

***Maintenance of AC and DC Supply Equipment on Auxiliary Electrical System of Power Plant in Wonogiri Hydro Power Plant***

Nur Fina Zarah  
14/370010/SV/07517

**ABSTRACT**

*Auxiliary electrical system of power plant in Wonogiri hydropower plant consists of AC and DC supply system which have a very important role in power generation. The equipment of AC supply system consists of PS I and PS II transformers serving the installed loads where the supply is taken directly from the generator unit or the feeders. In addition there is a diesel emergency generator as the voltage supply when generator units had trip and the feeders had maintenance or disturbances. The 110 VDC battery as DC supply system used for supply power at critical loads that have to be powered at anytime to prevent unsafe conditions. Thus, preventive maintenance were held to prevent the occurrence of sudden damage and to maintain the optimal performance of the equipments .*

*Preventive maintenance consists of In service inspection which is checking the equipments with human senses and In service measurement which is testing or measuring equipment in a live condition. Shutdown measurement is only performed on transformer maintenance which is testing the insulation resistance that the results have to be above the minimum value of isolation resistance according to IEEE Std 43-2000 standard.*

*As maintenance for diesel emergency generator and 110 VDC battery consist of visual inspection, total voltage and voltage per battery cell measurement, density of battery electrolyte measurement, DC voltage to ground 110 V measurement and room temperature measurement. From the measurement results can be analyzed by comparing them according to the standards referring to the book "Guidance on Maintenance of AC / DC Supply System" PLN / PDM / PGI / 19: 2014. The results indicated that the equipments of AC and DC supply system is in good condition.*

***Keywords:*** AC / DC Supply System, Auxiliary electrical system of power plant, In-service inspection, In-service measurement, Insulation Resistance Test, Preventive Maintenance.

## **Pemeliharaan Peralatan Suplai AC dan DC Pada Sistem Kelistrikan Pemakaian Sendiri di PLTA Wonogiri**

Nur Fina Zarah  
14/370010/SV/07517

### **INTISARI**

Sistem kelistrikan pemakaian sendiri di PLTA Wonogiri terdiri atas bagian sistem suplai AC dan DC yang memiliki peranan sangat penting dalam pembangkitan. Peralatan sistem suplai AC terdiri atas transformator PS I dan PS II yang berfungsi melayani beban-beban terpasang dimana suplainya diambil langsung dari unit generator maupun dari jaringan luar. Selain itu terdapat *diesel emergency generator* sebagai suplai tegangan apabila unit pembangkit trip dan jaringan luar juga dalam keadaan gangguan atau dalam *maintenance*. Pada sistem suplai DC menggunakan baterai 110 VDC untuk memasok daya pada beban kritis yang harus selalu teraliri listrik untuk mencegah terjadinya kondisi tidak aman. Dengan demikian untuk mencegah terjadinya kerusakan secara tiba – tiba dan untuk mempertahankan unjuk kerja peralatan yang optimal maka diadakan pemeliharaan preventif.

Pemeliharaan preventif terdiri dari *In service inspection* yang berupa pengecekan dengan panca indera dan *In service measurement* berupa pengujian atau pengukuran peralatan dalam kondisi bertegangan. *Shutdown measurement* hanya dilakukan pada pemeliharaan transformator berupa *insulation resistance test* yang hasilnya diatas nilai minimum tahanan isolasinya sesuai dengan standar IEEE Std 43-2000.

Pada pemeliharaan *diesel emergency generator* dan baterai 110 VDC berupa inspeksi visual, pengukuran tegangan total dan tegangan per sel baterai, pengukuran berat jenis elektrolit baterai, pengukuran tegangan DC terhadap ground 110 V serta pengukuran suhu ruangan. Dari hasil pengukuran dapat dianalisa dengan membandingkannya sesuai standar yang merujuk pada buku “Pedoman Pemeliharaan Sistem Suplai AC/DC” PLN/PDM/PGI/19:2014. Hasil yang didapatkan mengindikasikan bahwa peralatan pada sistem suplai AC dan DC dalam keadaan baik.

Kata kunci : *In service inspection*, *In service measurement*, *insulation resistance test*, pemeliharaan preventif, sistem kelistrikan pemakaian sendiri, sistem suplai AC/DC.