PROCESS INDUSTRY PRACTICES

July 2016

Electrical

PIP ELEGL03
Guidelines for Power Systems Analysis

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 provides guidelines for electrical system analysis used to develop and validate electrical power systems performance, including safety, reliability, and efficiency.

This Practice does not provide guidance on the type of analysis to be performed for specific applications. The following items are examples of additional studies which are beyond the scope of this Practice:

a. Ground grid study

b. High voltage substation design analysis

c. Insulation coordination studies

d. Switching transients

e. Flicker

f. Telephone Interference Factor (TIF)

g. Load shedding

h. Motor re-acceleration

i. System efficiency

j. Power factor correction

2. References

Applicable parts of the following industry codes and standards 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 Industry Codes and Standards

- Institute of Electrical and Electronic Engineers (IEEE)
  - IEEE C37.06 - *AC High-Voltage Circuit Breakers Rated on Symmetrical Current Basis - Preferred Ratings and Related Required Capabilities for Voltages Above 1000 V*
  - IEEE C37.010 - *Application Guide for AC High-Voltage Circuit Breakers Rated on a Symmetrical Current Basis*
  - IEEE C37.012 - *Application Guide for Capacitance Current Switching for AC High Voltage Circuit Breakers*
  - IEEE C37.5 - *Guide for Calculation of Fault Currents for Application of AC High-Voltage Circuit Breakers on a Total Current Basis (withdrawn)*
  - IEEE C37.13 - *Low Voltage AC Power Circuit Breakers Used in Enclosures*
  - IEEE 141 (IEEE Red Book) - *Recommended Practices for Electric Power Distribution in Industrial Plants*
  - IEEE 242 (IEEE Buff Book) - *Recommended Practice for Protection and Coordination of Industrial and Commercial Power Systems*