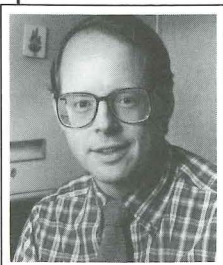


## The changing landscape of plating standards

*Have you ever wondered what happened to QQ-Z-325, the federal/military spec for zinc plating?*



**Milt Stevenson Jr.,**  
Anoplate's Director of  
Engineering

**F**or years when I was growing up in the business, QQ-Z-325 was the standard. But about 1980, the government canceled that spec and superseded it by ASTM B633. Similarly,

many other government plating standards, including tin and passivate, have been dropped in favor of standards developed by organizations in the private sector, including not only ASTM, but also SAE (which publishes the AMS spec) and ANSI.

Because most specification platers like Anoplate have grown accustomed to the military specs, this change may at first seem threatening. But in truth, it's an opportunity. Why?

**continued on page 2**

## What goes into the quoting process?

*A look at pricing methods — and behind-the-scenes efforts to control costs*

**W**hen it comes to pricing a metal finishing project, there is no standard approach.

Some current thinking favors an equation that relies heavily on labor and equipment utilization. But it's also possible to use surface area and weight/volume multipliers in a completely different calculation. Other factors include the cost of special plating materials — such as gold, silver, and other metals with a high intrinsic value. Also important to consider is the cost of any plating additives, special surface preparation, or engineering. It can all get pretty complicated.

Over the years, Anoplate has developed a quoting process based on an hourly rate for processing in specific departments — a rate that factors in individual departmental costs for energy, raw materials, bath composition, and equipment maintenance. This approach seems fair because it assigns costs based on the overhead

expenses of specific processing, instead of on general, plant-wide overhead costs.

Anoplate is now able to estimate the number of pieces that can be processed through a given department and thereby establish a price-per-piece, with or without a cost for additions like masking, baking, and special handling or testing. On long-run jobs or more difficult jobs, it is not uncommon for management and cost-accounting personnel to meet in a group to fine-tune a price.

To assign "unusual costs" to the jobs that entail them, separate charges have been developed — and are typically itemized on invoices — for laboratory procedures, oven baking, extra pickling, glass bead blasting, and the like. All jobs require a certain amount of lab time and quality control, but certified short-run work may require an inordinate amount,

**continued on page 2**

## **Plating standards... continued from page 1**

For some time now the entire government, especially the military, has been under the budget ax. Last year's election sent a clear message to Washington: cut business as usual, and dramatically cut back wherever possible. One obvious area to curtail is the generation of specs. The military has specifications for not only hundreds of finishes, but everything from "dehydrated beef with carrots" to "jacket, flyer's A-2 leather." No one would argue that if agencies outside the government already provide equivalent standards, then it's a waste of taxpayer money to develop, issue, and maintain government specifications as well. What's more, the various defense agencies that once served as custodian over the specifications no longer have the manpower or expertise they once had — so keeping even the existing standards up to date is virtually impossible, especially in the wake of rapidly changing technology.

Even with ample money and manpower, however, the government is notoriously bad at developing good specs. When the government upgrades a specification, it often does so without considering all the ramifications or all of the alternatives. For example, when MIL-A-8625 for anodize was revised from "E" to "F," one of the changes was that the minimum coating weight for conventional Type II sulfuric acid anodize went from 600 to 1100 milligrams per square foot. To meet this new requirement, anodizers basically had to double up the thickness of the film to meet the spec. While the agency generating the document updated the quality requirement section to reflect this change, the coating weight-thickness table in section 6 was left unchanged.

Guess what. Customers are now finding that none of their assemblies are going together. OEMs are faced with either changing all of their drawings or requesting an off-spec finish. When I tried to find out why the Navy undertook this change (and whether they had considered all the problems it might cause), I was told that there was no technical justification for the change and that the Navy was thinking of changing back. Does this kind of organization belong in the spec-generation business?

The recent cancellation of MIL-C-26074 governing electroless nickel coatings brings another case to point. The Air Force in this case saw fit to cancel the spec outright, superseding it by three AMS specs. On hearing this, I contacted the Air Force to point out that not only do the AMS specs not address hydrogen embrittlement testing; they mandate a 450F bake for all aluminums

— something that will surely weaken any heat-treatable alloy such as 6061 or 7075. Along with Allen Grobin, Chairman of ASTM's B08 Committee on inorganic coatings, I encourage the government to rethink this hasty decision.

Maybe I'm a perfectionist, but I'm always poking holes in specifications. With the government rapidly getting out of the spec-writing business, I think a lot of large corporations will follow suit. They too are reducing staff (and eroding technical competence) in areas like finishing. As they do, they will be turning to standards such as ASTM or AMS.

I urge you to get involved with the ASTM or SAE committee involved in writing specifications that govern the processes or products your firm offers. That's the proactive approach that Anoplate is taking.

## **The Quoting Process... continued from page 1**

and a fee is charged on minimum orders only. On jobs that run for long periods (measured in hours or even days), the extra charges are incorporated into the piece price.

## **Controlling costs: some new methods**

Anoplate has taken several steps recently to manage costs generally — and to keep plating quotes attractive.

One example is the effort to control costs for waste management, which now account for 10 percent of all sales dollars at Anoplate. Mike Florczykowski, Anoplate's Facilities Engineer, has been working on methods of treating spent plating solutions on-site rather than treat them off-site — a strategy that curbs expenses and favorably impacts processing costs.

Another cost-control measure that impacts price is the shift of certain quality-control functions to individual operators. Mary Walker, Manager of Quality, has led the effort to establish "self certification" of qualified individuals in selected departments. Based on stringent criteria, self-certification allows certain carefully trained employees to certify their own work. Quality-assurance personnel do not need to become involved, and processing costs are contained.

Bar coding provides another behind-the-scenes step toward managing costs and giving customers the best value for their processing dollar. Shop orders at Anoplate are now being bar coded in an effort to track jobs and assign processing time more exactly. When the system is fully implemented (July 1995), time will be recorded on 13 terminals positioned throughout the plant. The bar code system will also be used by Anoplate's Maintenance Department.

**JUST IN**  
**MIL-STD-45662A,**  
**Calibration**  
**Systems**  
**Requirements,**  
**has been**  
**canceled and**  
**superseded by**  
**ANSI Z 540.1 &**  
**ISO 10012-1.**

**Editorial Note:** Milt Stevenson Jr. has served for five years on the ASTM B08 Committee on Metallic and Inorganic Coatings and is current Chairman of the B08-02 subcommittee on substrate preparation prior to plating.



The system will allow maintenance time to individual processing departments to be documented and allow costs to be assigned to those departments with greater accuracy.

Cost-containment measures like these — though often “invisible” on a quote — have a direct effect on pricing. Though devising a quote is not an exact science, it’s not a shot in the dark, either. A quote from a responsible plater is an honest effort to attach reasonable costs to work described by the customer. ■

## SOME DOS AND DON'TS WHEN YOU REQUEST A QUOTE

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■ **DO** send clear prints. If print quality is poor, or if the image is small, don't fax a print without first handwriting all major dimensions, critical (close) tolerances, and important notes. If you can barely read the print, the fax copy at the other end will be indecipherable.

■ **DON'T** ask your metal finisher to take the time to develop a quote when you have no real intention of using it. If one plater's pricing is consistently high, communicate that fact and consider that plater only for work that falls into his specialty area. This will save everyone a lot of wasted time.

■ **DO** communicate any historical problems associated with a part. If one plater has had difficulty maintaining a tolerance, achieving adequate coverage, or meeting a special requirement, the next plater may have the same problem. Discussing part history up front gives everyone involved a better sense of the best processing strategy to select. (It saves money, too.)

■ **DON'T** expect “unlimited quotes” if you only process low-volume jobs on rare occasions. Most reputable metal finishers want your business, want to please you, will work hard and long to produce good work. But quotes are time-consuming to assemble. From once-in-a-blue-moon accounts, frequent RFQs start to look like frivolous RFQs.

■ **DO** give your metal finisher time to respond. Some quotes require scheduling decisions, consultation with the engineering staff, or research on such matters as the availability of materials. Some requests for quotes arrive along with 35 others, all of which have to be analyzed, researched, written up, reviewed, and dispatched. You're eager to get a price. Chances are, your plater is just as eager to get it to you. Expect a prompt response, but don't expect a miracle.

■ **DO** check to be sure your fax number and phone number are legible if you're faxing the quote. When the type is small, an “8” can look like a “6” and a “3” can look like an “8”. If necessary, enlarge the numbers on the transmission cover sheet or handwrite them in large, clear numerals.

## Cross-functional project teams:

*They keep everyone on the right track*

### Building good project teams boosts the chances of success

Anoplate recently completed finishing on 37 cast-steel railway car covers — called “manway covers” in the railroad industry. What was significant about these large parts was not so much the parts themselves or even the process used to finish them. The significant thing about the parts was the way they were viewed by the customer.

The customer approached finishing for these parts in a manner that's becoming more and more prevalent among progressive organizations: through an emphasis on partnering with suppliers and building cross-functional project teams that bring a variety of perspectives and different areas of expertise to bear on a project.

Instead of the customer asking Anoplate for a price on electroless nickel coating for such-and-such a part, for example, the customer contacted Anoplate engineers and asked Anoplate to participate on a project team whose goal was to improve the durability of manway covers and to investigate various improvement possibilities.

The project team included materials engineers, representatives from the manufacturer of the covers, a plating engineer from Anoplate, and railway personnel familiar with how the covers were customarily used in the field. The result of the team approach was eye-opening.

Able to draw on specialized knowledge from different sources, the team learned that the tough organic coatings that resisted corrosion so effectively on the liner inside the tanker had a tendency to chip when the cover was slammed open and shut during general use. This chipping had led not only to corrosion of the cover's substrate but to contamination of the chemical product inside the tank cars.

The team investigated the composition of the substrate steel and looked at alternatives, some of which entailed prohibitive costs for materials and re-engineering. On-the-job patterns of use were explored, with design ideas for cushioning materials that would prevent sharp contact of metal against metal during opening and closing of the covers.



■ **A multi-discipline team contributed to the successful coating of 37 railway tank car covers at Anoplate.**

**continued on page 4**



**Cross-functional...**  
**continued from page 3**

Different surface finishes were also investigated — and with Anoplate's assistance, a high-phosphorous electroless nickel coating (2.5 mils) was selected as the most cost-effective and practical solution. Special surface-preparation procedures were implemented, too, as a means of assuring good adhesion and long-term coating performance.

And the team effort did not end there. Although the new finishing procedures have proven effective in protecting the covers from chipping and corrosion, the team will still conduct long-range monitoring of the coating's effectiveness — its long-range service history.

Suppliers, manufacturers, end users, and different technical experts — all have their own special perspectives and all contribute something different to the project's success.

### *The old way of doing things*

The importance of the cross-functional approach is just as clear when you consider what happens in its absence.

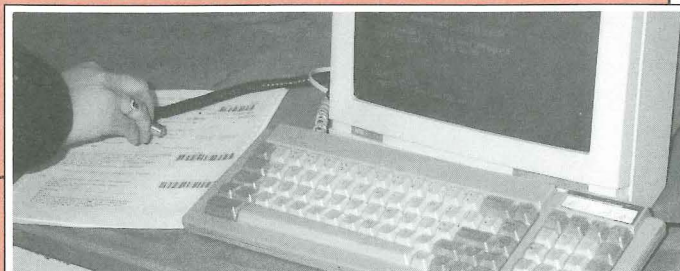
Five or six years ago, for example, Anoplate worked with a group of materials engineers to develop surface preparation and plating strategies for electroless nickel as an alternative for materials such as stainless, painted steel, and even epoxy coatings. One specific task was to replace epoxy-coated steel idler assemblies with new assemblies plated with electroless nickel. (The idler assemblies were part of an ocean salt conveyor, which rested on a 30-foot mound of wet salt — so corrosion protection was a key concern.)

The performance of the EN coating was a big improvement. Rust occurred on sharp edges and unburred cuts after several years — but the epoxy-coated idlers had provided a useful life of only six months.

## FAST FACTS

Anoplate's production control software has been upgraded to include barcode job tracking. When the upgrade is fully implemented

(July), production control and customer service representatives will have access to real time information on the status of every part in the shop, including which operations are complete and which remain. ♦ Mary Walker, Quality Manager, and Cliff Phillips, Black Chrome Leader, attended a three-day training session on internal auditing at Dresser-Rand. ♦ TRW's Space & Electronics Group (Redondo Beach, CA) recently audited and approved Anoplate for 12 finishes. Other recent approvals by California firms include Westinghouse Marine (Sunnyvale), Allied Signal Ocean Systems (Sylmar), and Parker Aerospace (Irvine). ♦ Eleven Anoplate employees attended a joint Rochester, Syracuse, and Mohawk Valley AESF Branch meeting to hear Brian Manty, national Vice President. ♦ Sixteen Anoplate employees, their spouses, and other family members were trained and Red Cross-certified in First Aid and CPR. This is the fifth time Anoplate has offered these courses on-site at no cost to interested employees and their relatives. ♦ Milt Stevenson Jr. attended the First International Technology Transfer Conference on Hydrogen Embrittlement of Fasteners. Speakers from various defense agencies and leading airframe producers spoke on avoidance and testing for hydrogen embrittlement. While attending the Denver conference, Milt also visited customers in the greater Denver region. ♦ Anoplate's management intern the past two summers, Dave Wohlabauh of Syracuse University's football team, was selected by the New England Patriots in the fourth round of the recent NFL draft. He joins another former Anoplate intern now playing in the NFL, Chris Gedney of the Chicago Bears.



■ **Anoplate's new barcode job-tracking system will be fully functional by July.**

The EN coating was a major improvement, yes. But a multi-disciplinary project team could have produced even better results. Here's why:

While exploring further improvement possibilities, Anoplate engineers visited the manufacturer of the idlers in Mississippi. This visit revealed several "up front" process changes that could save effort, time, and expense — and a lot of wasted idlers. For example, better corrosion protection could be achieved through use of a better grade of steel, perhaps hot-rolled steel that was ordered "pickled and oiled." Scaled structural members could be blasted prior to assembly, and sharp edges and burrs could be mechanically removed to improve coating coverage and enhance corrosion resistance.

All of these procedures, though at first glance contributing to higher costs, would have been far less costly than replacing the entire idler assembly. And all of them would

have been options available to a project team that included someone who by today's standards would be an obvious team member: the manufacturer.

# ANOPLATE

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