Analisis Studi Aliran Daya Sistem Tenaga Listrik Di Proyek FEED Pembangunan Booster Pump Station Batang Heavy Oil Rokan Hilir Riau Menggunakan Software ETAP 19.5 = Analysis of Power System Load Flow Study in the FEED Project for the Construction of Booster Pump Station Batang Heavy Oil Rokan Hilir Riau Using ETAP 19.5 Software

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Abstrak

Proyek FEED (Front End Engineering Design) Pembangunan Booster Pump Station Batang Heavy Oil di Rokan Hilir, Riau yang dilaksanakan oleh PT Solusi Energy Nusantara merupakan bagian dari Proyek Strategi Nasional National Capital Integrated Coastal Development (NCICD). Praktik keinsinyuran ini adalah mensimulasikan perancangan dan analisis sebuah sistem tenaga listrik dengan menggunakan software engineering ETAP (Electrical Transient Analysis Power) power station 19.5. ETAP mampu bekerja dalam keadaan offline untuk simulasi tenaga listrik dan online untuk pengelolaan data real-time dengan metode pendekatan studi aliran daya (load flow study). Metode pendekatan aliran daya yang akan digunakan dalam praktik keinsinyuran ini adalah metode Newton-Rhapson dengan faktor ketelitian 0,0001. Dari hasil analisis simulasi dan teori aliran daya, maka didapatkan nilai level tegangan dari peralatan listrik yang dihasilkan masih dalam batas yang diperbolehkan, yaitu ± 5%. Power supply dari PLN dengan hasil level tegangan, 20 kV Medium Voltage switchgear (100%); 6,6 kV Medium Voltage Switchgear (99,06%) dan 0,4 kV Low Voltage Switchgear (99,72%), sedangkan power supply dari EDG (Emergency Diesel Generator) diperoleh dengan hasil level tegangan 6,6 kV Medium Voltage switchgear (100%) dan 0,4 kV Low Voltage switchgear (99,3%). Praktik keinsinyuran dilaksanakan mulai dari pengumpulan data sampai dengan pembuatan laporan telah memenuhi aspek profesionalisme, KEI dan K3LL.
.....The FEED (Front End Engineering Design) Project for the Construction of the Batang Heavy Oil Booster Pump Station in Rokan Hilir, Riau implemented by PT Solusi Energy Nusantara is part of the National Capital Integrated Coastal Development (NCICD) National Strategy Project. This engineering practice is to simulate the design and analysis of an electrical power system using ETAP (Electrical Transient Analysis Power) power station 19.5 engineering software. ETAP is able to work offline for power simulation and online for real-time data management with the load flow study approach method. The power flow approach method that will be used in this engineering practice is the Newton-Rhapson method with an accuracy factor of 0.0001. From the results of simulation analysis and power flow theory, it is obtained that the voltage level value of the electrical equipment produced is still within the allowed limit, which is ± 5%. Power supply from PLN with voltage level results, 20 kV Medium Voltage switchgear (100%); 6.6 kV Medium Voltage Switchgear (99.06%) and 0.4 kV Low Voltage Switchgear (99.72%), while power supply from EDG (Emergency Diesel Generator) is obtained with voltage level results 6.6 kV Medium Voltage switchgear (100%) and 0.4 kV Low Voltage switchgear (99.3%). Engineering practices carried out from data collection to report writing have fulfilled aspects of professionalism, KEI and HSE.