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MENGGULUNG TRAFO PERHITUNGAN PRAKTIS LILITAN TRAFO

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A transformer is a device that transfers electrical energy from one circuit to another through inductively coupled conductors—the transformer's coils. A varying current in the first or primary winding creates a varying magnetic flux in the transformer's core, and thus a varying magnetic field through the secondary winding. This varying magnetic field induces a varying electromotive force (EMF) or "voltage" in the secondary winding. This effect is called mutual induction.
If a load is connected to the secondary, an electric current will flow in the secondary winding and electrical energy will be transferred from the primary circuit through the transformer to the load. In an ideal transformer, the induced voltage in the secondary winding (VS) is in proportion to the primary voltage (VP), and is given by the ratio of the number of turns in the secondary (NS) to the number of turns in the primary (NP) as follows:

By appropriate selection of the ratio of turns, a transformer thus allows an alternating current (AC) voltage to be "stepped up" by making NS greater than NP, or "stepped down" by making NS less than NP.In the vast majority of transformers, the windings are coils wound around a ferromagnetic core, air-core transformers being a notable exception.

Transformers come in a range of sizes from a thumbnail-sized coupling transformer hidden inside a stage microphone to huge units weighing hundreds of tons used to interconnect portions of national power grids. All operate with the same basic principles, although the range of designs is wide. While new technologies have eliminated the need for transformers in some electronic circuits, transformers are still found in nearly all electronic devices designed for household ("mains") voltage. Transformers are essential for high voltage power transmission, which makes long distance transmission economically practical.

Ilmu ini adalah oleh-oleh waktu dulu kerja di PT. Riau Sakti United Plantation (PT. RSUP-Industry) waktu dikirim untuk mempelajari kelistrikan di departemen Boiler PT. Pulau Sambu Kuala Enok (sambu grup) dan saat mampir di departemen listriknya dan ketemu Managernya pada saat itu di bengkel dan ada yang menggulung trafo, jadi catatan di bawah ini semoga bermanfaat:.

Ukuran luas penampang dalam besi keren:
lebar penampang dalam besi = 5 cm
panjang penampang dalam besi = 6,5 cm
Maka luas penampang dalam besi keren = 5x6,5 = 32,5cm2
Luasan tersebut merupakan luasan efektif trafo = Leff

Kapasitas trafo:
(Leff)2 x rugi-rugi dalam trafo = (32,5)2 x 0,64 = 676 VA
Mencari arus primer:
Arus primer = Kapasitas Trafo/Tegangan primer = 676/220 = 3,1A
Mencari arus sekunder:
Arus sekunder = Kapasitas Trafo/Tegangan sekunder = 676/24 = 28,2A
Jumlah lilitan per volt:
Jumlah lilitan per volt = Frek/Leff = 50Hz/32,5 = 1,54 lilitan/volt
SEHINGGA:
Jumlah lilitan total sisi primer:
(input 220V) = 1,54 x 220 = 339 lilit
Jumlah lilitan total sisi sekunder:
(output 24V) = 1,54 x 24 = 37 lilit

Gambar 1. Jumlah lilitan hasil perhitungan.

Tabel. Kemampuan kabel diameter kabel - arus max

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