

## ABSTRAK

### PENGARUH WAKTU PENGGUNAAN SEL VOLTA BERBAHAN ELEKTROLIT AIR LAUT TERHADAP PERMUKAAN KATODA TEMBAGA DILAPISI PERAK

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Penelitian ini dilakukan untuk menganalisis pengaruh waktu penggunaan sel volta berbahan elektrolit air laut terhadap permukaan katoda tembaga dilapisi perak. Bahan yang digunakan yaitu alumina, semen, tembaga,  $\text{AgNO}_3$ , air laut dan aquades. Alat yang digunakan yaitu *power supply*, multimeter, dan *stopwatch*. Penelitian ini dilakukan dengan empat tahapan, yakni preparasi bahan, pembuatan alat dan pengujian sistem, pengambilan sampel, dan karakterisasi permukaan tembaga berlapis perak serta pengolahan data hasil. Katoda tembaga dikarakterisasi menggunakan SEM-EDX. Berdasarkan hasil yang diperoleh terjadi kenaikan tegangan dan arus setelah 24 jam dan 72 jam. Kenaikan tegangan dan arus tersebut didukung oleh kenaikan massa katoda tembaga (Cu) yang bereaksi dengan air laut setelah 24 jam dan 72 jam. Nilai perhitungan hambatan dalam dipengaruhi oleh kenaikan tegangan dan arus, nilai hambatan dalam lebih kecil pada penggunaan pertama dibandingkan dengan setelah 24 jam dan 72 jam. Nilai perhitungan daya diperoleh paling besar pada 72 jam, yang dipengaruhi oleh kenaikan tegangan dan arus. Dapat disimpulkan bahwa hasil hambatan dan daya listrik katoda Cu dilapisi Ag memiliki korelasi dengan hasil karakterisasi SEM-EDX

**Kata Kunci** : Tembaga, Perak, Air Laut, SEM-EDX, Sel Volta

## **ABSTRACT**

### **THE INFLUENCE OF TIME USING VOLTA CELL WITH SEAWATER ELECTROLYTE TOWARD CATHODE SURFACE SILVER COATED COPPER**

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This study was conducted to analyze the influence of time using voltaic cells with seawater electrolyte toward cathode surface silver coated copper. The materials used are aluminium oxide, cement, copper,  $\text{AgNO}_3$ , seawater, and distilled water. The tools used are power supply, multimeter, and stopwatch. This research was conducted in four stages, namely material preparation, tool making and system testing, sampling, and surface characterization of silver-plated copper and processing of result data. Cathode was characterization using SEM-EDX. Based on the results obtained, there was an increase in voltage and current after 24 hours and 72 hours. The increase in voltage and current is supported by an increase in the mass of the copper cathode (Cu) which reacts with seawater after 24 hours and 72 hours. The calculated value of the internal resistance is affected by the increase in voltage and current, the value of the internal resistance is smaller in the first use compared to after 24 hours and 72 hours. The maximum power calculation value is obtained at 72 hours, which is affected by the increase in voltage and current. It can be concluded that the electrical resistance and power test results for Cu cathode coated with Ag have a correlation with the SEM-EDX characterization results

**Key Words** : Copper, Silver, Seawater, SEM-EDX, Voltaic Cell