



## Howard Plating Industries

Marshana Mitchell, Sr. Chemical Engineering Student  
Wayne State University  
Project Title: Life Cycle of a Stage 2 Cleaning Tank

Ms. Marshana Mitchell was assigned to Howard Plating Industries, located in Madison Heights, Michigan. The company is an electroplater of metal parts and fasteners for automotive applications.

Marshana was very successful at helping the company to determine the life of the Stage 2 Immersion-Cleaner Tank on their Number 9 plating line. She looked at several different alternatives and decided that the most economical and practical approach for production staff was to develop a correlation between titration and conductivity. Measurements of total alkalinity, free alkalinity, ph, and conductivity were taken daily from the Stage 2 cleaner. A linear correlation was plotted from the conductivity and alkalinity data. The results showed that the Stage 2 Tank generally loses its effectiveness between a conductivity range of 12000mmhos and 14000mmhos. Marshana also recommended the use of a skimmer to remove oil buildup on the cleaning solution, as well as to conduct additional testing to determine ways of extending the life of the cleaner. Implementation could save the company an estimated \$16,000 annually. .

