



*Thorough contract review is as crucial as knowing the correct times and temperatures needed for the heat-treating process.*

## Good habits, a solid system can help avoid mistakes

**T**he contract is the first piece of paper you receive with incoming parts prior to processing. This is the purchase order (PO) that details what type of processing the incoming parts require. Besides heat treatment, the PO will detail any additional instructions such as straightening, cryogenic treatment, and company-specific processes.

From my previous articles, it's known that aerospace (AMS/NADCAP) and commercial heat treating are vastly different regarding processing controls and requirements. Commercial heat treating is very loose on PO requirements, whereas AMS processing has specific language that must be documented on the PO for the contract to be accepted as an AMS job.

However, not all AMS processes are created equal, and each AMS process has its own requirements on what must be documented on the PO. This is usually located at the beginning of the specification under "ORDERING INFORMATION" and will list all the information needed. When performing contract review of AMS jobs, you must make certain that your customers have accurately listed every AMS requirement on the PO before you begin the process of heat treating. This is where things can get sticky. Often customers will not know these important requirements and leave the details out. This article will point out the pains of those occurrences, what you can do as a quality representative to help mitigate those pains, and how to train your staff to be efficient in locating missing information during contract review.

One of the most common problems I see when performing contract review is missing information. Before any heat treating can begin, the PO must be in conformance with the requirements of the AMS spec being referenced. A common occurrence I run into at my facility is customers who know what AMS process they want, but do not know what information needs to be on the PO. An example would be a customer who wants to heat treat 6061 aluminum to a T6 condition in accordance with AMS 2770R, but they will not list the heat-treat condition as delivered, which is a requirement of AMS 2770R.

If your quality system is working as intended, you will catch this missing information on contract review. In this case, a simple fix would be to contact your customer and notify them that they are missing information, and a revised PO is necessary. Simple, right? Well, what should be a simple remedy is not always so simple. I have

run into situations in which the customer questioned why it was needed, as well as customers not knowing how to read a material certification to determine that condition. You would be surprised at how common both these scenarios are.

These are a few specific circumstances among many, but the common theme here is that your customers need guidance. You cannot assume your customers are as well versed in the AMS heat-treating world as you are. You must remember that most customers are flowing down heat-treating requirements without knowing the specifics. Have patience. Be patient in your discussions with the customer and



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explain your reasoning behind the request. I've noticed that if you simply tell them you cannot certify to that specification without the required information on the PO, they will follow. Some may need more explaining than others, but in my experience the result is usually the same. In the end, all they want is their job to be certified to the requirements of the AMS process and will do what is required to accomplish that.

How can you mitigate the risk of a PO missing information and slipping through the cracks of your quality system? This might surprise some readers but, in my experience, this is perhaps the easiest part of contract review. You must train your staff to review AMS contracts accurately. As always, find what works best for your company when you train. My staff has access to the AMS specifications Byington Steel processes and has been trained to locate the ordering information based on what AMS process is needed. Even though your staff is trained, you must still check the work. As I like to say, "trust but verify." In my opinion, there is no such thing as checking your work too much.

Constantly checking your work is a good habit that can save you in many cases. Therefore, I like to use a robust check and double-check system when performing contract review. At Byington, contracts are reviewed multiple times by different individuals to make certain that contracts are correct, processing parameters are accurate and clearly defined, and in conformance with the AMS specification. The process of contract reviews I'm most proud of is our final contract review. The final contract review comes with a checklist that the final reviewer must fill out. This checklist was created by my engineers, and every checklist is specific to what AMS process is being used.

The checklist asks a series of questions that the final reviewer must fill out. The checklist uses an Excel worksheet, and areas will turn red if any information is missing and turn green when all information is accounted for. Any red boxes will alert the reviewer of missing information, and the process of communicating with the customer is initiated. This checklist is attached to every single AMS job processed at Byington. It gives us traceability that the review process was conducted in the manner it was intended. Ideally, all checklists attached will be green.

Contract review is performed for every job that comes in whether it's commercial or aerospace. The monotony of performing this task is not lost on me, but it's as crucial to heat treating as processing at the correct times and temperatures.

It's important to point out that missing information on the AMS PO won't prevent you from processing parts correctly, but it will certainly open you up for audit findings when an auditor looks into your contract review process. Why leave that door cracked open when you can bolster your review process and slam the door shut? Believe me when I say that this review has gotten me out of a potentially bad situation more than a few times. I won't say that I know why AMS has these requirements, but the people who vote on these specifications have good reasons for them to be there. As quality representatives, we don't set or question the requirements – we just follow them. ♫

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