

INTISARI

Trafo distribusi 8 di PPSDM Migas Cepu memiliki kapasitas 500 kVA dengan terhubung beban ke boiler dan kilang. Pembebanan yang terhubung dengan trafo distribusi 8 ini mayoritas beban motor pompa 3 fasa dan beberapa motor pompa 1 fasa. Jika dilihat dari mayoritas pembebanan, maka bisa dikatakan beban yang seimbang karena mayoritas beban motor pompa 3 fasa. Saat dilakukan pengukuran di *output* trafo distribusi 8 ini terdapat arus disaluran netral, sehingga adanya arus netral diindikasikan disebabkan oleh ketidakseimbangan beban ataupun penyebab harmonisa.

Dalam studi kasus ini dilakukan pengukuran dengan menggunakan tang ampere sebagai *hipotesis* adanya arus masing-masing saluran. Dari hasil pengukuran terdapat ketidakseimbangan beban antar saluran dan juga terdapat nilai arus disisi saluran netral. Serta untuk mengetahui kandungan harmonisa pada trafo distribusi, maka dilakukan pengukuran dengan *power quality analyzer*.

Dari hasil pengukuran dengan *power quality analyzer* tipe fluke 435 didapatkan hasil pengukuran bahwa nilai arus di sisi saluran netral sebesar 14A. Nilai ketidakseimbangan beban antar saluran penghantar, didapatkan nilai arus saluran R sebesar 346A, di saluran S sebesar 306A, dan di saluran T sebesar 318A. Nilai THD arus yang didapatkan dari pengukuran dengan *power quality analyzer* pada sisi penghantar R sebesar 3.4%, di sisi penghantar S sebesar 3.0%, dan di sisi penghantar T sebesar 3.0%, serta di saluran netral bernilai paling besar yakni 29%. Pada analisis pembahasan didapatkan hasil ketidakseimbangan pembebanan sebesar 4.6%, dengan rata-rata pembebanan sebesar 45% dari kapasitas total trafo.

Kata kunci : arus netral, ketidakseimbangan beban, THD arus, trafo distribusi.

ABSTRACT

Distribution transformer 8 at PPSDM Migas Cepu has a capacity of 500 kVA with load connected to boiler and refinery. The loading connected to the distribution transformer 8 is the majority of the 3-phase motor pump load and some 1-phase pump motors. When viewed from the majority of loading, it can be said that the load is balanced because the majority of the motor pump 3 phase load. When measured at the output of distribution 8 transformer there is a neutral current, so that the induced neutral current is caused by load imbalance or harmonics.

In this case study measurements were made using the ampere pliers as the hypothesis of the current of each phase. From the measurement result there is imbalance of load between channel and also there is current value of neutral conductor side. And to know the content of harmonics on the distribution transformer, then measured with a power quality analyzer.

From result of measurement with fluke quality 436 type fluke quality got result of measurement that current value at neutral conductor side equal to 14A. The value of load imbalance between conductor obtained by value of channel current R equal to 346A, in channel S equal to 306A, and in channel T equal to 318A. The THD value of the current obtained from the measurement with the power quality analyzer on the conductor side of R is 3.4%, on the conductor side S of 3.0%, and on the conductor side of T is 3.0%, and in the neutral channel is the greatest value of 29%. In the analysis of this chapter we get the result of imbalance loads of 4.6%, with the average loading of 45% of the total capacity of the transformer

Keywords : distribution transformer, neutral currents, THD currents, Unbalanced loads.