

Edge Deburring of a High Volume Automotive Part using the *Faradayic* Process

Objective:

This project demonstrated the feasibility of using the patented *Faradayic* Process to remove a burr from the edge of a hole in a high volume automotive part.

Summary:

The *Faradayic* Process successfully removed the burr that existed on the hole edge, while maintaining the ID of the hole. The electrolyte for this process is a water based solution containing sodium chloride (NaCl), this being essentially table salt. The *Faradayic* Edge Finishing process creates no mechanical or thermal damage to the part and utilizes environmentally-friendly electrolytes, which are both inexpensive and easy to maintain. Additionally, the *Faradayic* Edge Finishing process allowed for increased tool life due to a decrease in heat generation when compared to the proprietary chemistry controlled process. The fully automated machine produces 290 parts per hour.

Background:

The patented *Faradayic* Process is an electrochemical manufacturing technique that utilizes a controlled electric field to either polish or shape a metallic work piece. Since the *Faradayic* Process is electrically mediated, it does not require aggressive chemicals to facilitate the metal removal as needed in conventional chemical processes (e.g. chemical etching). The material removal rate is determined by the applied electric field, which is user-defined and computer controlled. This provides the means for precise control of the length of the process and the total material removed. Additionally, the use of neutral salt solutions (e.g. sodium chloride and sodium nitrate) as the electrolyte makes the process both worker and environmentally safe.

The *Faradayic* Process technology illustrated above is protected by a substantial patent portfolio including issued, allowed, and pending patent actions.

