PROCESS INDUSTRY PRACTICES

November 2022

Electrical

PIP ELEGL09
Electrical Power System Event Reporting Guideline

PURPOSE AND USE OF PROCESS INDUSTRY PRACTICES

In an effort to minimize the cost of process industry facilities, this Practice has been prepared from the technical requirements in the existing standards of major industrial users, contractors, or standards organizations. By harmonizing these technical requirements into a single set of Practices, administrative, application, and engineering costs to both the purchaser and the manufacturer should be reduced. While this Practice is expected to incorporate the majority of requirements of most users, individual applications may involve requirements that will be appended to and take precedence over this Practice. Determinations concerning fitness for purpose and particular matters or application of the Practice to particular project or engineering situations should not be made solely on information contained in these materials. The use of trade names from time to time should not be viewed as an expression of preference but rather recognized as normal usage in the trade. Other brands having the same specifications are equally correct and may be substituted for those named. All Practices or guidelines are intended to be consistent with applicable laws and regulations including OSHA requirements. To the extent these Practices or guidelines should conflict with OSHA or other applicable laws or regulations, such laws or regulations must be followed. Consult an appropriate professional before applying or acting on any material contained in or suggested by the Practice.

This Practice is subject to revision at any time.

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1. Scope

This Practice addresses the reporting and analyzing of electrical events associated with the electrical power delivery system(s) for process industries. These events can affect the dependability of the electrical system. Adverse electrical system events can cause safety, environmental, and economic impact to employees, surrounding communities, and businesses. Understanding the relationship between electrical system dependability and the adverse impact due to events can help to improve the electrical power delivery system.

Methods to calculate the effect of electrical events associated with the electrical power delivery system(s) for process industries are described within this Practice. The means to collect, store, calculate, and report data from electrical events can be by means of commercial software or maintenance management software as chosen by the owner.

Existing utility-based metrics for both distribution and transmission systems will be reviewed as to their applicability for use in the process industry environment.

Reporting and analyzing events associated with electrical utilization equipment, e.g., electric motors, lighting, HVAC, etc., is outside the scope of this Practice. Electrical events associated with utilization equipment should, however, be reported and analyzed through the owner's maintenance management system.

2. References

Applicable parts of the following Practices, industry codes and standards, and publications shall be considered an integral part of this Practice. The edition in effect on the date of contract award shall be used, except as otherwise noted. Short titles are used herein where appropriate.

2.1 Process Industry Practices (PIP)

- PIP ELEGL09-F1 – *Electrical Power System Reliability Metric Calculator* (included in this Practice)

2.2 Industry Codes, Standards, and Publications

- CIGRE
  - *[1] Methodology for Reliability Analysis of Power Transformers Based on Failure Data – The 20th International Symposium on High Voltage Engineering, ISH 2017-367*
- Electrical Power Research Institute (EPRI)
  - *[2] Reliability of Electric Utility Distribution Systems: EPRI White Paper (Final Report, October 2000)*
- Institute of Electrical and Electronic Engineers (IEEE)
  - [3] IEEE 100 – *The Authoritative Dictionary of IEEE Standards Terms, Seventh Edition*
  - IEEE Std 493 – *IEEE Recommended Practice for the Design of Reliable Industrial and Commercial Power Systems*