Analysis of the Effect of Current, Time, and Number and Placement of Anodes on the Thickness and Uniformity of the Brass Electroplating Layer on Electric Wheelchair Headrest Connections Made from St.37

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ABSTRACT

Headrests developed for headrests require joints that are installed and clearly visible, Discuss headrests from St. 37 has the advantage of cheap materials and many on the market, but it also has disadvantages, namely that it is relatively easy to corrode and its appearance is less attractive. Therefore, it needs to be coated with a material that is corrosion resistant and attractive. The material used to plate the selected brass. The aim of this research is to determine the effect of current, time and number of anodes on layer thickness and to determine the number of anodes and their placement on layer thickness uniformity. The steps taken are to design and produce the headrest, then cut it into the headrest. Once the headrest is ready, electroplating is carried out using brass material as the coating material. During coating, the influence of current and time on the layer thickness is seen. Apart from that, we will also find the effect of the number of anodes with symmetrical placement on the thickness and uniformity of the layer. Thickness measurements will use a digital microscope, as will measurements of thickness uniformity. To determine the effect of current and coating time, it was analyzed using regression. To determine the effect of the number of anodes with symmetrical placement on coating uniformity. The uniformity test uses a statistical test of uniformity. The results of the research show the following things: (1) the results of the T test in the statistical processing of the electric current variable have a P-value of less than 0.05 so that it can be stated that electric current has a significant effect (2) the results of the T test in the statistical processing of the time variable obtain a P value -value is less than 0.05 so it can be stated that the time variable has a significant effect (3) the results of the F test in the statistical processing of the two variables show that the F significance value is less than 0.05 so it can be stated that the electric current and time variables have a significant effect (4) based on statistical calculations, the variables of current strength and time simultaneously influence the layer thickness by 96% (5) the number and placement of anodes can influence the uniformity of the visual quality of the electroplating brass layer on the headrest connection of an electric wheelchair made from St. steel. 37 (6) level of uniformity on the body of 2 anodes in symmetrical positions (75%), 3 anodes in the same angle position (80%) and 4 anodes in symmetrical positions (90%). This shows that the greater the number of anodes with symmetrical placement, the more uniform the electroplating brass layer produced.