



# Energy storage operation and maintenance considerations and requirements

What are the limitations of electrical energy storage systems?

There are currently several limitations of electrical energy storage systems, among them a limited amount of energy, high maintenance costs, and practical stability concerns, which prevent them from being widely adopted. 4.2.3. Expert opinion

What are the guidelines for battery management systems in energy storage applications?

Guidelines under development include IEEE P2686 "Recommended Practice for Battery Management Systems in Energy Storage Applications" (set for balloting in 2022). This recommended practice includes information on the design, installation, and configuration of battery management systems (BMSs) in stationary applications.

Are energy storage systems outpacing existing standards?

Between 2011 and 2013, several major grid energy storage installations experienced fires (figure 1). As a result, leading energy storage industry experts recognized that technologies and installations were beginning to outpace existing standards.

Should the energy storage industry shift to a predictive monitoring and maintenance process?

This article recommends that the energy storage industry shift to a predictive monitoring and maintenance process as the next step in improving BESS safety and operations. Predictive maintenance is already employed in other utility applications such as power plants, wind turbines, and PV systems.

How often should energy storage systems be inspected?

For example, an Energy Storage Safety 101 presentation during a May 2020 meeting of the California Energy Storage Alliance recommended semi-annual steps such as visual inspections of the overall system, examining the HVAC (cooling), and checks on the ESS software control and communications.

Do energy storage products need periodic maintenance?

The requirements for periodic maintenance for energy storage products should be identified by the OEM (IEEE 2010). In settings where predictive analytics maintenance is economical, guidance should also be available from the manufacturer that identifies methodologies for assessing when a product may be approaching a failure mode.



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