Low Loss Solution to Energy Storage Inverters

Tape wound soft magnetic cores are a mainstay in the energy storage industry, where the use of highly efficient, low-loss inverter filter cores are critical. In support of the cost savings efforts of one of MK Magnetics' customers in this industry, we introduced them to our Optifficient brand of ultra-low loss amorphous cores. Composed of cutting-edge materials such as Metglas® 2605SA1 magnetic alloy, these custom products are manufactured with optimized annealing and bonding processes, and delivers up to 30%+ lower loss than standard amorphous cores being sold by other suppliers, depending on frequency and flux density. We specialize in developing solutions for difficult problems; in this case, we engineered and built a custom manufacturing process designed for the production of gapped toroid filter cores. It is built around tightly controlled processes for air-gapping single and multiple-cut toroids. Our efforts resulted in products that exhibit reduced variance in inductance over powder cores and ferrites, with greatly improved shock, vibration and thermal characteristics.

In this project, we worked in close collaboration with the client's engineering team to develop a low loss solution that would seamlessly integrate into their line of energy storage devices. The challenge was to develop a product that could meet the core loss requirements and be manufactured within tight budgetary constraints and to an aggressive timeline. Additionally, this project would require cut C-cores of varying dimensions weighing up to 25 lbs., but not limited to this size.

As a complete solution, this example represents design development, prototyping, and mass production. Because of our specialization in core manufacturing we have assembled a range of custom and standard equipment that is supported by a highly experienced staff and a comprehensive quality program. This combination of resources and capabilities resulted in a customer whose expectations were far exceeded. It has also led to a long-term relationship that continues today.

To learn more about this project, or the processes used to complete it, contact us directly.

Ultra-Low Loss Amorphous Cores Case Study Highlights

Project Name & Description	Low Loss Solution
Capabilities Applied/Processes	• Special anneal & bonding processes • Special annealing furnaces and control systems
Overall Part Dimensions	Various multiple cut C-cores sizes up to 25 lbs., but not limited to this size
Material Used	Amorphous Metglas 2605SA1® Amorphous Metglas 2605SA1® is a registered trademark of Metglas Inc.
Material Finish	Bare, epoxy coated, nylon or aluminum cased or custom cases
Industry for Use	Energy Storage
In Process Testing/Inspection Performed	In process and finished core loss measurements
Volume	Prototypes to mass production
Delivery/Turnaround Time	3 weeks from Engineering to delivery
Standards Met	Met and exceeded customer requirements