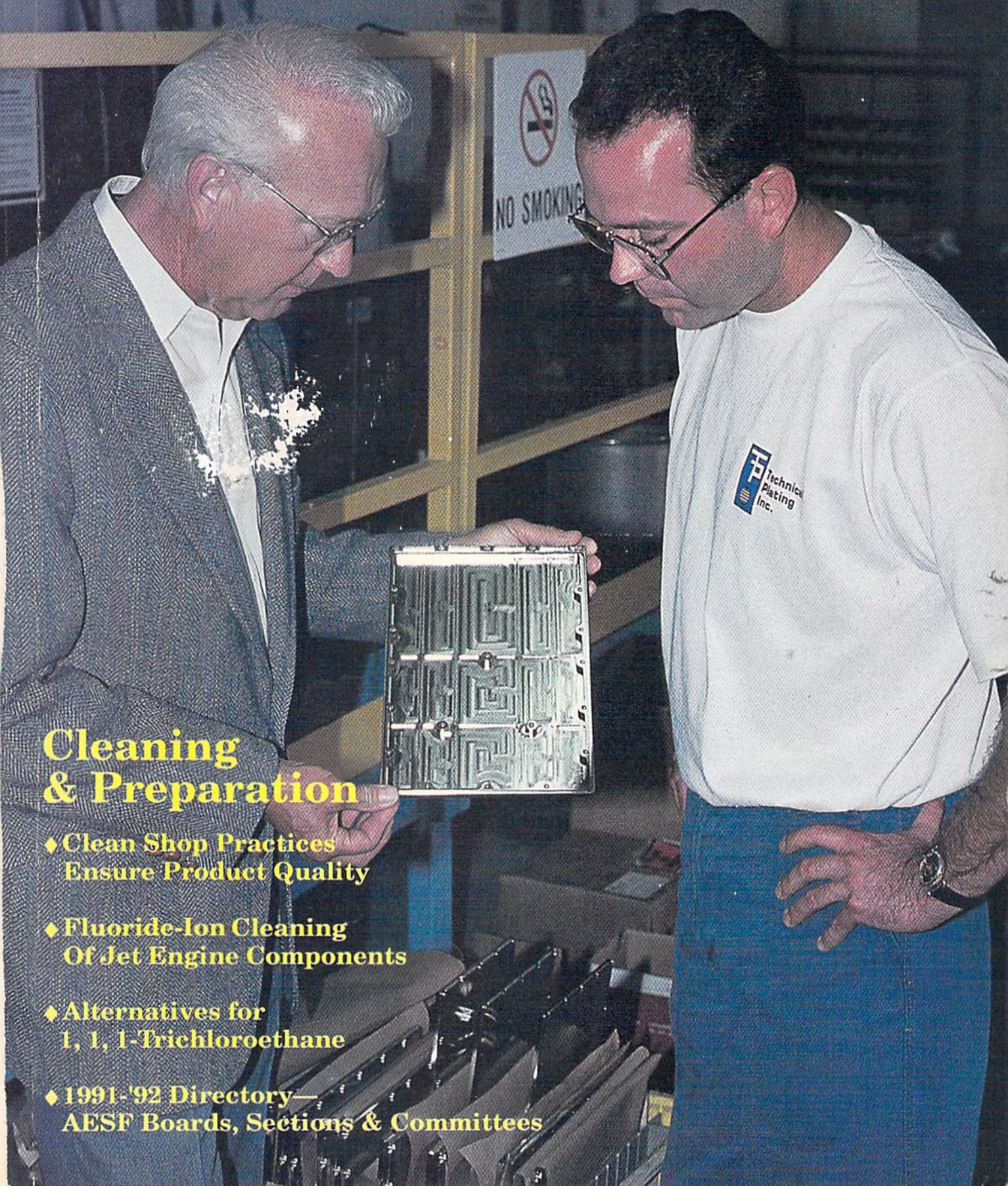


# PLATING and SURFACE FINISHING

Journal of the American Electroplaters and Surface Finishers Society, Inc.



## Cleaning & Preparation

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# Clean Shop Practices Ensure Quality & Quick Turnaround At Technical Plating

*Meeting a specific need has been the impetus to start many businesses, and Technical Plating, Inc. is no exception. Founded in 1975 to meet the tin and nickel plating production needs of major high-tech clients, the company emphasized quality and fast turnaround time, attracting more clients and enjoying solid growth. One of the main reasons for Technical Plating's success is its managers' emphasis on a controlled shop environment. Parts are ultra-clean, prior to finishing, and processes are carefully monitored to keep them contamination-free.*



At Technical Plating, President Jim Thomas (right) and Vice President/General Manager Bryan Thomas (left) confer on a regular basis with Denny Holland, plant manager. The three consult on troubleshooting, verify that processes are being followed, and ensure the acceptability of parts—before and after finishing.

In his 20 years of purchasing experience in the surface finishing industry, Jim Thomas, now president of Technical Plating, Inc. (Minneapolis, MN), carefully observed the successes and failures of other shops. He discovered that the ones that stayed in business turned out dependable, consistent-quality work. Generally, the successful shops were also *clean* shops.

While working as purchasing manager at a local stamping house, Jim contracted plating services from local finishers. Although he used a number of job shops to process millions of critical parts, it was difficult to consistently meet high-volume and quality needs. In 1975, Jim and Leanne Thomas decided to open their own plating shop, concentrating on satisfying the tin and nickel plating demands of stamping companies in the broad, upper midwest, doing work for 3M, Honeywell Inc., Control Data Corp., Seagate and many more. That's when Jim began putting what he had ob-

served about controlled shop environments into practice.

Starting out with 4,000 sq ft in Brooklyn Park, MN, they went after high-tech clients, finishing a diversity of parts, such as internal parts for computers, electronics parts, defense-related pieces, and instruments used by the medical profession. Jim's son Bryan started working with them in 1979. The business has grown steadily over the years, and the plant was expanded four separate times (up to 14,000 sq ft) between 1978 and 1990.

## New Facility Planned

When further expansion was no longer possible, the Thomases decided to design and build a new facility in a high-tech industrial center on the outskirts of Minneapolis. No time was wasted, because the company was committed to servicing its growing list of clients and offering them the high-quality work they expected.

Ground for the new facility was broken in March of 1990, and move-in was accomplished in July of the same year—no small feat, considering that the new building encompasses 25,000 sq ft.

Most finishers would be envious of the physical attributes of the new plant—it's a finisher's dream, with 20-ft high ceilings, 100 candle ft lighting, 10 lines for operation, and economical steam heat piped throughout. Tanks are either all polypropylene or acid-resistant materials; the floor is covered with acid-resistant, epoxy paint. Deionized water is used on all the electroless lines. What is most striking about the plant is its scrupulous cleanliness.

"We spent extra money to help the building stand up well to the finishing shop environment, which is naturally very hard on buildings. Good ventilation was important to us. We oversized the make-up air unit (which has a capacity of 27 cfm) to keep the air clean and circulating," says Jim Thomas.



## Finishing Services at Technical Plating

- Bright acid tin—IAW MIL-T-10727 Type I - Barrel & Rack
- Matte tin—IAW MIL-T-10727 Type I - for Solder Applications—Barrel & Rack
- Bright acid tin—IAW MIL-T-10727 Type I - Reel to Reel
- 60/40 Tin Lead (bright) IAW MIL-P-81728A - Reel to Reel
- 60/40 Tin Lead (matte) IAW MIL-P-81728A - Barrel & Rack
- Copper—IAW MIL-C-14550—Barrel & Rack
- Electroless Nickel - IAW MIL-C-26074
- Passivation - IAW QQ-P-35C VI
- Clean room facility for passivating of delicate parts

### "Clean Room" for Passivating

An atmospherically controlled "clean room" is devoted to parts requiring special attention, such as catheter tubes used for heart catheterization. The clean room contains two small passivation lines that were installed primarily to service the computer industry. Passivation removes excess iron, so parts can be classified at the "surgically free" level. Only soft and DI water are used, because the passivation process should leave the parts stain- and spot-free.

### Monitored Quality Control

It's the individual attention paid to each client that's important at Technical Plating. The job processes used for each customer, as well as the resulting job analyses, are entered into the company's computer system, and information is updated each time an order is run. When a new job comes in, a process sheet is prepared for the finishing of that particular part. A pre-production lot is processed, and the parameters for the entire job are set from that. If the parts need a pre-cleaning, they are degreased before they leave the loading dock.

Load sizes are established with the pre-production run; time, temperature and chemistry are tightly controlled throughout the finishing process.

"Every customer gets a printout of what's on the parts he sent in," states Thomas. "We have an established acceptable quality level (AQL) on all work. Considering that we barrel-plate approximately one-quarter of a million small parts per week in 60/40 tin-lead, we can only use X-ray fluorescence on a certain percentage of those parts. We are striving for zero percent defects."

"We're proud of our record for quality. We've done more than 50 million parts for one customer—with no rejects," Thomas adds.

Company policy allows ample time for the floor operators to keep their areas clean. As Bryan Thomas explains, "We

want customers to feel they are receiving personal attention here and being well taken care of. All our employees take pride in doing the best possible job, and we emphasize how important it is to do things right the first time."

According to the father-son team, Technical Plating has about 150 regular customers, and the managers work on having a close relationship with them. This is accomplished through visits to the customers' plants and encouraging the customers to tour the shop any time. In addition, all incoming parts are visually inspected at the loading dock before the finishing process is initiated. If a potential problem is spotted, the customer is called before anything else is done.

### The Company Way

Jim and Bryan Thomas are exacting when it comes to the appearance and operation of their plant; they are equally careful in their selection of employees.



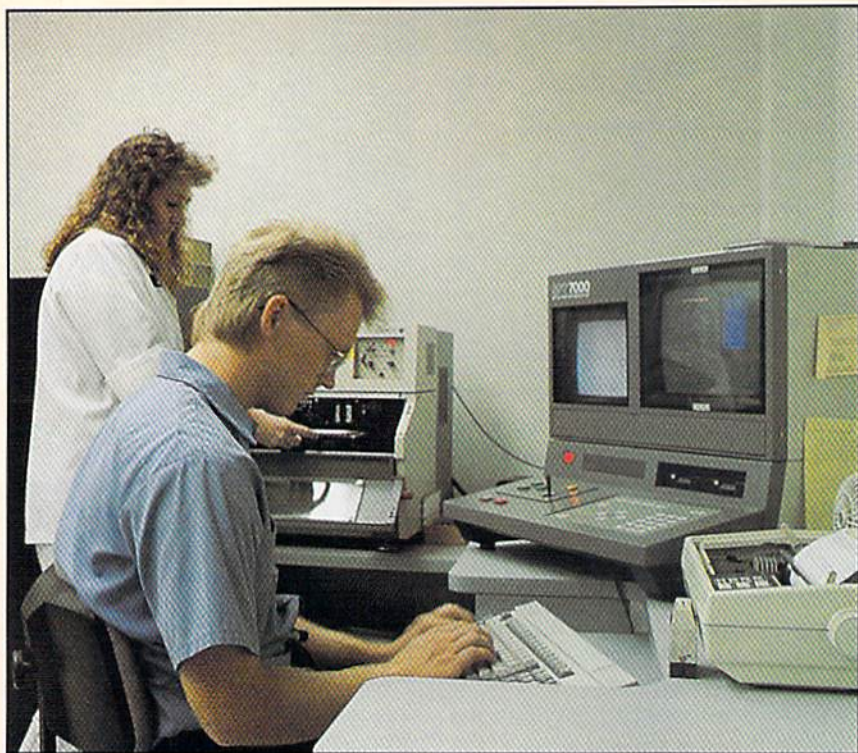
In a separate room at the plant, aluminum wires are anodized for use as voice coils in computers. This department can produce high-quality wire for the speaker industry.

"Obviously, to run a quality operation, you need quality people, and we take extra effort to get good help," Jim Thomas states. "While many shops hire experienced finishers, we usually don't. We don't want anyone to have preconceived ideas on how things *should be done*, because we're taking extra measures to *control* all the steps and ensure exactly how things *are done*. We probably hire only one out of every 25 applicants, paying careful attention to attitude and work habits. We put a lot of time into training that person specifically for what we do. When a new employee



Internal motor drives for computer assemblies are carefully cleaned and treated prior to electroless plating. The shop environment is carefully controlled to ensure production of quality parts and employee safety. Note the corrugated blue pipes, which are super-high-velocity vents for carrying off any fumes released in the finishing process.





The shop's analytical lab includes X-ray fluorescence equipment which is programmed with information concerning each customer's job. The equipment is capable of providing histograms, Gaussian displays, 3D views and spectrum analysis, among other functions. Its use contributes to the company's full SPC program. When a job is analyzed, two copies of the report are printed; one is sent to the customer and the other is kept by Technical Plating for traceability of parts.

masters the operation of one line, we move him to another. The idea is that everyone in our plant knows how to run each and every process."

Technical Plating currently has 16 production platers and runs a shift-and-a-half (about 10 hours) a day, four days a week, and usually a half day on Friday.

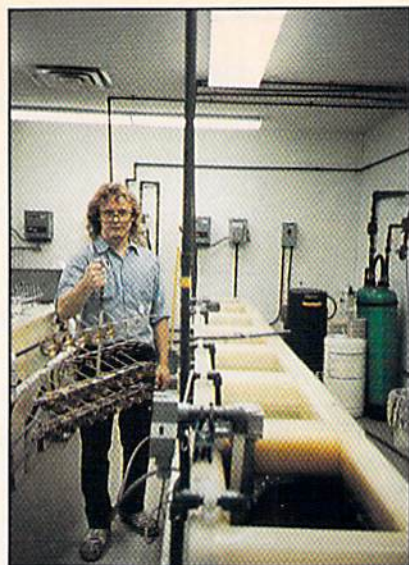
### New Point Source

Technical Plating had to qualify as a new point source when it built its new facility. "As a result, our competitors have to deal with fewer costs than we do," says Jim Thomas. The only wastes produced by the company are classified as F-006 and F-007, and a batch-treat waste system prepares it for disposal. A state-of-the-art pH control system keeps plant effluent between 6.0 and 9.0. The company

uses approximately 30,000 gal/day for production purposes. Technical Plating operates under the jurisdiction of the Metropolitan Waste Control Commission (MWCC). Its discharge limits are a combination of its total facility discharge local limitations and the U.S. Environmental Protection Agency's (EPA) Metal Finishing Category Pretreatment Standards for New Sources.

### Assistance with Paperwork

The managers of Technical Plating rely on a safety company to help with environmental paperwork. That way the managers can spend time in the shop, ensuring the continuance of high quality work rather than being buried in paperwork. Representatives of the safety company perform weekly inspections and



The "clean room" is used primarily for passivating parts requiring special attention, such as catheter tubes for heart catheterizations. The room is also used as a center for racking of delicate parts.

compliance monitoring, sending out the required reports to the county, state and federal governments.

### Meeting Industry Needs

With careful attention to details, Technical Plating has catered to the needs of the manufacturer of delicate or sensitive parts. For example, special barrels are utilized that allow parts to plate uniformly without bunching up; and variable speed controls on dryers help ensure that delicate parts are not damaged. Proper packaging for return to the customer is another area that's carefully handled. Looking to growth areas, a tape-automated overhead line is now in the planning stages.

Whatever options may be taken in the future, however, one can be sure that the managers will not deviate from their proven plan for success—operating a scrupulously clean plant and exercising careful control over process variables to ensure timely delivery of high quality work. □

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