

## **PROTOCASE - SPACEX SIMPLIFIES ENCLOSURES WITH TEMPLATES**

We've all heard sayings like 'beauty is only skin deep' or 'one shouldn't judge a book by its cover'. The same could probably be said for electronic devices. But those who design electronics know that although enclosures may be superficial, they play a critical role in enhancing usability and generating positive first impressions. Despite their low-tech nature, electronic enclosures have traditionally required a disproportionately large amount of time and effort in the development process. According to Protocase, traditional custom enclosure manufacturers are just not tuned to the needs of the design community, but rather, work on volume-based business models. Some designers are lucky enough to have a good local metal shop in their neighborhood, but consistency is hard to achieve by this route. Many designers turn to off-the-shelf enclosures, which are then taken to the nearest machine shop, clamped down and drilled or milled. The results are usually less than perfect.



Protocase's founders recognized through their own work experience that electronic designers were underserved, and envisioned a business model where custom enclosures could be as fast and easy as, say, obtaining a custom prototype circuit board. To do this, they created a unique manufacturing process that extends the concepts of 'lean manufacturing', operating with very small queues between operations so that small to medium sized jobs move from start to completion very quickly. This allows the company to take on jobs as low as quantity one, and consistently deliver finished product within 2-3 days of the client approving a final CAD drawing.

Another challenge is the effort required to design custom enclosures. Even the simplest enclosure embodies a great number of mundane details, such as bend radii, corner reliefs, fastener alignment, tolerances, etc. Designing enclosures from scratch requires a lot of time from professionals with sheet metal experience, and many electronics designers simply lack the know-how or tools to do this type of design. So Protocase developed a set of design tools based around the concept of 'template based design'. Protocase developed two template based tools, which are available free of charge on the company's website.

Protocase Designer® is a simple 3-D enclosure design CAD program. Users can choose a template, specify the size, and then customize it by adding cutouts and fasteners. The program can connect to the company's web servers for instant price quotations or online order submission. The online enclosure template generator allows users to request a template for a given enclosure style, which is then automatically generated in the user's choice of CAD format, and delivered by email within minutes. The user simply customizes this base design to create a finished enclosure specification.

According to Protocase, the combination of template based design tools and their unique manufacturing process can change the way that designers work, giving them easy access to fully finished professional quality metal enclosures with a fraction of the time and effort required by traditional techniques.

