

Analisis pengaruh harmonik pada transformator daya di industri semen = Analysis of harmonic effects on power transformers at cement industry

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Abstrak

Banyaknya aplikasi beban nonlinier pada sistem distribusi tenaga listrik dimana salah satunya komponen penting yang digunakan pada sistem tenaga listrik adalah transformator daya telah membuat arus sistem menjadi sangat terdistorsi dengan persentase kandungan harmonik arus THD (Total Harmonic Distortion) yang sangat tinggi. Dari hasil pengukuran di PT. Indocement Tungal Prakarsa, Tbk diketahui bahwa pada salah satu transformator daya yaitu pada transformator 3 terdapat harmonik dengan persentase THD arus sebesar 26.3 % yang melebihi batas IEEE 519-1992 yang diijinkan yaitu 15 %, harmonik yang dominan adalah harmonik ke-3, ke-5 dan ke-7. Meski demikian pengaruh distorsi harmonik pada komponen secara umum adalah penurunan kinerja dan bahkan kerusakan suatu alat.

Nonlinear load applications on electric power distribution system in which one of the important components used in electrical power systems are power transformers making the current system highly distorted caused by high the percentage THD current harmonic content (total harmonic distortion). Results of measurements in PT. Indocement Tungal Prakarsa, Tbk is discovered in one of power transformer power labeled as transformer 3 has percentage of harmonic current THD in amount of 26.3% that exceeds the IEEE 519-1992 limits standards which is only allow 15% of the dominant harmonic on the 3rd harmonic, the 5 and to-7. Yet the influence of harmonic distortion on the general component is decreased performance and even damage a tool. Therefore, this writing will be explained by result of observation on harmonic distortion effect at transformers performance which is one of the electric power system fundamental components. Power Transformers performance can be determined through Power losses parameter that happened on transformers when operating with non linear and linear Load. Harmonic Distortion cause Power losses on transformers which is proportionally increase to high harmonic components current in loads current.