protection AKKA - Remote Battery Monitoring System



AKKA Devices, wall mountable device on the left and the portable device on the right.

Importance of battery monitoring in power protection

Most important aspect of power protection is reliability. Problems in power protection can cause serious issues with the end process and can lead to significant financial losses and even endanger human lives. In nearly every power protection system, the power, during the early moments of grid failures, comes from batteries. If batteries cannot supply the required power, until other protection systems have started or the grid failure has passed, the supply for the critical load will be severely compromised.

According to several studies, battery systems of UPS devices are one of the most critical points of failures in protected power systems. One example is a study conducted in the year 2013. In this study, it was found out that failure of UPS batteries was the leading root cause failure for data center blackouts.

The design life's for batteries vary from few years to even more than ten years. Decades of experience in working with batteries has shown us that estimating real lifetimes of batteries is nearly impossible without reliable measurements. Also we have found out that about 3 to 5% of new batteries have serious defects and should not be used in critical applications.

ABB's AKKA system, for protecting your processes continuity with decades of experience

ABB's AKKA device has been developed more than twenty years ago and has been used successfully ever since. Lately the device has been re-designed and a new service product using AKKA has been developed to bring customers additional added value.

ABB's AKKA portfolio includes two devices, a portable AKKA device for performing battery state of health measurements and a wall mountable device for measurements and monitoring. In addition to the devices, an easy-to-use, graphical software has been developed. Software is used to perform measurements and to display the gathered data.

Battery tests of the UPS devices vs. AKKA

Modern UPS devices can perform battery tests independently, but these tests usually monitor only the voltage at the ends of the entire battery string.

AKKA system performs this measurement on battery block level. This helps to identify the weakest links of the battery system and to show which batteries are still up to task. This data makes it possible to replace individual batteries without jeopardizing the reliability of the battery system.

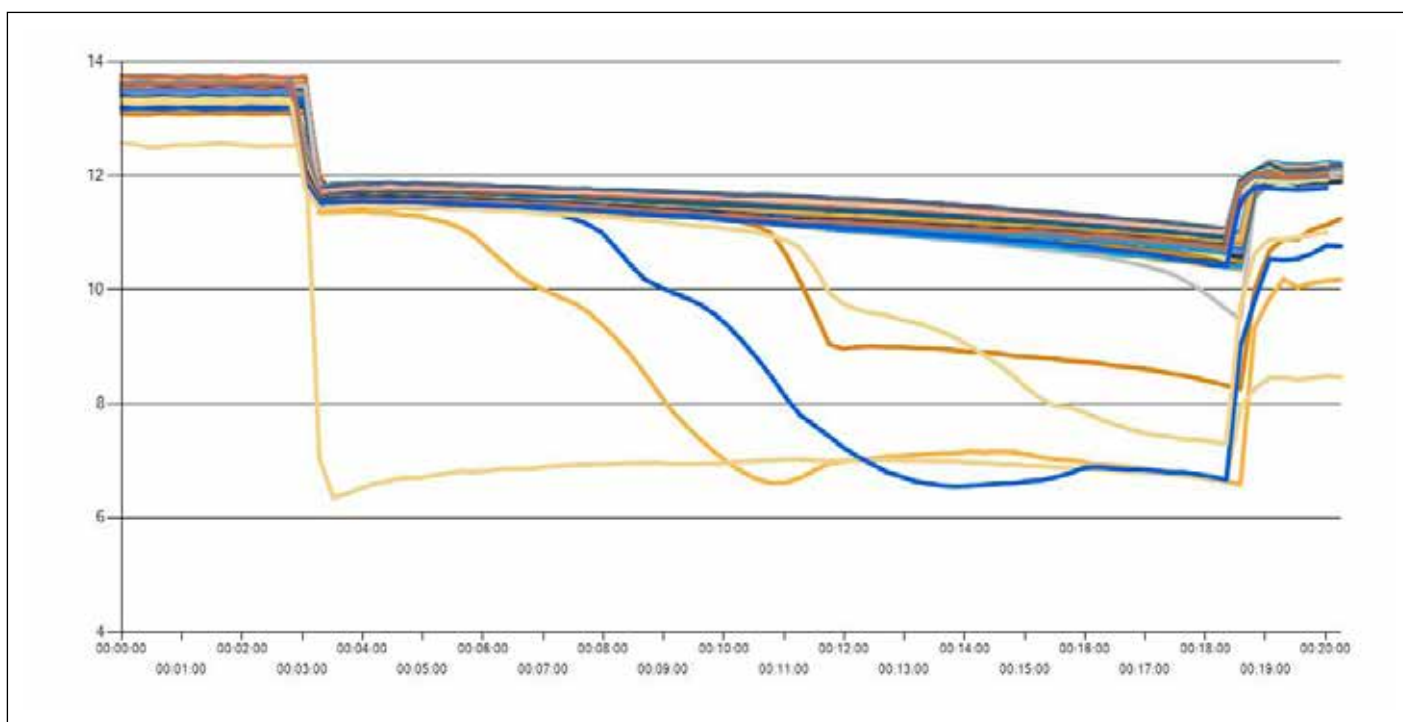


Chart from a discharge test that was recorded with AKKA system. Several faulty batteries can be identified.

Monitoring and measurement methods used by AKKA

State-of-health measurement:

State-of-health measurements with AKKA are based on performing discharge testing and recording the results with AKKA. During this test the terminal voltages of each battery are constantly recorded and compared with others.

Monitoring:

AKKA devices monitor individual battery terminal voltages and the environmental temperature of the battery room. Additionally AKKA devices can be setup to detect the discharge events, during which they will start the measurements and do comparisons between the performances of the individual batteries.

AKKA devices are equipped with potential free relay contactors that can be used to output alarms to other systems.

AKKA Measurement cables

AKKA devices interface with battery systems through AKKA measurement cables. These cables have been certified by the SGS.

Battery state-of-health measurement service

We are also offering battery state-of-health measurements as a service.

In this service customers battery system will be fitted with AKKA measurement cables that allows our service engineers to perform battery measurements with portable AKKA devices.



Battery system fitted with AKKA measurement cables.

Result of this service is a report that will be delivered to the customer. This report includes the discharge curves, general assessment of the battery systems condition and remaining lifetime and recommendations of maintenance work to be done to increase the reliability of the system.

This measurement service can be bundled with UPS devices yearly maintenance service contracts.

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