

PSMA Magnetism Committee

Meeting Minutes

APEC 2013, Long Beach, CA

March 19, 2013

* **Key Items Magnetism Committee Performs**

- 1) **Industrial Sessions** for APEC on even numbered years, alternating with the Capacitor Committee on odd numbered years.
- 2) **Core Loss Research**
- 3) **Out of print book publishing**
- 4) Maintaining the Web page and in particular the **Magnetism Forum** - which is due for a serious update.

* One current effort is to create a survey (see attached in its first draft form), in part to determine the theme of what the next Industry Session for the Magnetism Committee should be.

Fred Weber - Reviewed the current draft of the survey and requested suggestions and input:

- 1) Needs a better introduction -
 - A) Perhaps even sending a personalized direct letter and survey to key Industry and Committee personnel.
 - B) Request Survey be forwarded to other individuals within a company
 - C) Have link to the PSMA Website
- 2) Shorten as much as possible
- 3) Do not ask the value of something that has already occurred.
- 4) Use Survey Monkey, or equivalent
- 5) Optional request for Name and Contact info.
- 6) Request respondents send forum info to the committee.
- 7) Describe WHY the reprinted books are chosen - Comprehensive - None Better on the Market

* Themes for next years **Industry Session** were suggested:

“Transformers, chip scale to utility scale.”

The unique challenges of transformer design for different size and purpose are compared and contrasted.

“How is Magnetism Catching Up To SiC & GaN” - with topics like:

- A) Higher Temperature
- B) Higher Switching, up to 20MhZ
- C) Higher Voltages

* **Other Books / papers** (past books documented on the survey) to be considered for **reprint** (reprint is only for out of print books) or to be **referenced in the forum** (if still in print):

- . A) Transformers and Inductors for Power Electronics: Theory, Design and Applications by W.G. Hurley and W.H. Wolfle - Forum
- . B) Ricardo Guy's book - reprint if out of publication (We cannot identify this book—if anyone has more information, please let us know).
- . C) Electromagnetic Devices, Herbert C. Roters
- . D) Mag Inc. App notes for the Forum
- . E) Ed Herbert has a notebook of Magnetic Fundamentals that perhaps we can publish.

- . F) Unitrode/TI has many applications that they have published in their design seminars for many years now.
- . G) Lloyd Dixon from TI has written many magnetics papers that we can publish - again
- . H) Bruce Carsten has few magnetics tutorials that will also be very useful if we - can reprint/publish.
- . I) Inductance Calculations by Frederick W. Grover is a very nice book for about \$10 on Amazon

* **Core Loss Study Review** - It is believed within the committee that the research at Dartmouth has proceeded to the limits of which Dartmouth can support. Ed Herbert is hoping that Dartmouth will agree to complete a few more tests, to have commonality with test systems, setups, and fixturing of the earlier tests.

Ed Herbert suggested that Phase IV testing be directed towards semiconductor manufacturers, who should have the test equipment needed to generate the waveforms needed for higher frequency testing.

The question was asked of the committee chair; What is the end goal for the research?

The committee Chairman, Ed Herbert, responded:

- A) SPICE Model
- B) Become a Standard
- C) Allow developers to determine total losses
- D) By understanding Core Loss, winding loss is easier to determine.

* Finally, it was recommended, by the Marketing Committee, that the Magnetics Committee add to their Webpage a "**Buyers Guide For Magnetics**" or perhaps a "Selectors Guide".

It was proposed that since we are the leaders in the industry we could set up basic recommendations and expectations for designers for given various applications:

- A) Establish a list of questions that should have answers by the designer
- B) What technology would be best for application
- C) What size should be expected
- D) Additional Items

* **The next meeting** will be April 18, 2013 at 11:00 Central Time.

Regards,

Fred Weber
Future Technology Worldwide