

Design Review

A thorough assessment of a magnetic design, covering material, dimensions, tolerances, coatings and other salient features can be called a design review. Because magnets affect the performance of a product in so many ways, some of them very subtle, a design review is a very wise idea.

Who performs a design review? Frequently it happens coincidentally when sourcing magnets. The magnet supplier's engineers will examine a customer's drawing to be sure that the part can be made and to offer design advice.

However, there is a serious flaw with the process described above. A magnet supplier may have a natural bias, which may taint their opinion in a way that does not favor the customer. In their enthusiasm to make a sale, a supplier may push for changes or withhold critical information. For example, there may be a claim that a total redesign is necessary, when it may be simply a case of the supplier lacking certain capabilities. It isn't unusual for suppliers to offer conflicting advice, leaving the customer confused.

Customers are better served if the person performing the design review is completely independent of all parties, with a fresh perspective to offer. This is why consultants do such a good job with design reviews. Their only allegiance is to their client. Good consultants ask many tough questions about the design, to assure that every relevant aspect has been considered carefully and thoroughly. Sometimes a new and different suggestion arises from the review. Sometimes the reviewer finds that everything has already been considered. In either case, the review improves the project's probability of success.

Example One

Not too long ago, a company was using NdFeB magnets for the first time in a new product.

Their entire previous experience had been with ferrite magnets, which their engineers understood exceptionally well.

Just as the new product was entering the pre-production stage, a serious problem was uncovered during a routine product test. After brief exposure to temperatures of 100 to 150°C, the magnetic flux dropped a few percent. To those experienced with rare earth magnets, this effect is well-known and called irreversible loss. But to the engineers in unfamiliar territory, this was an unexpected and unwelcome surprise.

Many weeks were lost on an already tight schedule as the product engineers scrambled to understand this phenomena. No one, including several suppliers, had ever asked if the design team had considered thermal effects fully.

Example Two

A company was using an NdFeB magnet for a sensor application. The part had been in production for many years without a problem, except for the usual pressure to reduce the cost. Many people had reviewed the design and the lone concern had been the tolerances, which appeared to be too tight for normal production processes.

During one meeting, an engineer from a potential supplier asked why the part was as long as it was. The room fell silent. No one had ever questioned this aspect of the design before and there was no obvious answer. Yet to the person making the inquiry, it was clear the magnet was about 50% longer than it needed to be. Everyone had overlooked a very simple way to reduce cost.

Will a design review help your project? Yes it can, or at the very least, it will improve your confidence in a design. Please contact us to discuss your specific situation.

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