

SUMMARY

PENGUJIAN KUALITAS MINYAK TRANSFORMATOR DENGAN MENGGUNAKAN SENSOR GAS HIDROGEN DAN METANA

TRANSFORMER OIL QUALITY TESTING USING HYDROGEN AND METHANE GAS SENSOR

Created by Putra, Maradona

Subject : Isolator listrik , minyak

Keyword : Algoritma ; Back-Propagation ; Jaringan Syaraf Tiruan ; Mikrokontroler ; Transformator.

Description :

Kualitas minyak transformator sangat penting dalam menjamin kelangsungan operasi dan umur suatu transformator. Jumlah umur yang dicapai sangat bergantung pada sistem isolasinya. Salah satu gangguan pada transformator adalah timbulnya gas yang mudah terbakar sebagai akibat kerusakan sistem isolasi, baik pada isolasi padat maupun isolasi cair. Pada tugas akhir ini digunakan sensor gas hidrogen dan metana untuk meneliti keberadaan gas terlarut hidrogen serta metana pada isolasi cair transformator. Pelaksanaan tugas akhir ini meliputi perancangan perangkat keras akuisisi data sensor gas hidrogen dan gas metana berbasis mikrokontroler AVR seri ATmega 32 dengan menggunakan metode Jaringan Syaraf Tiruan algoritma backpropagation serta pengumpulan data karakteristik minyak transformator untuk tiap-tiap sampel yang diberikan. Hasil pengujian perangkat keras dibandingkan dan dievaluasi dengan metode penggolongan berdasarkan warna untuk sampel minyak transformator yang telah digunakan selama periode tertentu. Pengujian sampel dilakukan selama hitungan 4 menit untuk tiap pencatatan dengan jeda waktu 5 menit untuk mengembalikan ruang sensor kepada keadaan semula. Hasil pengujian menunjukkan error pembacaan kualitas minyak transformator sebesar 4.7%. Jumlah kesalahan pembacaan terjadi sebanyak satu buah sampel dari tiga kali pengujian, dengan tujuh buah sampel untuk masing-masing pengujian. Algoritma back-propagation dapat memetakan pola sesuai dengan pembacaan ADC yang diberikan oleh sensor, sehingga sampel minyak transformator dapat diketahui kualitasnya.

Description Alt:

Transformer oil quality has important role in operation and reliability of a transformer. Transformer oil reliability depends on its insulation system. One of the example of transformer disturbances is the appearance of combustable gases as the result of whether solid or liquid insulation fault. This final project uses two types of gas sensors that reading sensitively in hydrogen and methane characteristics. These sensors are used to examine the presence of dissolved gases in the liquid insulation. The realization of this final project consist of two parts. The first one is hardware designing base on AVR ATmega 32 microcontroller that implementing back propagation neural network algorithm. The second one is collecting and processing the data for each

kind of transformer oil sample. Testing result is compared and evaluated by color quality classification method for transformer oil that has been used for certain periods. It is collected by command the microcontroller to start counting procedure up to 4 minutes for each transformer oil sample. The sensor room need to be cleared to the normal condition with interval 5 minutes before start to collect another testing. Testing result shows that reading error of the system is 4.7%. Testing is done three times with 7 kind of samples every testing. Back propagation algorithm could map the pattern easily according to the analog to digital converter result. In conclusion transformer oil quality can be recognized well by using hydrogen and methane gas sensors.

Contributor : Ir.Harris Pirngadi, MT, ID.
 Dr. Mochammad Rivai, ST, MT.
Date Create : 27/10/2008
Type : Text
Format : pdf.
Language : Indonesian
Identifier : ITS-Undergraduate-3100008031976
Collection : 3100008031976
Call Number : RSE 621.314 Put p
Source : Undergraduate Theses, Electrical engineering RSE 621.314 Put p, 2007
COverage : ITS Community Only
Right : Copyright @2007 by ITS Library. This publication is protected by copyright and permission should be obtained from the ITS Library prior to any prohibited reproduction, storage in a retrieval system, or transmission in any form or by any means, electronic, mechanical, photocopying, recording, or likewise. For information regarding permission(s), write to ITS Library

Full file - Member Only

If You want to view FullText...Please Register as MEMBER

Contact Person :

Mr. Edy Suprayitno (edy_supra@its.ac.id)

Mrs. Ansi M. Putri(ansi@its.ac.id)

Mr. Taufik Rachmanu (taujack@its.ac.id)

Mrs. Dewi Eka Agustina (dee@its.ac.id)

Thank You,

Nur Hasan

ITS Digilib Supervisor