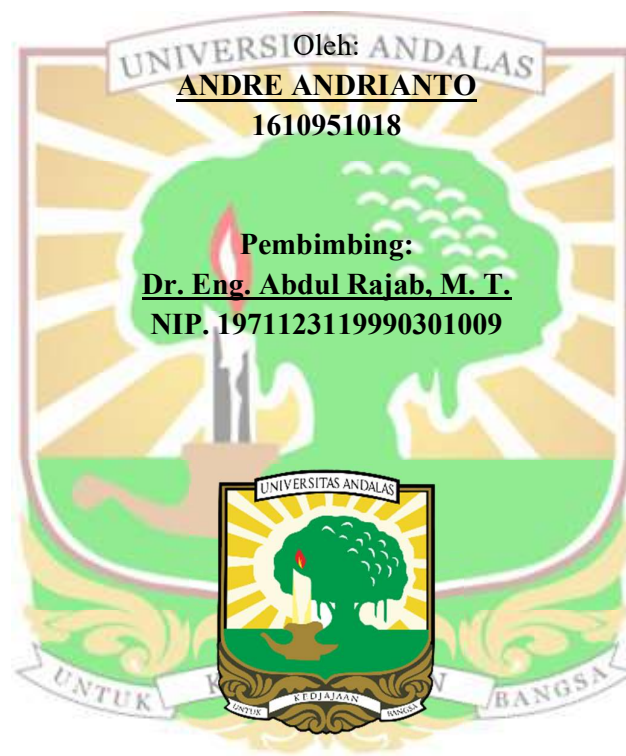


**EVALUASI METODE *DISSOLVED GAS ANALYSIS* (DGA) PADA
CAMPURAN MINYAK NABATI DAN MINERAL AKIBAT GANGGUAN
PARTIAL DISCHARGE (PD)**

TUGAS AKHIR

Karya Ilmiah sebagai Salah Satu Syarat untuk Menyelesaikan Jenjang Strata Satu
(S-1) di Departemen Teknik Elektro, Fakultas Teknik, Universitas Andalas



**Program Studi Sarjana
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Judul	EVALUASI METODE <i>DISSOLVED GAS ANALYSIS (DGA)</i> PADA CAMPURAN MINYAK NABATI DAN MINERAL AKIBAT GANGGUAN <i>PARTIAL DISCHARGE (PD)</i>	Andre Andrianto
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Abstrak		
<p>Minyak yang sering digunakan sebagai bahan isolasi pada transformator yaitu minyak mineral, namun beberapa dekade terakhir banyak yang mengganti minyak mineral dengan minyak nabati. Adanya gangguan <i>thermal</i> dan listrik pada transformator, mengakibatkan minyak isolasi mengeluarkan senyawa gas. Penelitian ini bertujuan untuk mengevaluasi metode DGA pada campuran minyak nabati dan minyak mineral akibat gangguan listrik berupa <i>partial discharge</i>. Persentase minyak campuran di variasikan dengan nilai 5:95%, 7,5:92,5% dan 10:90%. Pada setiap jenis minyak campuran diberi perlakuan berupa PD, kemudian dilakukan pengujian DGA. Selanjutnya, metode interpretasi gangguan seperti Status DGA, <i>Key Gas</i>, Rasio Roger, Segitiga Duval dan Pentagon Duval dievaluasi, apakah berlaku terhadap minyak campuran tersebut. Dari hasil penelitian didapatkan gas yang paling dominan yaitu Hidrogen (H₂) dan metana (CH₄) nilai persentase sebesar 85% dan 13%. Berdasarkan metode Status DGA, Minyak yang digunakan masuk ke dalam “Status DGA 3”, sehingga minyak memproduksi gas secara signifikan dan terus berlanjut maka perlu dilakukan tindakan mitigasi. Dari lima metode yang digunakan hanya metode rasio Roger dan Duval pentagon yang tidak bisa digunakan pada pencampuran minyak nabati dan mineral terhadap gangguan listrik berupa <i>partial discharge</i> karena pada metode rasio Roger dan Duval pentagon tidak menemukan adanya gangguan <i>partial discharge</i>.</p> <p>Kata Kunci: <i>Partial Discharge Pattern, Dissolved Gas Analysis, Fatty Acid Methyl Ester.</i></p>		

<i>Title</i>	<i>EVALUATION OF DISSOLVED GAS ANALYSIS (DGA) METHOD IN MIXTURES OF VEGETABLE OILS AND MINERALS DUE TO PARTIAL DISCHARGE (PD) INTERFERENCE</i>	<i>Andre Andrianto</i>
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Abstract

The oil that is often used as an insulating material in transformers is mineral oil, but in the last few decades many have replaced mineral oil with vegetable oil. There are thermal and electrical disturbances in the transformer, causing the insulating oil to emit gaseous compounds. This study aims to evaluate the DGA method on a mixture of vegetable oil and mineral oil due to electrical disturbances in the form of partial discharges. The percentage of mixed oil is varied with a value of 5:95%, 7.5:92.5% and 10:90%. Each type of mixed oil was treated in the form of PD, then the DGA was tested. Furthermore, disturbance interpretation methods such as DGA Status, Key Gas, The Rogers ratio, Duval's Triangle and Duval's Pentagon were evaluated, whether they apply to the blended oil. From the research results, it was found that the most dominant gases were Hydrogen (H₂) and methane (CH₄) with percentage values of 85% and 13%. Based on the DGA Status method, the oil used is included in "DGA Status 3", so that oil produces gas significantly and continues, it is necessary to carry out mitigation measures. Of the five methods used, only the Roger's ratio and Duval's Pentagon method cannot be used in mixing vegetable and mineral oils against electrical disturbances in the form of partial discharges because the Roger's ratio method and Duval's pentagon does not find any partial discharge disturbances.

Keywords: *Partial Discharge Pattern, Dissolved Gas Analysis, Fatty Acid Methyl Ester.*