

# ChemScan<sup>®</sup>

## PROCESS ANALYZERS

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### ChemScan<sup>®</sup> Application Summary #80 Electrodeless Copper Plating

#### Statement of the Problem

Electrodeless copper deposits are typically applied before conventional electroplating in order to provide a conductive base on plastics or other nonconductors. Major markets for electrodeless copper include automotive parts, appliance components, printed wiring boards, molded interconnect devices, plastic composite connectors, multichip modules and EMI/RFI shielding of electronic devices.

Components of the electrodeless bath include an aqueous solution of copper ions, reducing agents, complexing agents and bath stabilizers operating in a specific ion concentration, temperature and pH range. The typical reducing agent used is formaldehyde and the typical complexing agent is Rochelle Salt.

#### Control Strategy

The consumption of critical components in the bath occurs in direct proportion to the consumption of copper. Complexing agents and stabilizer levels occasionally need independent control, although on-line analysis of dissolved copper is sufficient for most applications.

#### Apparatus

ChemScan Process Analyzers can detect copper directly in an undiluted side stream recirculated from the plating bath using spectrophotometric (light absorbance) techniques and a temperature measurement. Copper concentration is calculated by the ChemScan Analyzer and is output in the form of a 4-20 mA signal, which can be used as an input value for control of replenishment concentrate feed pumps. See Figure 1 for comparative results from a high copper bath.

