TECHNOLOGY SUMMARY

ULTRA-LOW LOSS THIN FILM MAGNETICS FOR FUTURE POWER SUPPLIES

VALUE PROPOSITION (ELEVATOR PITCH)

A fundamental roadblock in advancing the magnetic passive device technology for high frequencies is the availability of suitable magnetic material. Presently, ferrites are used as magnetic core material in these applications.

Ferrite material has low loss performance at frequencies of 130 kHz and 100 mT of peak applied field, with a loss density of 300 kW/m3, additionally, low flux density of ferrites has restricted the magnetic components to larger footprint/volume.

Tyndall National Institute have developed novel soft magnetic alloy compositions and rapid quenching processing technology for low-loss nano-crystalline films to address the challenge to develop high flux density, low loss and lower footprint magnetic components working up to frequencies of 5- 10 MHz..

THE TECHNOLOGY

An, as-deposited, thickness of 5 µm results in reduced eddy current losses within the material at high frequencies & power loss density of 250 kW/m3 at 500 kHz and 100 mT peak ac field, which is less than half the power loss density of presently available state-of-art commercial solutions.

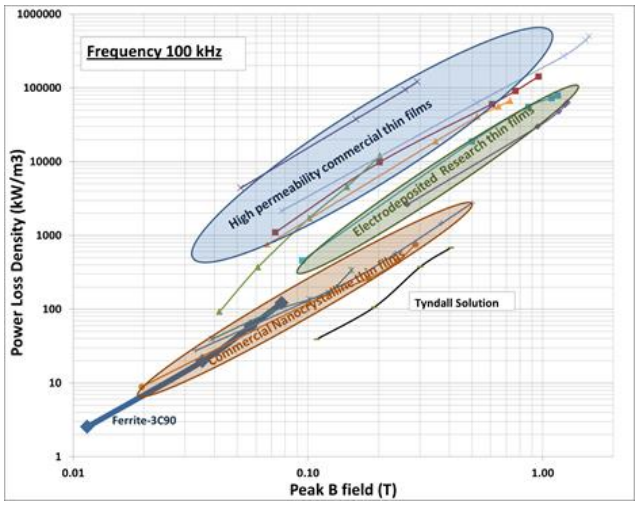
Additionally, a key roadblock in widespread deployment of these materials for power applications is the high material & processing costs. The Tyndall material technology using cheaper elements in material compositions and process innovations to produce a high quality ribbons with an estimate cost reduction of 75% compared to commercial thin films.

DEVELOPMENT STAGE

- Novel alloy system developed
- Processing technology developed
- Material performance demonstrated
- High efficiency, smaller footprint magnetic components demonstrated

APPLICATIONS

- Magnetic inductors
- Magnetic transformers
- Magnetic sensors
- Energy harvesting
- Power-Supply-on-Chip/in -Package



CONTACT

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