

# DEVELOPMENT OF ELECTRIC POWER SYSTEM PROTECTION RELEASE TRAINING KITS TO IMPROVE THE COMPETENCY OF VOCATIONAL SECONDARY SCHOOL STUDENTS

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## ABSTRACT

Vocational High School is a form of formal education with the aim of focusing more on increasing work-ready abilities or competencies in certain areas of expertise. One of the fields in Vocational School is the field of Electricity. To achieve this goal, of course, a quality learning process is needed to prepare graduates with reliable electrical competency to be able to compete in the world of work. The learning process carried out at Vocational Schools is divided into 3, namely theory, practice and field. One of the skills competencies in Vocational Schools is the Electrical Power Installation Engineering skills competency. Competence related to electrical power protection systems is an important part that needs to be taught to students. Protection systems and electrical protection equipment are always updated, while on the other hand, existing instructional devices are still not updated. The research that will be carried out is development research. The aim of this research is to develop a protection relay instructional device as a medium for increasing the competency of vocational school students and to determine the feasibility/validation of the product being developed. This research was carried out based on the ADDIE and RAD approaches. The ADDIE model is used to develop guidelines for the use of protective relay instructional devices which consist of 5 stages, including: a) Analyze b) Design, c) Development, d) Implementation, e) Evaluate. The RAD (Rapid Application Development) model is used for developing overcurrent relay instructional device hardware which consists of a) Analyze, b) Prototyping Cycles, c) Test, d) Implement. The research results show that the Sepam T20 1000+ protection relay training kit can be used as a learning medium regarding emergency switches. The results of the training kit feasibility test showed that the training kit was considered very suitable for use with a percentage of 84.00% in terms of motivation, 88.00% in terms of convenience, and 90.00% in terms of material. The feasibility of the Sepam T20 1000+ protection relay training kit is in the "Very feasible" category.

Kata Kunci: *protection relay, instructional design, electrical engineering, student competency*