

# Spang Power Electronics

## PROJECT PROFILE



**Spang Power Electronics** designed and manufactured a single zone rectifier for electrophoretic paint deposition for Honda Motor Corporation of Mexico. This rectifier can supply 800 ADC at 400 VDC. It is being used in an indexing batch type system.

### System Operation

The rectifier consists of an input circuit breaker; a 396 KVA, 3 phase, rectifier-transformer; a 6 SCR, full converter power control unit; an L-C filter; load metering and controls. The entire painting process is operated, controlled and monitored with an Allan Bradley PLC and Smart Touch operator interface.

The input circuit breaker serves as the main disconnect. The transformer isolates the line from the load and steps down the incoming voltage of 440 volts to 325 volts. The Power Control Unit then converts this incoming voltage to 0-400 VDC. An L-C filter reduces output ripple to a maximum of 1-2% for improved paint quality.

### Indexing Batch Type System

An indexing system coats one body at a time. The tank is approximately the size of one body type. This particular system provides manual selection of five different body types. Anodes are submerged in the paint and the car body acts as the cathode. As the rectifier conveys DC power to the anode and the cathode, ions in the paint solution move from the anode to the cathode and coat onto the car body. The amount of deposition is directly proportional to the current being generated. These anodes are placed in the tank so they simulate the shape of the part being plated. This ensures consistent paint deposition and prevents the high cost of wasted paint.

The rectifier begins operating once the car body is completely submerged. The power supply ramps on until it reaches the voltage setpoint. When the coating time expires, the power supply reduces the voltage to the exit

## 800 ADC, 400 VDC Electrocoating Rectifier for Honda Motor Corporation

voltage setpoint. This point is normally set at 50 VDC and serves to hold the build on the body until it is removed from the tank.