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WHAT OEM DESIGN ENGINEERS SHOULD KNOW BEFORE WORKING WITH A CONTRACT MANUFACTURER

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Outsourcing metal fabrication is steadily becoming more common as contract manufacturers (CMs) offer more comprehensive services. It's likely that your OEM has or is currently outsourcing and that you, the design engineers, are reliant upon those contract manufacturers to help your vision come to life.

A design engineer's day-to-day responsibilities aren't easy, and CMs understand the difficulties associated with such a high-stress job. The combination of creating meticulously detailed models under high liability is a tall order for anyone.

This guide presents suggestions so you receive the best results possible when working with your OEM's CM.

1. Organizing Documents and Standardizing Communication

One of the fundamental challenges CMs face when working with OEMs is a lack of consistent reference documents for a design. An OEM could provide a written/drawn model, PDF, and 3D model, all with contradictory information.

If changes made to one model aren't applied to the other documents, this miscommunication could lead to missing design changes and inaccurately fabricated products. Before a design is presented to the CM, confirm there is a "master" model that the CM knows to use exclusively for the design.

If questions arise from the CM, be open to walk through the design so the product is made correctly the first time.

2. Set Regularly Scheduled (Virtual) Meetings with CM Engineers

If a design change must be made or you want to check on the progress of production, don't hesitate to contact a CM's engineering team. Opening a dialogue directly with the CM will inform you immediately of any design flaws that might exist and must be remedied. You could also determine that the originally requested dimensional tolerances were not realistic or practical to create a functional final product.

While it isn't a necessity to meet the CM in person, take the time to schedule regular meetings with their engineering or management staff. This can be weekly, bi-weekly or monthly, but agree to a day and time that you will discuss design with the CM.

By using communication tools such as **Join.me** or Google Hangouts, you can quickly keep tabs with the CM without drastically disrupting your workflow. Keeping a direct line of communications will help you rectify problems sooner without the hassle of waiting until the faults present themselves much later in the manufacturing process.

3. Meet the CM Before Production Begins to Gather Feedback

It's likely, if the CM is large and experienced enough, that they have worked on a similar product to the design you're presenting. With this in mind, it is almost always beneficial to attend the initial meetings with a CM to gather their feedback.

Be open to suggestions provided by the CM so the manufacturing process goes as smoothly as possible on the first go. The biggest disconnect between the design engineer and the CM is a lack of understanding regarding the capabilities of capital equipment or material pricing/usage.

What might appear to work theoretically could be challenging and too expensive in practice. The CM can serve as a safety net if you take advantage of the resource.

4. Be Careful About Relying Exclusively on Your CAD Models

CAD models and Solidworks are useful tools for design engineering, but they can't always anticipate manufacturing challenges that are inherent in the design you make.

For instance, requesting the placement of holes close to bends in the part will distort the metal. These fundamentals of manufacturing can't be captured in modeling software and requires more knowledge of the CM's manufacturing process.

Whether you're well-seasoned or new to designing for manufacturing, be prepared to learn more about the manufacturing process even if you feel far removed from it. Your design engineering will be more informed if you better understand the limitations.

5. Make Engineering Design More Cost-Effective By Optimizing Tolerances

The tighter the dimensional tolerances are, the more expensive and time-consuming a part will be to manufacture. Remember, though, that the end goal is to create a fully functional and sustainable product. The purpose of tolerances is to facilitate function and ease of final assembly.

You might find that a product works perfectly despite being manufactured with looser tolerances. If this is the case, you don't have to insist on the tolerances listed in the original design.

Finding the perfect balance between tight part tolerances and functionality will not only save money, but facilitate production for the CM.

Really Getting to Know a CM Will Help You Design in the Long Term

While the manufacturing and metal fabrication world has its share of frustrations, you could be surprised by some of the conveniences presented to you by your CM. As you come to understand their equipment, personnel and overall process, you might find you can cut a part from a single sheet of metal rather than fusing two together, removing a step of the process.

Again, you might find the tolerances you specified were overly tight or, worse, not tight enough, but the CM will help guide you to the right place. There's a treasure trove of knowledge a CM can provide if the design engineer stays engaged. The more proactive the OEM engineer, the more mutual benefit will be gained for both parties.

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