

# **DECREASE OF TRANSFORMER POWER CAPACITY DUE TO INFLUENCE OF HARMONIC ON TRANSFORMER TYPE PORTAL DISTRIBUTION 250 KVA AT PT.PLN (Persero) UPJ TANDES**

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## **ABSTRACT**

High level of harmonics greatly affect the performance of transformers, the effect is the losses on the transformer is increasing. Therefore, as a result of the increase in losses the decrease in transformer power capacity will occur. So in this final project is done data retrieval by using portal type distribution substation in AC.263 with power capacity 250 kVA, with reference to SPLN standard D5.004-21.2012. The calculation result obtained by Total Harmonic Distortion (THD) value for current at R phase equal to 16,401%, S phase equal to 19,019% and phase T equal to 15,202% while for Total Harmonic Distortion (THD) for the voltage at the R phase of 2.586%, the S phase of 2.048% and the T phase of 2.030% of the result THD for the current on each phase has exceeded the specified standard limit and for THD the voltage at each phase is still below the specified standard. Therefore, a correction analysis of the transformer losses resulted from the current THD value exceeding the standard limit, the reference used in performing the correction analysis of loss calculations is IEEE C57.110-1998 standard. From the calculation analysis that has been done, the result that harmonics increase the burden of losses at loss of copper equal to 65,672 W, winding eddy current loss of 692,279 W and other stray loss of 954,179 W so that there is a decrease in transformer power capacity due to harmonics of 1.821 kVA.

Keywords: Harmonics, Transformer, Losses, Winding Eddy Current Loss, Other Stray Loss, Copper Loss.