Renco Electronics, Inc.

Engineering Success Story

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Volume1, Issue 1

Since 1955 Renco Electronics has been designing and manufacturing transformers and inductors for many types of applications and a variety of industries. Renco Electronics' catalog has many pages of standard off-the shelf products and as a result some customers do not realize the amount of custom design work that Renco's engineering team spends their time on. Renco Electronics' experienced design engineers specialize in designing custom magnetics based on a few specifications possibly written on a napkin to very detailed customer specifications. Renco Electronics will work with the customer to design a cup, bobbin, and/or core if necessary in order to complete a custom design. The following is a custom magnetics design success story.

A customer was evaluating Renco Electronics' standard RL-3410 high frequency current sensor, shown in Fig. 1, for an application that would utilize four of the RL-3410 parts per board.

Fig. 1 RL-3410 Current Sensor

After some analysis the customer realized the RL-3410 would be too large for his PC Board and requested that Renco provide a custom current sensor that would take up less board space. Renco Electronics' engineering team removed the standard cup and potting compound from the existing design and provided well insulated samples of a current sensor that was electrically the same as the RL-3410, but that took up less space. This same design technique had been previously used successfully for other customers requesting the same type of modification.

The custom samples were quickly evaluated and the customer advised that he desired a more robust mechanical package. The customer provided a failed design concept previously provided by a competitor of Renco Electronics' and this started a lively exchange of ideas that led to the design of a custom cup. Renco Electronics provided an initial mechanical drawing of a custom cup and after many e-mails and revised drawings the customer settled on a cup design that would meet his mechanical needs. The customer had prototypes of the initial custom cup made using the rapid prototype technology known as Stereolithography (SLA), shown in Fig. 2.

Fig. 2 SLA Prototype of Custom Cup

In a matter of a few weeks, the customer provided 25 prototype cups and Renco's sample makers inserted two pins in each of the cups and epoxied them in place. In addition, wound toroids were placed in the cups with the leads soldered to the appropriate pins and finally the toroids were encapsulated in place with epoxy. See Fig. 3 for the encapsulated custom current sensor prototype.

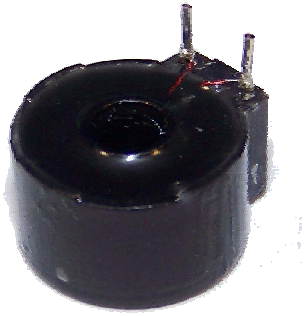

Fig. 3 Custom Current Sensor Prototype

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The customer was quite pleased with the samples and promptly used them to build up his prototype PC boards that were evaluated both mechanically and electrically. After only a few days, the customer requested that a few modifications be made to the custom cup design. After another round of e-mails and phone calls a new custom cup design was settled upon and new SLA samples were made and shipped to Renco Electronics for use in building more custom current sensor samples. A few days later Renco Electronics completed and shipped a second set of samples, but a few important events occurred while the samples were being built.

During the second round of custom cup design Renco Electronics requested tooling quotes from their commonly used bobbin manufacturers in order to be prepared when the customer decided he wanted to proceed with formal tooling of the cup.

While the second set of custom current sensor samples were being completed the customer notified Renco of an immediate need for 1,000 pieces of the custom current sensor for a pilot production run and that started quite a bit of interaction between Renco Electronics and their bobbin manufacturer. The custom cup drawings were finalized for tooling and sent off to the bobbin manufacturer.

Once the customer approved the final cup design and the second set of custom samples, the cups were promptly tooled, tooling samples were shipped to Renco Electronics for approval, and after tooling approval was given, a few thousand pieces were promptly molded and sent to China for assembly of the production current sensor as shown in Fig. 4.

Fig. 4 Production Current Sensor

This whole process was not completed in a matter of a year, but instead happened in less than four months. Renco will soon start large volume production of this custom product.

The above success story occurs more often than some of Renco Electronics' customers realize. See Fig. 5 for a few of the custom parts Renco Electronics has developed with their customers in the past.

Fig. 5 Custom Magnetic Design Solutions

If you have a requirement for a modified standard product and if you have some custom magnetic specifications jotted down on a napkin/paper, or if you need to discuss tooling a bobbin or core for your design, contact Renco Electronics' highly skilled Design Engineering team to discuss your custom options. Renco Electronics will work with you to develop the custom magnetics that will meet your mechanical and electrical requirements.

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