

4070392621: ELECTRICAL ENGINEERING

KEY WORD: PARTIAL DISCHARGE ANALYZER / INSULATION DIAGNOSIS / FPGA /

FRACTAL / CENTOUR SCORE / AUTOMATIC CLASSIFICATION

RATTAPOOM VUDHICHAMNONG: A MICROCOMPUTER-BASED PARTIAL
DISCHARGE ANALYZER FOR HIGH VOLTAGE EQUIPMENT

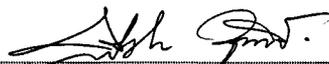
THESIS ADVISOR: SAMRUAY SANGKASAAD, Dr. Sc. Techn. 109 pp.

ISBN 974-333-672-9

This thesis presents the development, design and construction of a microcomputer-based partial discharge (PD) analyzer for detecting PD in high voltage equipment in accordance with IEC60270. The PD measuring system was designed for straight method with the measuring frequency range of 40 to 420 kHz. The sensitivity of the detector is better than 1 pC for a test object having capacitance upto 1 nF with coupling capacitance of 1 nF. Digital circuits of the PD analyzer were programmed into a Field Programmable Gate Arrays (FPGA) on the PCB which was fitted inside a PC. The measuring system operates in real time for processing and displaying PD data. The application of the analyzer for analyzing PD data for insulation diagnosis in high-voltage equipment was illustrated. PD signal is measured and recorded to a file. $H_n(\phi, q)$ distribution matrix is calculated and displayed in a 3-dimensional distribution. Fractal features are derived from $H_n(\phi, q)$ distribution, and automatic classification of defects using Centour score method was explained. The designed partial discharge analyzer has advantages of easy operation and that measurements without a shielded chamber can be performed in moderate environmental interference.

ภาควิชา วิศวกรรมไฟฟ้า

ลายมือชื่อนิสิต



สาขาวิชา วิศวกรรมไฟฟ้ากำลัง

ลายมือชื่ออาจารย์ที่ปรึกษา



ปีการศึกษา 2542