

Certificate of Performance of Protective Coatings for Voltage Regulators

The following is a brief description of the coating system used at the Badger Drive assembly plant for Eaton's Cooper Power series Voltage Regulators.

1. Pretreatment Systems.

There are two pretreatment systems used at the Eaton Badger Drive assembly plant. The first system is a seven-stage, spray washer used to prime coat relatively flat cabinetry and tank cover component parts. This process consists of the following seven stages: an alkaline cleaner, rinse, conditioner, zinc phosphate, rinse, reactive organic polymer sealer, and a deionized water rinse.

Parts which have complicated shapes, such as voltage regulator tanks, are processed through the immersion eight-stage, pretreatment wash system; immersion allows pretreatment chemicals to clean and treat all surfaces of product. The immersion pretreatment process consists of the following stages: alkaline cleaner, rinse, conditioner, zinc phosphate, rinse, reactive organic polymer sealer, and a deionized water rinse.

2. Prime Paint System.

The prime paint systems consist of a high-build, cathodic epoxy electrocoating. The application process is the same for component parts processed through either pretreatment system. The cleaned and zinc phosphatized parts are immersed into a bath of cathodic epoxy paint and the paint is applied by electrodeposition. This coating is followed by several permeate and deionized water rinses. The coating is then cured in a convection oven until the metal reaches a temperature of 350 °F for 30 minutes. This completes the application of the primer system.

3. Top Coat System

Assembled voltage regulators are cleaned and painted with a two component urethane enamel. The regulators are cleaned in a two stage manual wash booth with a cleaning stage combination iron phosphate surfactant cleaner coater followed by a clean water rinse. The units are held for 15 minutes in

a convection dry-off oven to remove any residual surface moisture and then cooled after exiting the dry-off oven.

A two component polyurethane top coat is manually applied using an advanced design air-assisted, airless high-pressure, high-flow spray gun. A Graco proportioning system is utilized to ensure that a proper ratio is maintained between the two components of the coating and that thorough mixing occurs. The topcoat is then baked in a convection oven for 35 minutes at 185 °F. This completes the application of the top coat system.

4. Materials

A. Prime Paint Line Pretreatment

- Alkaline Cleaner
- Zinc Phosphate
- Reactive Organic Sealer (non-Chromic Acid)

B. Final Wash Before Top Coating

- Iron Phosphate Cleaner Coater

C. Paint

- Primer - High-Build, Cationic Epoxy Electrocoat
- Top Coat - Two Component Urethane Enamel



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