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## **Online Custom Magnetics Design House Launches Speedy Production Service**

[Frenetic Electronics](#), the company that offers a web-based custom magnetics design platform, has announced Frenetic Factory, a worldwide magnetics production facility with plants in the U.S.A., Mexico, Europe, India and China. Frenetic Factory can deliver samples quickly with no minimum order quantities (MOQs). It currently has a production capacity of 8.75 million units annually, that can be scaled to even higher volumes fast.

Explains Chema Molina, founder and CEO of Frenetic, "The future of electrification depends on the speed of designing power supplies, and the main problem with custom power supplies is the magnetic components. Current methods for designing and manufacturing these components are overly manual, lengthy, and iterative. Our mission is to use our cutting-edge scientific models and expertise to design and build better magnetics."

"Our philosophy is to divide the magnetics challenge into three stages—design, sample and production. Table 1 describes the challenges that power supply designers face in getting magnetic components designed, and then in ordering samples and obtaining production quantities. It outlines the personnel who handle each stage of the magnetics design at magnetics companies, the tools they use, and the time required for each stage.

As Table 1 indicates, it can take up to two months to get samples of magnetic components, and this comes after what can be an even longer magnetic design process. Meanwhile production lead times can take 12 months.

Frenetic launched its magnetics design service in 2021. Using a simple online process and unique Core Optimizer tool to make the core selection process faster and more efficient, users input their electrical and environmental specifications, and receive an optimized transformer design in minutes, thanks to Frenetic's custom algorithms which are based on decades of magnetics design experience.

The company's web-based platform allows users to compare millions of different magnetics possibilities within seconds, while maintaining the highest level of accuracy. BOMs, 3D models and engineering drawings are automatically generated. That magnetics design service, which was known as Frenetic Simulator, was a paid service.

However, Frenetic Factory is aimed at those who are not Frenetic design customers, but want product samples. For these customers, Frenetic is offering free online design tools starting with L1, a tool for designing inductors. Using L1, engineers can design a custom inductor and then obtain samples and later production quantities through Frenetic Factory (Table 2). A similar tool for transformer design, T1, will be available soon.

Says Molina, "Frenetic Factory produces an optimum design for your specs using standard cores and custom windings." Molina adds that for customers who want an even-more custom solution, Frenetic can offer magnetic component designs using custom cores. However, that will require a few days more, he says.

Table 3 outlines Frenetic Factory's production capabilities. As the table indicates, no minimum order quantities are required and Frenetic Factory produces fast samples from factories in different countries and regions.

Frenetic Factory comprises facilities around the world that are either owned by Frenetic Magnetics or a qualified third party. This is the same operational model used by much of the electronic components industry. Moreover, Frenetic Factory is fully responsible for the technical support and quality of the components it supplies, no matter which facility they were produced in. Table 4 compares tech support, along with design and production capabilities for Frenetic Factory with what's typically offered by large and small- and medium-sized magnetics manufacturers.

Manufacturing quality and product standards adhered to include MIL-STD-461E, MIL-STD-981, ESCC 3201 and Qualified Parts, and AEC-Q200. Core types available include ferrite, powder, amorphous, electrical steel and nanocrystalline; shapes include round, Litz, foil, planar and Cu-stamped.

"We are thrilled to unveil Frenetic Factory. We believe that we have already demystified the process of designing custom magnetics and now, with the launch of Frenetic Factory, industry can take a huge step in expediting the process of receiving optimized magnetic parts," concludes Molina.

For more information see the Frenetic Factory [page](#) or contact the [company](#).

Table 1. Challenges and lead times faced by power supply designers in obtaining magnetic component designs, samples and production quantities from magnetic component manufacturers.

	Design Stage	Sample Stage	Production
<b>WHO</b>	Electrical engineers	Lab technicians/Factories	Purchase department
<b>TOOLS</b>	Excel/Maxwell	Stock and lab tools	Email
<b>TIMING</b>	<b>Up to 600 hours</b>	<b>Up to 2 months</b>	<b>12 months</b>
<b>CHALLENGES</b>	Low accuracy invokes 4-5 iterations.  Costly and slow.	Stock is difficult to find, access to suppliers is difficult.  Custom pieces take 2 months.	Getting quotations is slow and not guaranteed.  Spec issues in 90% of cases.

Table 2. Capabilities of the L1 design tool.

Inductors ✕

# L1

15 min Ferrite

**L1 Capabilities**

- **Optimal High Frequency Inductors using:**
  - Ferrite Material
  - Litz wire and Round wire
  - Natural and Forced Air
  - Up to 8 x E100 stacks
  - Designs in less than 90 seconds

Table 3. Frenetic Factory’s sample and production capabilities, core and winding material options, and production expertise.

## FRENETIC FACTORY CAPABILITIES

**Production Capabilities**

- No MOQ
- Fast samples
- Factories in the US, Mexico, Europe, India, and China
- Up to 8,756,000 units per year

**Materials**

CORE	WINDING
Ferrite	Round
Powder	Litz
Amorphous	Foil
Electrical steel	Planar
Nanocrystalline	Cu-stamps

**Production Expertise**

ISOLATION	MECHANICAL
Isolation up to 100kV	Aluminum case
Epoxy encapsulation	Custom coil former and cores
	Drawings

Table 4. Comparing design, production and tech support capabilities of Frenetic Factory with those of large magnetic component manufacturers and small-and-medium (SME) magnetic component manufacturers.

## MARKET ALTERNATIVES

	DESIGN TECH	PRODUCTION CAPABILITIES	TECHNICAL SUPPORT
<b>LARGER MANUFACTURER</b>	<ul style="list-style-type: none"> <li>• 1 engineer per region</li> <li>• FEM simulations</li> <li>• No power electronics experience</li> <li>• R&amp;D in materials</li> </ul>	<ul style="list-style-type: none"> <li>• All the options, including OTS</li> <li>• 10,000 of MOQ</li> <li>• Through distributors for SME business</li> <li>• High cost</li> <li>• Long lead times</li> </ul>	<ul style="list-style-type: none"> <li>• 1 engineer per every 1000 customers</li> <li>• Good production recommendations</li> <li>• Email &amp; phone</li> </ul>
<b>SME MANUFACTURER</b>	<ul style="list-style-type: none"> <li>• 2-4 engineers per company</li> <li>• No power electronics</li> <li>• They expect a design from you</li> </ul>	<ul style="list-style-type: none"> <li>• 1000 of MOQ</li> <li>• Competitive cost</li> <li>• Limited capabilities to their factories' equipment and experience</li> </ul>	<ul style="list-style-type: none"> <li>• 1 engineer per 200 companies</li> <li>• Good production recommendations</li> <li>• Email</li> </ul>
<b>FRENETIC</b>	<ul style="list-style-type: none"> <li>• World class designers</li> <li>• Proprietary tech (FO and L1)</li> <li>• Power electronic experts</li> <li>• Magnetic Core Patents</li> </ul>	<ul style="list-style-type: none"> <li>• No MOQ</li> <li>• More than 100 factories around the world</li> <li>• Samples in 2 weeks</li> <li>• Competitive cost</li> </ul>	<ul style="list-style-type: none"> <li>• Online chat</li> <li>• Average answer in less than 8 hours (chat/email)</li> <li>• Support in the electrical and mechanical design/production</li> </ul>