

## **ABSTRAK**

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**Judul : ANALISA PENGGUNAAN BATERAI PADA SISTEM PROTEKSI 150KV Gardu Induk Rawadenok**

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Sistem DC memiliki peranan penting dalam mengoperasikan peralatan gardu induk. Pada sistem transmisi 150 kV, sistem instalasi yang digunakan salah satunya adalah baterai 110 VDC digunakan sebagai penyuplai energi listrik cadangan. Beberapa komponen yang disuplai yaitu: rele-rele proteksi, tripping coil, dan penerangan darurat/alarm. Baterai merupakan salah satu komponen utama gardu induk, jika dalam keadaan normal sistem DC disuplai langsung oleh rectifier. Kondisi baterai dapat berpengaruh terhadap kinerja baterai bila terjadinya blackout. Dari hasil yang telah dilakukan, pengujian baterai yang digunakan pada GI Rawadenok didapatkan kapasitas baterai yang digunakan di unit ke 1 yaitu, sebesar 415 Ah, dan efisiensi sebesar 99% dan berdasarkan hasil penelitian menunjukkan bahwa terdapat dua buah sel baterai dengan tegangan tiap sel yang terukur masing-masing 0,28V dan 0,33V, pada sel 14 dan 47 sehingga perlu di ganti agar tidak mengganggu kinerja dari sel baterai lain. Secara keseluruhan dari hasil pengujian kapasitas baterai 110 Vdc pada Gardu Induk 150 KV Rawadenok dapat dikatakan layak dan handal karena setelah 7 jam pengujian kapasitas baterai masih di atas minimum menurut standar IEEE dan PLN, baterai memiliki efisiensi sebesar 99% dan kapasitas 415 Ah dimana mampu memberi sumber daya DC selama 2 jam 10 menit saat terjadi blackout pada Gardu Induk 150 KV Rawadenok

Kata kunci: blackout, kondisi baterai, pengujian, kapasitas baterai

## ***ABSTRACT***

DC systems have an important role in operating substation equipment. In the 150 kV transmission system, one of the installation systems used is a 110 VDC battery which is used as a backup supply of electrical energy. Some of the components provided are: protection relays, tripping coils, and emergency/alarm lighting. The battery is one of the main components of the substation, if under normal circumstances the DC system is supplied directly by the rectifier. Battery condition can affect battery performance when a blackout occurs. From the results of testing the battery used at GI Rawadenok, it was found that the capacity of the battery used in unit 1 was, 415 Ah and an efficiency of 99% and based on the results of the research it showed that there were two battery cells with the voltage for each cell being measured respectively. 0.28V and 0.33V, on cells 14 and 47 so they need to be replaced so as not to interfere with the performance of other battery cells. Overall, the results of testing the capacity of the 110 VDC battery at the 150 KV Rawadenok substation can be said to be feasible and reliable because after 7 hours of testing the battery capacity above the minimum according to IEEE and PLN standards, the battery has an efficiency of 99% and a capacity of 415 Ah which is able to provide DC power source for 2 hours 10 minutes when there is a blackout at the 150 KV Rawadenok Substation

Keywords: blackout, battery condition, testing, battery capacity