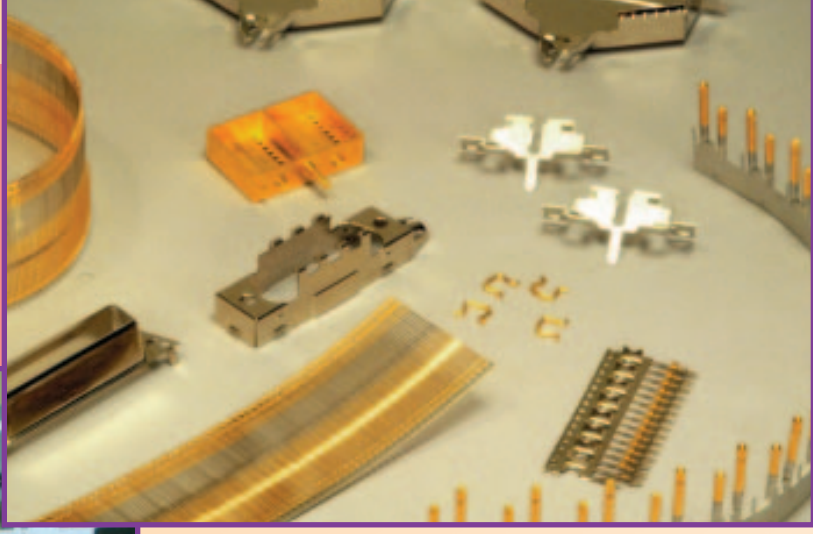
Specialist Finisher Performs Selective Metal Plating For Electronic Connector Terminals



Some of the many different reel-to-reel connector terminals and switch parts processed at Amax. The company plates parts for more than 100 customers.

Bruce Anderson and Paul Meyer, Amax owners, are shown here reviewing the installation of a new reel-to-reel plating line with capability of nickel, gold, palladium/nickel and tin/lead plating.

The success of Amax Plating, Inc., Elgin, IL, can be attributed to its innovative approach to selective precious metal plating, according to Bruce Anderson, company president. Amax is a jobshop that does electroplating for electronic component manufacturers, primarily manufacturers of connectors and switches. It is the company's specialty to provide quick response in reel-to-reel plating of connector terminals.

The terminals of the connectors require very precise selective precious metal plating for reliable electrical contact and solderability with other electronic components and printed circuit boards.

Amax turned to selective plating because of the high increase in the price of gold. It was only $35/oz in the '60s and is now about 10 times more.

Amax services an impressive list of customers in the electronics industry: Amp Inc., 3M Company, Honeywell, Lucent Technology (a new company formed from AT&T), Molex, Methode, J.S.T. and Thomas & Betts Corporation are just a few. Amax, an ISO 9002-certified company, also does plating for automotive and computer end-users. The company provides its plating services for customers from all over the nation and the world. There are currently 100 customers who send Amax reels of unfinished terminals for plating, Anderson said.

Amax was founded in Elgin, IL, in 1968. When it started, the company had only five employees. It now has 110.

Some of the finishing processes offered are gold, silver, palladium, copper, nickel, palladium/nickel alloy, electroless nickel, solder, tin and tin/lead. The various types of plating done in three adjoining plants include prototyping, strip plating, reel-to-reel selective plating, selective plating of discrete parts, selective plating of dissimilar metals, wire plating, and rack and barrel plating.

Jeronimo Mojica checks gold and tin/lead selective locations during final inspection.

Erika Gomez verifies special packaging for shipment of gold-plated fiber optic housings.

NDT is Essential For Plating Accuracy

Non-destructive testing (NDT) instruments are vital for plating connector terminals. They are used to accurately measure the thickness of the plated precious metals. Amax uses proprietary X-ray fluorescence systems[1] in its quality control department for plating process and final audit inspection. The systems are used to monitor plating thickness ranging from 0.508 µm to 15.24 µm. The two X-ray systems used provide Amax with the measurement data collection, which is put into the company's networked SPC system.

The X-ray fluorescence systems are very versatile. They are used for many specific applications and for unique and difficult measurement requirements, such as very small areas, varying shapes and configurations, and multiple points of measurement that require precise accuracy, says Bruce Johns, director of quality for Amax. "Good R&R (repeatability and reproducibility) and accuracy are some of the chief advantages of the X-ray fluorescent technique. Our equipment can be programmed and accurately locate finite points of thickness measurement. It can also be used by a number of operators with repeatable accuracy," Johns says.

One of the more difficult jobs that the X-ray systems have solved for Amax is its use for multiple plating, according to Anderson. As an example, measurement of the duplex plating thickness of nickel, palladium/nickel alloy with a gold overflash, and tin/lead on the solderable portion of the connector terminal is solved with the system.

The company says it is more difficult to do multiple plating now, because the spacing of the terminal areas are closer together, down to .032-in. centers. "The accuracy of our X-ray equipment allows us to control our process tighter, thereby reducing precious metal costs, providing a quality product to specifications, and means for satisfying our customers," said Johns.

Laura Sotelo, supervisor of the Amax quality control department, says the X-ray systems are very user-friendly. She teaches the new employees how to operate them. Sotelo says the systems are easy for employees to use. It usually takes just one day to learn to operate them properly. She says inspectors no longer have to measure several plated locations separately. "The X-ray systems are programmed to make this task easy and, because it does it automatically, it allows unattended data collection. It saves the inspector time to do other inspection tasks."

To stay ahead in the technology of selective precious metal plating of connector terminals, Amax has installed two new plating lines, which were built to rigid specifications. They provide increased plating capacity, finer control and faster delivery to customers, according to Anderson.

Besides the ISO-9002 certification, Amax has been awarded many supplier-of-excellence awards from customers. One such award is from Amp, Inc., the world's largest manufacturer of connectors. A five-pointed star made of Steuben crystal glass, the Amp Award has been bestowed upon a few suppliers, including Amax, the only plating company to receive it. *P&SF*

[1]*CMI XRX systems, CMI International, Elk Grove Village, IL*

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