White Paper

If You Take Care of Your Documentation, It Will Take Care of You.

ASCO®

Accurate documentation can mean the difference between a building that operates at top efficiency and one that suffers ongoing issues.

Documentation Demands Attention

It's an Important Component of Power Reliability

Keeping documentation updated ... or at least dusted off ... has become increasingly important as facilities have become more sophisticated and the missions they accomplish more critical. From planning to commissioning and throughout a facility's service life, accurate documents can mean the difference between a facility that operates at optimal efficiency and one that underperforms because of ongoing issues.

As one data center design-build engineer has stated, "The key to a successful outcome is planning, organization and documentation. It is the attention to details that is important."

The attention given to documentation has grown considerably in the last decade. The same engineer stated, "I've been commissioning for twenty-some years. During the dot-com era, I commissioned a couple of large facilities. I went back after they were resold, and found the commissioning documents in the same closet I had left them years before, with two inches of dust on them. If the operator never took that documentation and did anything with it, it wasn't valuable information. It was worthless."

Because it provides important benchmarks for facility design and performance, his firm now makes facility commissioning documentation easier for operators to access so that they can readily assess whether a facility is performing as designed. His firm is easing the creation of commissioning documents through automation.

Facility engineering documentation typically consists of one-line diagrams and maintenance records associated with the as-built configuration of the facility. While National Fire Protection Association standards and the National Electrical Code (NEC®) historically have required documentation, the level of documentation increased in 2008 with the adoption of NEC Article 708 for Critical Operations Power Systems. It addresses business-critical continuity for six sectors that are important to national security, including the data centers that help organizations in these sectors operate.

The objective is to ensure reliable on-site power for these facilities. Retaining testing and maintenance records is essential to meeting this goal. Logging engine-generator operations and on-site power events is important and today's digital technology automates many of the required record keeping tasks. That's good, because Article 708 requires more paperwork than any other NEC article. One expert said that its annexes seem to make the paperwork as important as a facility's wiring. "Many parts of it seem to make simple tasks regulatory events," he stated.

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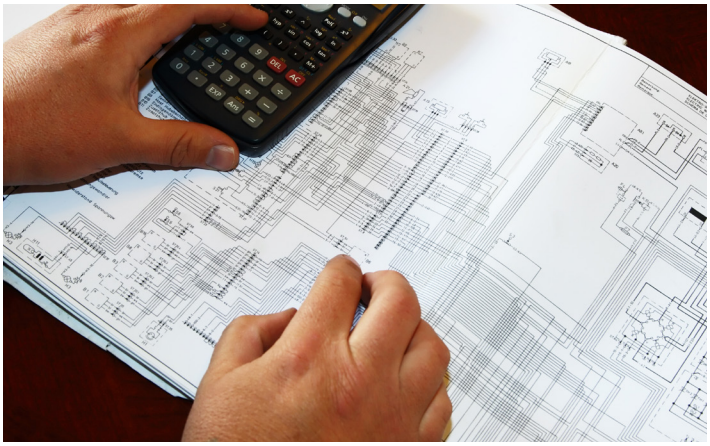
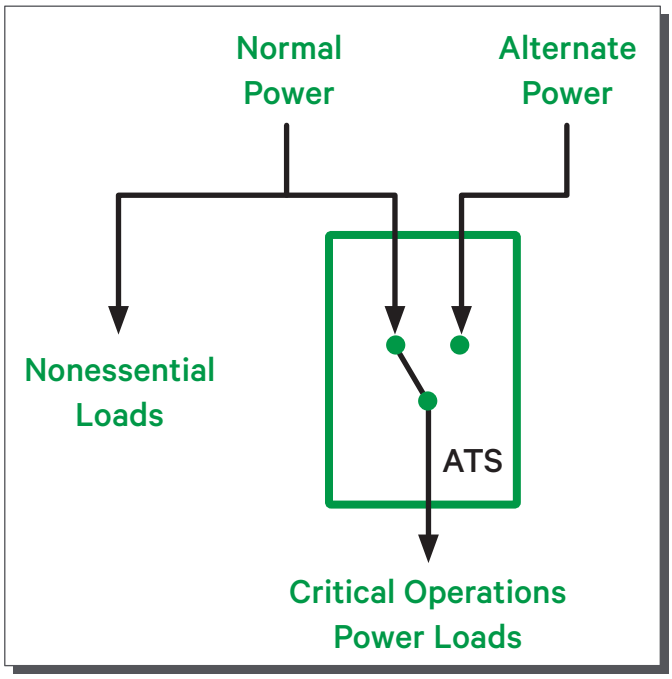
The demand for paperwork is particularly acute when it comes to risk assessment. The NEC language is explicit: Risk assessments of Critical Operations Power Systems must be conducted and documented in accordance with 708.4 (a) thru (c) to identify hazards, the likelihood of their occurrence, and the vulnerability of an electrical system to the effects of those hazards. One thing is for sure … creating and maintaining documentation, especially for risk assessments, will continue to require substantive efforts and robust record keeping. Engineers should be involved in all aspects of facility electrical system projects from the planning stage, including risk assessment tasks. The level of effort and associated costs will vary with the type of building construction and the level of component and system redundancy.





NEC Article 708 requires specific documentation for Critical Operations Power Systems.

Every step of the process — from commissioning to testing and maintenance — needs to satisfy documentation requirements. Authorities having jurisdiction must conduct or witness tests of completed systems following installation, then periodically thereafter. The results must be documented for future reference. Authorities also may require written evidence of a maintenance program when facilities and systems are designed.

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