

C815924 : MAJOR ELECTRICAL ENGINEERING

KEY WORD: RELIABILITY INDICES / BULK POWER SYSTEM / INTERRUPTED ENERGY RATE / CUSTOMER DAMAGE FUNCTION

WIROTE BUAKLEE : EVALUATION OF RELIABILITY INDICES AND INTERRUPTED ENERGY RATES IN BULK POWER SYSTEMS. THESIS ADVISOR: ASSIST. PROF. BUNDHIT EUA-ARPORN, Ph.D. 162 pp. ISBN 974-636-077-9

This thesis describes a method of evaluating reliability indices and Interrupted Energy Rates(IER) for bulk power systems by contingency enumeration approach with a selection and consideration of the contingency resulting in system problems prior to the test by fast decoupled load flow. Both independent outage and common cause outage are considered in the assessment.

In case of system problems occurring, e.g. line overload, insufficient of generation etc., they can be alleviated by generation rescheduling and load shedding algorithm. In the load shedding algorithm, the customer load will be classified into three categories, i.e. interruptible load, firm load and critical load. If a remedial action, e.g. load shedding, is necessary the interruptible load will be curtailed first, followed by the curtailment of firm load and critical load respectively. Then, both load point and overall system reliability indices and Interrupted Energy Rates are calculated.

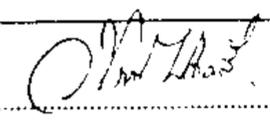
In the IER computation, an approximate method together with customer damage functions will be employed in stead of a direct method in order to reduce the computer memory and computation time.

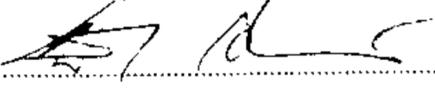
For this research, a computer program is developed on the 32-bit microcomputer using Borland C++ language version 3.1 to analyze two standard test systems, i.e. the RBTS 6-bus system and the IEEE-RTS 24-bus system. Results of the study demonstrate that the proposed method is more effective than the conventional method, e.g. contingency enumeration approach without consideration prior to load flow calculation, in evaluation of reliability indices and Interrupted Energy Rates in bulk power systems.

ภาควิชา.....วิศวกรรมไฟฟ้า

สาขาวิชา.....ระบบพลังงาน

ปีการศึกษา.....๒๕๓๙

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