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elsyca electrochemical intelligence

CASE STUDY

Title: Simulation of a decorative Cr plating process for a rack of shower tap parts

Bath type: Decorative chromic acid, Cr (VI)

Software product: Elsyca PlatingMaster

Industry: Appliances

Validity and reliability: Correlation between simulated and measured layer thickness values is well above 80%

Goal of simulations: Drastically speed up rack design

Customer Benefits: Productivity improvements, time & cost savings

Description:

Decorative Cr plating processes produce highly non-uniform current density and layer thickness distributions. Rack design by trial and error will often require huge labour costs, mainly due to the large number of adjustable configuration parameters: number of parts in the rack, orientation and position of the parts, shape, dimension and position of screens and/or current thieves, etc. An entire trial and error run (rack design – rack manufacturing – plating – measuring layer thickness distributions on some parts in the rack) might take easily one week or longer. In contrast, defining the rack configuration from figure 1 in the Elsyca PlatingMaster/SolidWorks CAD environment takes only a few hours, with another 1 or 2 hours to compute the resulting layer thickness distribution (figure 2). Hence, using Elsyca PlatingMaster will dramatically reduce the number of experimental trial and error runs, saving valuable money and time.

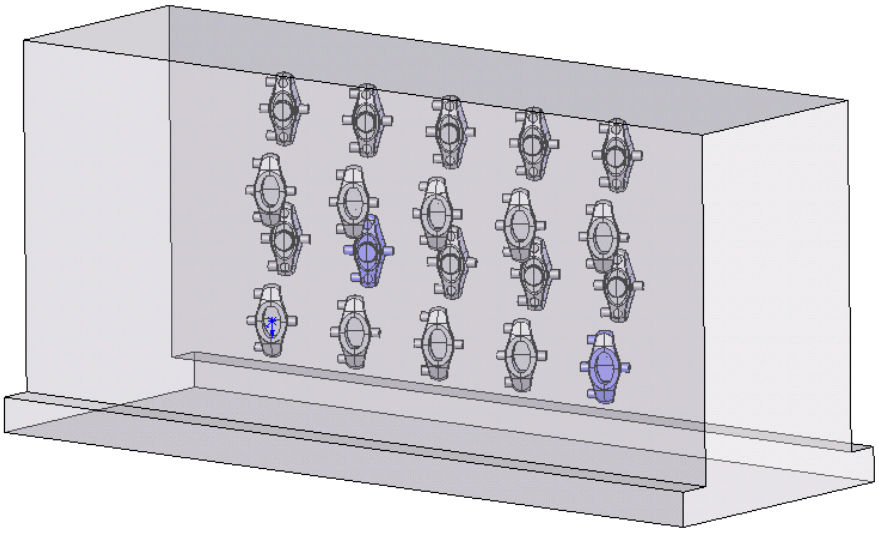

Figure 1: Rack configuration with load of 20 parts and surrounding plating tank walls; top surface represents the electrolyte level, front and back surface represent anodes

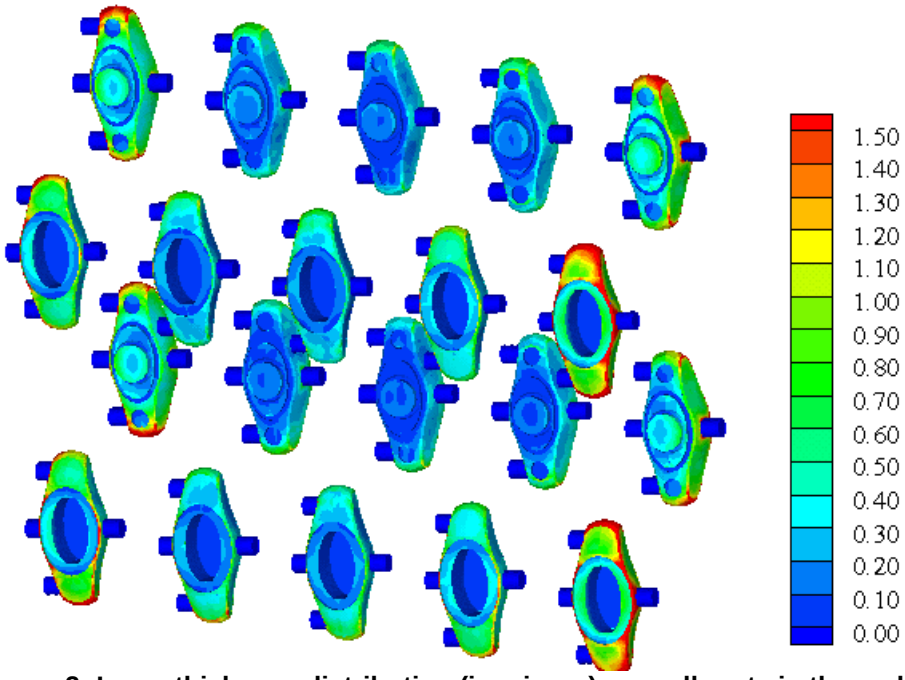

Figure 2: Layer thickness distribution (in micron) over all parts in the rack