

## RINGKASAN

### **ANALISIS TINGKAT KEANDALAN SISTEM DISTRIBUSI 20 KV PADA PENYULANG WONOSOBO 04 DI PT. PLN (PERSERO) UP3 PURWOKERTO DENGAN MENGGUNAKAN METODE RIA (RELIABILITY INDEX ASSESSMENT)**

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Dalam sistem distribusi tenaga listrik, kualitas energi listrik yang disalurkan kepada konsumen sangat dipengaruhi oleh keandalan sistem distribusi tersebut. Semakin kompleks sistem distribusi akan meningkatkan peluang terjadinya gangguan yang kemudian dapat mempengaruhi tingkat keandalan sistem distribusi tersebut. Oleh karena itu konfigurasi yang benar, peralatan yang andal dapat menghasilkan keandalan sistem distribusi yang baik.

Penelitian ini bertujuan untuk menganalisis keandalan sistem distribusi 20 kV pada penyulang WBO 04 Gardu Induk Wonosobo menggunakan metode RIA dengan menghitung SAIFI dan SAIDI sebagai indeks keandalannya. Hasil yang didapat dari penelitian ini menunjukkan nilai SAIFI dan SAIDI berdasarkan perhitungan RIA sebesar 5,46705 *fault/customer/yr* dan 18,64815 *hour/customer/yr*. Sedangkan berdasarkan simulasi ETAP kondisi *existing* sebesar 3,7786 *fault/customer/yr* dan 13,1499 *hour/customer/yr*. Setelah dilakukan upaya perbaikan dengan penambahan 2 unit *recloser* didapatkan nilai SAIFI dan SAIDI sebesar 3,4551 *fault/customer/yr* dan 12,4430 *hour/customer/yr* sehingga sudah sesuai dengan SPLN 68-2:1986 untuk daerah Jawa-Bali.

Kata kunci : Sistem distribusi, keandalan, indeks keandalan, RIA, SAIFI, SAIDI.

## **SUMMARY**

### **RELIABILITY ANALYSIS OF 20 KV DISTRIBUTION SYSTEM ON WBO 04 FEEDER AT PT.PLN (PERSERO) UP3 PURWOKERTO USING RIA METHOD (RELIABILITY INDEX ASSESSMENT)**

Firdaus Tamam Mulikh

*In distribution system, the quality of electrical energy that is received by the consumers strongly affected by the reliability of the distribution system. The more complex the distribution system the higher also the chance of trip will be happen which is going to affect the realibility of the distribution system. That is why correct configuration, reliable equipment could produce good distribution system reliability.*

*This study intend to analyze the reliability of 20 kV distribution system on WBO 04 feeders at Wonosobo Substatiton using RIA method by calculating SAIFI and SAIDI as the reliability index. The results obtained from this study shows the value of SAIFI and SAIDI based on RIA calculation are 5,46705 fault/customer/yr and 18,64815 hour/customer/yr. Meanwhile based on ETAP simulation in existing condition the results are 3,7786 fault/customer/yr and 13,1499 hour/customer/yr. After the repair were done by adding 2 unit of recloser the results of SAIFI and SAIDI are 3,4551 fault/customer/yr and 12,4430 hour/customer/yr which is fulfil SPLN 68-2:1986 for Java-Bali area.*

*Keywords : Distribution system, reliability, reliability index, RIA, SAIDI, SAIFI*