

Long-life Electroless Nickel Process by Continuous Regeneration with Electrodialysis

Rainer Born, Jens Heydecke & Werner Richtering, Atotech Germany GmbH, Berlin, Germany

The enrichment of reaction products and other contaminations is the reason for short bath life and large fluctuations of deposit qualities of nickel-phosphorus alloy deposits plated from conventional electroless nickel (EN) baths. Dependent on the bath type and substrate plated, typically only 5-15 metal turnovers can be achieved before the process electrolyte has to be discarded and a new bath has to be made up. Various concepts to extend the bath life of electroless nickel solutions have been discussed in the literature (e.g., selective precipitation or electrodialysis of process solutions, usually applied in batch operations). This paper presents a new method for continuous regeneration by electrodialysis comprising a specially developed electrodialysis system. Thereby a high selectivity for removal of sodium, sulfate and orthophosphite is achieved and consistent process parameters and deposit properties are obtained. Results for various electroless nickel processes under pilot-plant and production conditions for bath lives of more than 50 metal turnovers are shown, the equipment is described, the efficiency is discussed, and economical considerations are presented.

For more information, contact:

Dr. Werner Richtering (Presenter)
R&D Manager, Functional Coatings
Atotech Deutschland GmbH
Erasmusstraße 20
D-10553 Berlin
Germany
Phone: 49-30-34985770
FAX: 49-30-34985727
e-mail - werner.richtering@atotech.de