

WHY USING A PLASTICS MACHINING SPECIALIST IS THE BEST CHOICE

By Alex Curtiss

At first glance, it's hard to see why it's best to choose a plastics specialist to make a machined plastic part in your product, rather than just having a metal machining company, maybe one you know and trust, do the work. A metal machining company may be able to make your plastic part. The part may look fine to the naked eye and it may also seem to work well when it's put into a product and tested out. At first, it may even perform as it should—until something goes wrong and everyone is left scratching their heads looking for answers.

Here is what can go wrong.

That's exactly what happened to one company in Ohio who manufactures precision scientific instrumentation. A new \$2 million dollar machine that they manufactured for one of their top customers was delivered and installed but soon developed an electrical problem and no one knew why. Finally, they took the whole machine apart and examined it piece by piece. Finally, in one of the plastic parts, they noticed a tiny sliver of metal embedded in the plastic. That tiny spec was the culprit creating an electrical short circuit and that was the reason the machine had stopped working. The plastic part was machined by the company's vendor that produces their metal components. That is one problem that can happen when a metal machining company produces plastic parts rather than an experienced plastics only specialist.

Here is why that happened

This example is not a fluke. It is very difficult to adequately clean a machine that has been working on metals parts. The process can lead to contamination. If the plastic material is soft, residual metal fragments can become embedded in the plastic machined parts. Depending on what the part is used for, the metal fragment may not cause a problem initially, but, over time, it can cause the plastic to degrade and eventually stop performing properly.

What else can go wrong

There's another contamination risk with metal machining companies. Metal parts, unlike plastic ones, typically require the use of oil-based cutting fluids. Because of this, equipment used to manufacture metal parts, even if used for metal only occasionally, can contaminate plastic parts with those oil-based cutting fluids. Many plastics are highly sensitive to petroleum-based cutting fluids and will degrade if they come into contact with them. Also, many plastics are hydroscopic and will absorb the cutting oils. Additionally, if these parts are being manufactured for FDA-approved uses or medical applications, they will not meet their standards.

Who is knowledgeable about plastic materials?

Generally there is not an abundance of knowledge about what plastic to use for different component applications. To say plastic is like saying vehicle. There are many types of vehicles from dump trucks to Ferraris. Both are vehicles but the quality and use is not the same. The same applies to plastic. Metal shops are experts in metal and cannot be expected to have knowledge of the differences between the many types of plastics. Metal machining companies rarely have any in-depth knowledge of the performance characteristics of different plastics. On the other hand, a good plastic machining specialist know what plastics are best for each function and can produce the plastic part needed without risk of failure.

How to ensure the plastics vendor is the correct one to use

Even if you do choose a plastics expert rather than a metal machining company, there are still some points to consider.

First, experience matters. Make sure the supplier you choose is familiar with each machining process you need for your application, as well as with the specific plastic material you will be using. Ask them to share information such as property charts or plastic material handbooks. Specialists in plastic machining should have a wealth of up-to-date information.

Second, check for certification. The plastic machining vendor who makes the fewest errors the first time around should give you the highest quality at the lowest cost. Plastic machining vendors can keep errors to a minimum if they are highly process driven. The best ones are ISO Certified, use documented SPC (statistical process control) procedures, and own the proper inspection equipment such as CMM (coordinate measuring machine) or video inspection systems. Remember, experience, more than anything else, will ensure a supplier can manufacture the most cost-effective part with the best quality. And maybe keep that \$2 million machine from breaking down in front of a customer.

Alex Curtiss is President and CEO of EPP, Engineered Plastic Products Corporation (www.eppcorp.com) in Elk Grove Village, IL. The company specialized in producing high-precision machined plastic parts for the aerospace, medical, instrumentation and water treatment industries since 1976 and has been ISO certified since 2002 and ISO compliant since 1994.

Contact: Lekas & Levine PR, JoannePR@aol.com, [847.327.9530](tel:847.327.9530)