



**TRAINING
TIPS AND SUGESTIONS TO
IMPLEMENT NR-10**

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TRAINING PROGRAM TIPS AND SUGESTIONS TO IMPLEMENT NR-10



TARGET PUBLIC

Engineers and technicians who work in design, consulting, maintenance and operation of electrical systems.

PURPOSE

Guide the participants on the NR-10, showing the scope of the system, summary report of the NR-10 standard, steps for establishing the diagnosis, the structure suggested for the Plant Electrical Data Book, show the basic principles for the calculation of clothing according to the IEEE Std 1584 and NFPA-70E, tips, suggestions and strategies for the implementation of the NR-10.

STRUCTURE

The training lasts one day, with presentation on data-show.

PROGRAM

1 – NR-10 TOPICS REVIEW

- 10.1 – Purpose and Application Scope;
 - 10.2 – Control Measures;
 - 10.3 – Safety in Projects;
 - 10.4 – Safety in Assembly, Operation and Maintenance;
 - 10.5 - Safety in out of service electrical installations;
 - 10.6 – Safety in energized in service electrical installations;
 - 10.7 – High voltage services;
 - 10.8 - License, Certification, Training and Authorization of Employees
 - 10.9 – Protection against fire and explosion;
 - 10.10 – Safety signaling;
 - 10.11 – Job Procedures;
 - 10.12 – Emergency situations;
 - 10.13 - Responsibilities;
 - 10.14 – Complementary Comments.
- Attachment – Safety Distances



2 – STEPS AND SCOPE OF DIAGNOSIS

In this section we present the main steps of the diagnosis and shows its scope.

3 – ELECTRICAL DATA BOOK STRUCTURE

This topic is presented the suggested structure (skeleton) for the plant electrical data book.

4 – BASIC PRINCIPLES FOR CALCULATION OF CLOTHES FOR ELECTRICAL JOBS

- ▶ *Electric Arcing Definiton*
- ▶ *Electric Arcing Risks*
- ▶ *Causes of Electric Arcing*
- ▶ *Electric Power System Protection Filosofy*
- ▶ *Mathematis Formulation*
- ▶ *IEEE 1584 Incident Energy Calculation Exemple*
- ▶ *Tips and remarks to perform the study*

5 – TIPS, SUGGESTIONS AND STRATEGIES TO IMPLEMENT NR-10 STANDARD

In this section we present the tips and strategies to implement NR-10. It is also shown the critical factors of success and failure of implantation. Plant Electrical Data Book Management is also presented.

Class-Hours : 8 hours (1 day)

Instructor : Cláudio S. Mardegan, engineering graduation by EFEI in 1980, 30 years of experience in Industrial Electrical Power System Protection, is the ENGEPOWER's CEO, consultant of big national and multinational corporations.