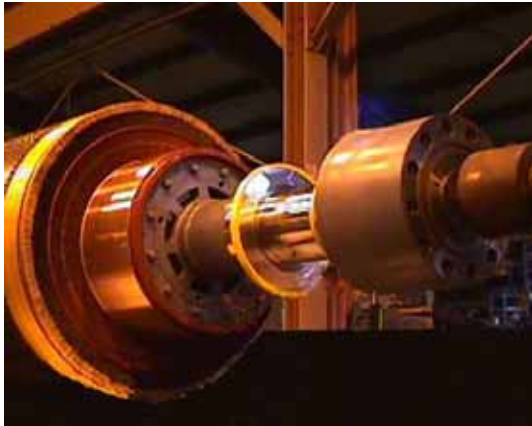


Electric Motors & Generators Applications



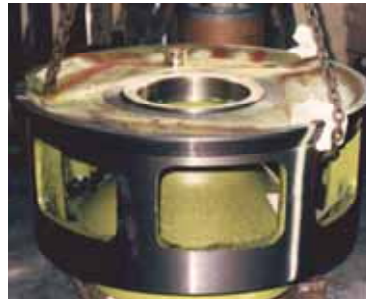
The SIFCO Process of selective plating is a versatile tool that is used for many different, demanding repair and OEM applications on electric motors & generators. This localized plating process works well in the manufacturing environment. The plated deposits withstand considerable stress and strain while maintaining excellent adhesion. It is a great repair tool that can be used in the shop or in the field.

The repair of electrical generating equipment presents many areas in which the SIFCO Process of Selective Plating can be used with great success.

The primary areas of application are the bearing housing (end bells), commutators and the rotor journals.



End bells, which house the bearings that support the motor shaft, experience fretting corrosion during operation. The SIFCO Process is used to plate these bores to size with copper, tin, or nickel. Machining the bores, prior to plating, is only necessary to reestablish concentricity.

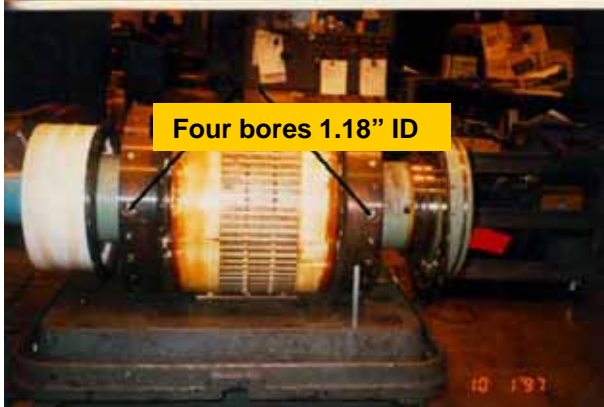


DC motor and generator slip rings can develop copper oxide films, which reduce electrical conductivity and cause arcing and pitting, especially during locked motor start-up. Excessive damage occurs in highly corrosive environments, such as in the bleaching areas of pulp and paper plants. Plating $2.50\mu\text{m}$ (0.0001 in.) of rhodium and then $1.30\mu\text{m}$ (0.00005 in.) of gold onto refinished commutator may extend brush life and maintenance intervals.

Electric Motors & Generators Applications

With the SIFCO Process, you can....

- ☑ Build up worn bearing journals
- ☑ Resurface end bells and stator housings
- ☑ Repair slip rings
- ☑ Extend life of commutators and brushes
- ☑ Extend life of high speed bearings



SIFCO PROCESS

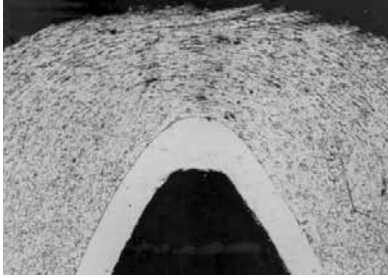
Cost-Effective
Permanent Repairs

- ✓ Repair Components in Place
- ✓ Reduce Equipment Downtime
- ✓ Eliminate Expensive Disassembly and Shipping Costs
- ✓ Expand In-House Maintenance and Repair Capabilities

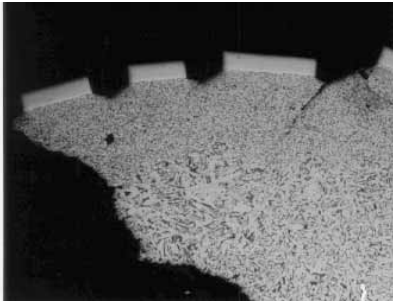
Plating a worn bearing housing can take less than thirty minutes and is a cost-effective alternative to machining the bore oversized and pressing in a pre-machined sleeve, or flame spraying and machining to the print dimension.



Electric Motors & Generators Applications



Selectively plated Nickel, 125µm (0.005") thick on carbon steel after a compressive bend. *This shows excellent adhesion of the deposit.*



Selectively plated Nickel, 125µm (0.005") thick on carbon steel after being subjected to a tensile bend test. The deposit cracked and shifted under load. No delamination. *Excellent adhesion.*

Adhesion of SIFCO Deposits

By using ASTM C633-79, entitled "Standard Test Method for Adhesion or Cohesive Strength of Flame Sprayed Coatings" SIFCO Selective Plating established values for the adhesion of SIFCO Process deposits, which show that the cohesive strength of the deposit exceed that of the cement utilized in the standard. For example, the minimum tensile strength value established (at the point of cement failure during testing) for Nickel (High Speed) is 22,803 kPa (11,200 psi) on a SAE 4130 carbon steel base material.

In additional qualitative tests, as described in QQ-N-290, the plated areas were subjected to high stresses and strains. These tests consisted of compressive and tensile bend tests as well as chisel test into the deposit. The result showed excellent adhesion to the base material per ASTM B517 test methods.

Ask for Technical Service Bulletins 81006, 82005, and 88004.

APPLICATIONS

- ✓ Salvage of mismachined or worn end bell bearing housings with copper, tin, or nickel.
- ✓ Salvage of mismachined or worn bearing journals with copper and nickel.
- ✓ Restoring worn commutators with gold and rhodium or nickel for increased brush life and reduce radio interference.

SAMPLE REPAIRS

- ➔ 2500 kW Allison generator 380 mm (15 in) diameter slip rings.
- ➔ 400 kW motor for plastic compound extruder.
- ➔ 300 kW motor-generator from a submarine.
- ➔ 250 ton air conditioning motor housing flange faces and end bells.
- ➔ Feedback generator commutators.
- ➔ Railroad traction motor commutators
- ➔ 112 kW LAC 280, motor for boiler feeder.
- ➔ 16 kW 1200 rpm motor Asea LAT 200.
- ➔ Navy shipboard repair of slip rings and generator shafts

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AS7108 NADCAP Certified

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