PALM TECHNOLOGY, INC.

ENstat™3

Anodic Passivation Controller Model 3700

ENstat 3 is an electrochemical system for continuously passivating the stainless steel components used in electroless plating baths. Its use helps prevent plate-out and avoids stripping the tank with nitric acid on a daily basis. The use of this system thus minimizes disposal of spent nitric acid solutions and the cost of their waste treatment.

The ENstat 3 is based upon the electrochemical technique of anodic protection, which has been used for many years to prevent corrosion of equipment in the chemical industries. Simply, anodic protection produces a passive film on the stainless steel by discharging a small impressed current from it at a carefully controlled potential. This film is very similar to that produced by nitric acid passivation and prevents deposition of electroless nickel, while also avoiding corrosion of the stainless steel.

The difference between this technique and the reverse current passivation method used in the past, is that with deplating the potential of the stainless steel is not controlled. Instead a large current is discharged from the metal to keep it from plating. This discharge, however, also causes the stainless steel to corrode and become etched, especially at the welds. With ENstat 3 only the amount of current needed to prevent plate-out is used to maintain the potential of the metal within a desired range. In addition, at the proper potential, most current is discharged through oxygen evolution rather than by metal dissolution.

Not only will the ENstat 3 protect the plating tank, but it will also reduce plate-out in the stainless steel pumps and heat exchangers electrically connected to it. Because protection is not dependent upon current flow, passivation does not change significantly with distance.

Hundreds of anodic protection systems have been installed on electroless plating tanks in Europe, some for more than twenty years. These installations have been very successful and have allowed the plating solutions to remain in the same tank for as long as one month without nitric acid passivation.

Key Features

- Microprocessor controlled
- Audible and visual alarms
- Overload Protection
- NEMA 4X enclosure

The ENstat 3 is a microprocessor controlled potentiostat, specifically designed to protect stainless steel equipment in electroless plating solutions. Its operating program was especially designed to assure stable, trouble free operation. In addition, the instrument automatically tests the condition of the tank and instrument to ensure that the system is operating properly. Most of the common errors or faults observed during field and laboratory tests were included in the program. The program includes default values which are adequate for most baths and tanks. However, if a custom set is required a new set up for operation may be done by following the plain English display instructions. To prevent unauthorized access a hardware key will lock out this mode.

The unit can provide a sustained output of 10 amperes, and thus is adequate for even the largest electroless plating tanks.

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