THE EFFECT OF CURRENT DENSITY AND CONTACT TIME OF CuCN GEL ELECTROLYTE ON COPPER COATING THICKNESS IN JIS G 3141 STEEL ELECTROPLATING

Name of Student: I Made Wahyu Diyatmika
Student ID: 2705 100 009
Department: Metallurgical and Materials Engineering Industrial Technology Faculty - ITS
Advisor: Prof. Dr. Ir. Sulistijono, DEA
Dr. Diah Susanti, ST, MT

Abstract
To increase metal resistance of corrosion, to increase the conductivity of electricity and thermal, and also to beautify the appearance of metal, coating with Copper electroplating is used exactly. The process of conventional electroplating has the weakness for coating on the component that has been installed. One of the innovations that could be carried out by changing the phase of the electrolyte solution from liquid to gel.

In this research was done electroplating on JIS G 3141 Steel with cyanide copper gel electrolyte as the plating medium. The current density was varied to 11.11 A/dm$^2$; 17.77 A/dm$^2$; 22.22 A/dm$^2$ dan 26.67 A/dm$^2$. The contact time also was varied to 10 minutes and 20 minutes. The testing of deposit thickness used MiniTest 600.

Results of the research show that the higher magnitude of current density and contact time in electroplating will increase the deposit thickness. The highest thickness is obtained with current density 26.67 A/dm$^2$ and contact time 20 minutes with the deposit thickness 13.4 µm.

Key Word: JIS G 3141 Steel, current density, gel electrolyte, copper electroplating, contact time