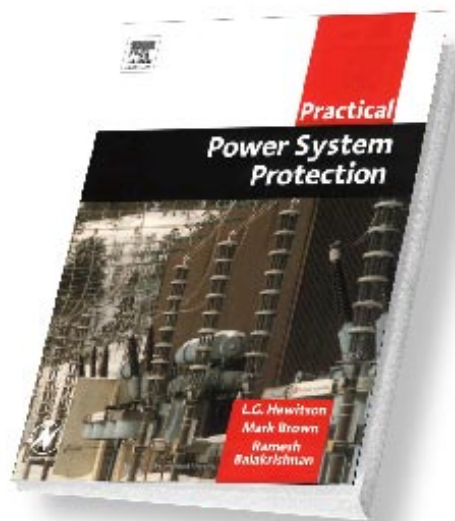


Practical Power System Protection



ELECTRIC POWER SYSTEMS PROTECTION is one of the more complex fields that requires deep understanding of the abnormal conditions that may occur in the system, their effect on the stability of the system and the advancements in protection technology, communications and automation. Books on power systems protection usually go deeply into the theory of fault analysis and protection algorithms. At the same time in many cases they lack coverage of the practical side of protection applications. This is to a great extent dependent on the authors and their audience.

Practical Power System Protection is targeted for a different audience – engineers and technicians that need to quickly reach a basic level of understanding of the principles and application of different types of protection, short circuit currents calculations and relays coordination. The authors of the book have practical experience and understanding of the needs of people with limited knowledge of protection. In 19 chapters and less than 300 pages they cover a wide range of issues related mostly to the protection of sub-transmission and distribution systems.

The first part of the book

describes the need for electric power system protection, basic types of protection and the components of a protection system.

The different types of faults that may occur in the system and their effects are then presented, followed by some simple methods for calculation of short circuit currents. Information on cables and conductors is included as well.

Since system earthing can have significant impact, a chapter in the book is dedicated to earthing methods and devices, as well as the effect of electric shock on human beings.

The coverage of protection starts with a historical review of fuses, their types and operating characteristics, followed by the analysis of the roles of circuit breakers and batteries as components of the overall protection system.

The chapter on protection relays starts with the principles and construction of electromechanical relays, followed by a brief overview of microprocessor relays, intelligent electronic devices, their communications capabilities and integration in substation automation systems.

After considering medium and

low voltage networks, the authors concentrate on the protection of the different power system components – overhead lines and cables, transformers, busbars, generators and motors. Principles of unit protection and its advantages as well as time-grading coordination are also introduced.

Requirements for management and testing of protection systems are described at the end of the book.

All the material covered in the book is presented in an easy to read and understand manner, which helps the reader become familiar with the basic principles and applications of such a complex subject.

Practical Power System Protection is part of a series of books from ELSEVIER that covers some new subjects to many power systems professionals, such as network automation and communications.

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