Designing for quality:
the Ford way

LaRon Michelle Brown, Technical Specialist at Ford Motor Company, tells about her experience with state-of-the-art software to enhance their production process. Ford Motor Company has been using Elsyca PlatingManager software in its production process.

Elsyca PlatingManager is graphical simulation platform for analyzing the production performance and quality of electroplating processes. Simulations are executed using a virtual mock-up of your in-house plating line and detailed layer thickness and quality results are available for every part on the rack and for every plating step.

Designing for quality

"Using Elsyca as an indicator of a Tier(1)s capability to plate a new design concept, while providing recommendations to the studio to design a manufacturable feasible component, is truly beneficial in efforts to mitigate warranty.

Elsyca's software is a proactive approach on continuous improvement that the Body Exterior Core Engineering group at Ford embraces. At Ford, Elsyca PlatingManager is used as a methodology

> Elsyca PlatingManager has been a formidable predicitive analysis' tool that I've become accustomed to relying on as a design feasibility aide.

to design for quality in advance, instead of reacting to quality concerns during production or excessive warranty."

Increasing customer satisfaction, decreasing costs

"Customer perception of quality and customer satisfaction is important to every OEM. Reducing the customer exposure to defects increases customer satisfaction, while reducing cost to the OEM and the OEM Tiers responsible for component quality. Thus, using CAE analysis is a quick upfront tool that offers Ford and it's Tier(s) a cost effective advantage in exploring the feasibility of a design concept.
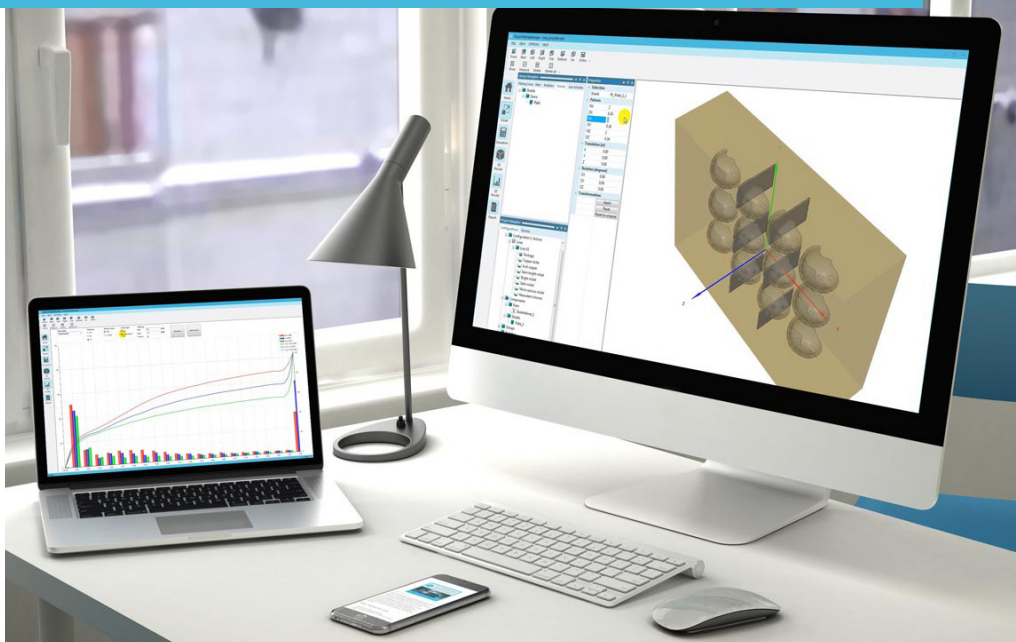
Prior to the mainstream usage of this software at the plating Tier level, many OEM Tier(s) conducted plating DOEs to determine the proper plating line setup to produce parts that meet OEM specification. Plating DOEs are disruptive to the manufacturing production line, they can be time consuming, thus inefficient and results in costly prototype rack design configurations."

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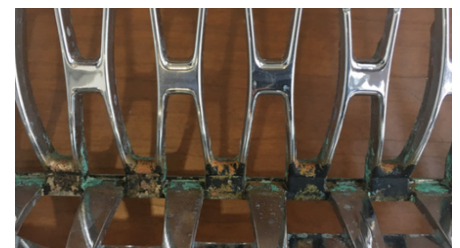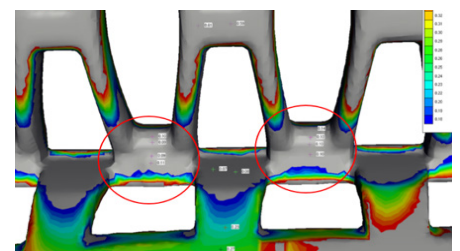
The simulation clearly identified low layer thickness area. The result of the corrosion test showed the failure zone at the same area

The benefits of using Elsyca PlatingManager

"Elsyca PlatingManager streamlines this process and allows the plating Tier to conduct multiple rack optimization configurations to precisely understand throughput and provide more accurate quoting.

The most important advantage of Elsyca software is the simulation can predict with 90-95% confidence the plating thickness on any area of any part on the plating rack. This is significant to understanding part design, size and geometry effect on rack density and the ability to plate within specification.

Elsyca PlatingManager offers multiple benefits for the Tier 1 including providing useful analytical data to use during the design phases and discussions with the studio.

During the design phase, Elsyca shows the impact of design on platebility. It serves as a guide to provide Studio engineers direction on flange depth, geometry, depth ratio, radii and height ratios, etc. At Ford, Elsyca reports and feedback are given to the D&R engineer and supplier to convey design concerns upfront to the studio engineer and work together collaboratively to design a component that will meet minimal plating requirements.

Now, we no longer have to rely on industry experience to communicate design challenges, will have CAE analytical data that provides the documentation to support design modifications—not only for aesthetics but for a robust quality part. I love it!"

LaRon Michelle Brown
Ford Motor Company
Technical Specialist
Core Engineering, Body Exteriors
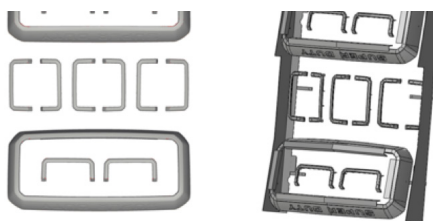
An example to illustrate how simulations contribute to higher efficiency: using simulation technology, racks were re-designed to carry additional grille components that were originally planned to be plated on seperate racks. This resulted in extra line capacity and a reduction of the overall cycle time. The overall savings totaled $300K!
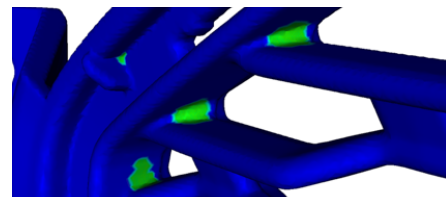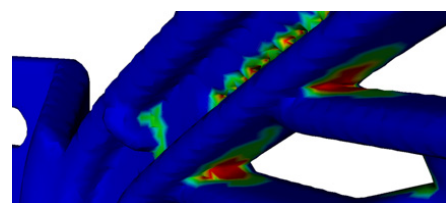
A car grille with an initial problematic design (the red areas) and the modified design.