



Intisari

Central Processing Plant Gundih merupakan sebuah unit pengolahan gas milik PT. Pertamina EP dan dikelola oleh PT. Pertamina EP Asset 4 Field Cepu.. Akan tetapi dalam perjalanannya proses produksi di CPP Gundih sering mengalami gangguan akibat petir sehingga diindikasikan sistem proteksi petir yang ada belum memenuhi standar dan perlu dilakukan evaluasi berdasarkan standar.

Sistem proteksi petir di CPP Gundih dalam perancangannya mengacu pada beberapa standar yaitu NFPA 780 2004 "*Standard for the Installation of Lightning Protection Systems*" dan NFPA 70 *National Electrical Code*. Evaluasi dilakukan pada sistem proteksi eksternal berupa sistem terminasi udara, sistem konduktor pembumian, dan sistem pembumian. Sistem proteksi internal berupa *bonding* dan pemasangan *surge protective device*.

Hasil evaluasi menunjukkan bahwa sistem terminasi udara tidak dapat melindungi seluruh area CPP Gundih sehingga dibutuhkan penambahan terminasi udara pada beberapa struktur bangunan yaitu 12 buah di *GTG Shelter* dan 8 buah di *Solidification Storage Building* dan 1 buah pada struktur bangunan V-0201, V-0301, V-0401 A&B, R-0401, dan T-0401. Material dan ukuran penampang dari konduktor pembumian yang digunakan sudah sesuai standar yaitu kabel BC 0,6/1 kV dan NYA 0,45/0,75 kV dengan luas penampang 70 mm². Sistem pembumian menggunakan metode *ring* dengan hambatan pembumian < 1 ohm dan elektroda pembumian 3 m dengan luas penampang 19 mm dan kedalaman 4,5 m sehingga sudah sesuai standar. Pemasangan *surge protective device* sudah dilakukan dengan rating sesuai standar yaitu 275 V AC pada level tegangan 230 V AC dan 600 V AC pada level tegangan 400 V AC. *Bonding* pada pembumian peralatan elektrikal dan *body* logam telah dilakukan pada objek-objek vital yaitu pada panel DCS, ESS, dan FGS.

Kata kunci : Petir, *Central Processing Plant*, Proteksi Petir, Evaluasi



Abstract

Central Processing Plant Gundih is a gas processing unit owned by PT. Pertamina EP and managed by PT. Pertamina EP 4 Field Cepu. However, in a production process in CPP Gundih often occur disturbance caused by lightning so that indicated lightning protection system which has not fulfill standard and evaluation based on the standard is needed.

The lightning protection system in CPP Gundih in its design refers to several standards, namely NFPA 780 2004 "Standard for the Installation of Lightning Protection Systems" and NFPA 70 National Electrical Code. Evaluation is performed on external protection systems such as air termination system, grounding conductor system, and grounding system. an Internal protection system in the form of bonding and installation of surge protective device. Evaluations include material selection, cross sectional size, and installation design

The result of the evaluation shows that the air termination system can not protect the entire CPP Gundih area so it needs additional air termination in some building structures, namely 12 units in GTG Shelter and 8 units in Solidification Storage Building and 1 unit on the building structure of V-0201, V-0301, V-0401 A & B, R-0401, and T-0401. Material and sectional dimensions of the grounding conductor used are in conformity with the standard BC cable 0.6 / 1 kV and NYA 0.45 / 0.75 kV with cross-sectional area of 70 mm². The earthing system uses ring method with grounding resistance of <1 ohm and 3 m earthing electrodes with 19 mm cross-sectional area and a depth of 4.5 m so as to conform to the standard. Installation of protective device surge has been done with the standard rating of 275 V AC at 230 V AC voltage level and 600 V AC at 400 V AC voltage level. Bonding on the earthing of electrical equipment and metal body has been done on vital objects that is on panel of DCS, ESS, and FGS.

Keywords : *Lightning, Central Processing Plant, Lightning Protection, Evaluation*