

**ANALISIS PENGARUH PENAMBAHAN EKSTRAK LILIN  
DAUN PISANG SEBAGAI PELAPIS PERMUKAAN  
TERHADAP PERFORMA FOTOVOLTAIK**

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*Diajukan Sebagai Salah Satu Syarat untuk Menyelesaikan Program Strata 1  
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| Judul                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Analisis Pengaruh Penambahan Ekstrak Daun Pisang Sebagai Pelapis Permukaan Panel Surya Terhadap Performa Fotovoltaik | Gerinanda  |
| Program Studi                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Teknik Elektro                                                                                                       | 2010953004 |
| Fakultas Teknik Universitas Andalas                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                      |            |
| <p style="text-align: center;"><b>Abstrak</b></p> <p>Pelapisan permukaan panel surya merupakan salah satu cara yang dapat dilakukan untuk memberikan perlindungan pada panel serta dapat mengoptimalkan penyerapan energi matahari. Penelitian ini bertujuan untuk menganalisis efek penambahan ekstrak lilin daun pisang sebagai pelapis permukaan panel surya. Ekstrak lilin daun pisang dibuat melalui metode ekstraksi <i>meserasi</i> dengan pelarut <i>n-hexana</i>. Penelitian ini dilakukan menggunakan metode penelitian eksperimental dengan variasi ketebalan lapisan 4<math>\mu</math>m, 7<math>\mu</math>m, dan 9<math>\mu</math>m. Pengujian dilakukan dengan membandingkan hasil keluaran V-I fotovoltaik standar dan fotovoltaik yang dilapisi ekstrak lilin daun pisang. Pada penelitian ini akan dilakukan pengujian di dalam ruangan menggunakan lampu LED dan di luar ruangan untuk beberapa variasi intensitas. Hasil penelitian menunjukkan bahwa kurva karakteristik V-I di dalam ruangan semakin menurun seiring bertambahnya variasi ketebalan lapisan. Pada pengujian di luar ruangan menunjukkan hasil yang berbeda di mana penambahan lapisan lilin dapat meningkatkan daya rata-rata keluaran sebesar 5,2529%. Panel surya mengalami peningkatan seiring bertambahnya ketebalan dengan rata-rata sebesar 1,125% setiap kenaikan satu <math>\mu</math>m. Penambahan lapisan pada ketebalan tertentu dapat meningkatkan meningkatkan keluaran yang lebih baik dibandingkan panel standar tanpa lapisan ekstrak lilin daun pisang.</p> <p>Kata kunci: Fotovoltaik, ekstrak, karakteristik, pelapisan, ketebalan</p> |                                                                                                                      |            |

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| <i>Title</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <i>Analysis of the Effect of Adding Banana Leaf Wax Extract as a Surface Coating on Solar Panel Performance in Photovoltaic</i> | Gerinanda  |
| <i>Mayor</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <i>Electrical Engineering</i>                                                                                                   | 2010953004 |
| <i>Engineering Faculty Andalas University</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                 |            |
| <p style="text-align: center;"><i>Abstract</i></p> <p><i>Surface coating on solar panels is an effective method to provide protection while optimizing solar energy absorption. This study aims to analyze the effect of adding banana leaf wax extract as a surface coating for solar panels. The wax extract was obtained through the maceration extraction method using n-hexane as a solvent. The research was conducted using an experimental approach with coating thickness variations of 4 <math>\mu\text{m}</math>, 7 <math>\mu\text{m}</math>, and 9 <math>\mu\text{m}</math>. Performance testing was carried out by comparing the voltage-current (V-I) characteristics of standard photovoltaic panels with those coated with banana leaf wax extract. The tests were conducted indoors using LED lamps and outdoors under different intensity variations. The results showed that the indoor V-I characteristic curve decreased as the coating thickness increased. However, outdoor testing revealed a different trend, where the addition of the wax coating improved the average power output by 5.2529%. The solar panel experiences an increase in performance as the thickness increases, with an average growth of 1.125% for every 1 <math>\mu\text{m}</math> increment. The addition of a coating at a certain thickness can enhance the output performance compared to standard panels without a banana leaf wax extract coating.</i></p> <p><i>Keywords: Photovoltaic, extract, characteristics, coating, thickness</i></p> |                                                                                                                                 |            |