

Efek harmonisa terhadap arus bocor ke tanah = Harmonic effect on earth leakage current

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Abstrak

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Trend penggunaan peralatan elektronika daya sesungguhnya tidak hanya ada di industri saja, namun sudah merambah pemakaian di skala rumah tangga. Peralatan elektronik seperti lampu hemat energi, lampu LED, UPS, dan perangkat lainnya yang menggunakan elektronika daya memiliki kontribusi terhadap total distorsi harmonisa di dalam jaringan listrik.

Arus bocor merupakan arus yang mengalir dari kawat fasa ke tanah, secara umum berkaitan dengan kapasitansi antara fasa dengan tanah. Kapasitansi ini dapat bersifat normal, parasitis, atau disebabkan oleh kegagalan kerja suatu komponen, masalah pengkawatan dan turunnya kemampuan insulasi.

Harmonisa memiliki komponen frekuensi tinggi di dalamnya, sehingga dapat menurunkan kapasitansi antara kawat fasa dengan insulasi. Sehingga arus bocor dapat meningkat dengan adanya frekuensi tinggi di dalam kawat ini. Arus bocor yang cukup tinggi dapat memicu bekerjanya perangkat proteksi arus bocor atau dapat menimbulkan resiko tersengat listrik pada sistem yang tidak dilengkapi oleh perangkat proteksi tersebut.

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ABSTRACT

The trends of power electronic usage are not only happening in world of industry, but it is also already happening in household appliances. Electronic equipment such as fluorescence lamp, LED lamp, Uninterruptible power supply, and other equipment that use power electronics have a definite contribution to total harmonic distortion in the system.

Leakage current is the current that flows from phase wire to the ground. Generally it is related to capacitance between phase and earth. The capacitance could be normal, parasitic, or caused by component failure, wiring problems and degradation of insulation level.

Harmonic that have high frequency component inside of it could reduce the insulation capacitance between phase and earth, that will be tend to cause larger earth leakage. If the earth leakage high enough it could trigger the earth leakage protection device or it will increase the possibility of electrical shock risk on the system that not completed by those protective device.;The trends of power electronic usage are not only happening in world of industry, but it is also already happening in household appliances. Electronic equipment such as fluorescence lamp, LED lamp, Uninterruptible power supply, and other equipment that use power electronics have a definite contribution to total harmonic distortion in the system.

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