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CONFERENCE & EXHIBITION

Frenetic

Keynote Speaker:

Name: **Jonathan Church**

Job Position: **Director of Product**

Company: **Frenetic**

Presentation: The Journey of Optimization for Complex Magnetics

Abstract:

In the advent of Wide Bandgap (WBG) maturity, predominantly devices with faster switching speeds and higher blocking voltages have allowed for rapid growth in power converter innovation, yielding solutions with greater power densities and efficiencies and transforming numerous expanding markets around the world.

Whilst this revolution has provided a step change in the potential for converter optimization it has created challenges, and an awareness of opportunities for enhancement in the field of magnetics. Sometimes being referred to as the “bottleneck” of the converter, it’s acknowledged that in fact a prudent design of the magnetic has the greatest potential to impact the converter size, weight, and performance.

However, to prudently design magnetics in these increasingly challenging contexts, and to get the best solution, one must be aware of the impacts/impositions their high-level design objectives have on the degrees of freedom in design and how these steer the process itself. In ‘The Journey of Optimization for Complex Magnetics’ - Jonathan will present an overview of the challenges involved with magnetics design optimization post WBG advent.

Where does the optimization journey really begin? How can we ensure we start the process in the right way? How do we close the gap between design and production? And how can we avoid trapping ourselves with poorly defined constraints? Amongst others, these are some of the questions tackled in the presentation.

Bio:

After graduating from the University of Newcastle Upon Tyne with a BEng in Electrical & Electronic Engineering, Jonathan spent over a decade working with novel power converter applications for underwater vehicle systems. Working for numerous ROV (Remotely Operated Vehicle) manufacturers in the UK, he has been a key player for the industry in its transition from low frequency AC to high-frequency DC converter-based systems.

Critical to the ROV industry's success over the last decade has been the adoption of both wide bandgap technologies and the ability to significantly reduce the size of magnetics, all whilst maintaining reliability and keeping costs to a minimum. After working on many different design challenges with conventional methods, Jonathan is no stranger to the perils and pitfalls in the optimization processes of complex magnetics.

In more recent years, Jonathan found great value in the use of Frenetic's digital platform to help in his pursuit for better magnetics. Following a few years as a customer, he joined the team at Frenetic to help work on a better future for the power electronics industry and is now their Director of Product.