

by Azizur Rahman

Joint West Michigan Chapter Invites Distinguished Lecturer Prof. Shenai

To adequately train students as well as practicing engineers and researchers who can successfully tackle the challenges of modern industry, the IEEE Power Electronics Society–IEEE Power & Energy Society (PELS–PES) joint Chapter in West Michigan invited IEEE PELS Distinguished Lecturer Prof. Krishna Shenai to the School of Engineering at Grand Valley State University (GVSU) in Grand Rapids, Michigan. Prof. Shenai gave a very engaging and insightful presentation, “The Design of Compact Power Systems.” This event was cosponsored by the IEEE Western Michigan Section and the School of Engineering at GVSU. Prof. Shenai’s

talk lasted for about two hours and was attended by approximately 15 students, faculty, and local industry personnel (Figure 1).

Prof. Shenai emphasized that the field reliability of a power electronics switching converter is among the least understood topics today. There are no established guidelines for the design and manufacture of high-performance, low-cost power converters to guarantee prescribed mean-time-between-failure (MTBF) for a given end application. This is particularly important when developing next-generation compact power systems based on advanced silicon and emerging wide-bandgap power devices. Prof. Shenai discussed the current approach used in the industry for assessing the field reliability of power converters as well as presented extensive experimental

results on compact high-end computer power supplies with MTBF of 1 million hours.

In addition, he outlined a novel power converter design and manufacturing approach that emphasizes “physics-based” component failure mechanisms. He concluded his presentation with specific recommendations for power electronics curriculum enhancements to adequately train future engineers who can develop such optimum power converters. The audience also felt that there is a compelling need to update the current power engineering curriculum, especially in the context of impending energy challenges and the clean energy initiatives mandated by the government. Throughout the presentation, there were lively discussions and exchanges, and many ideas were explored.

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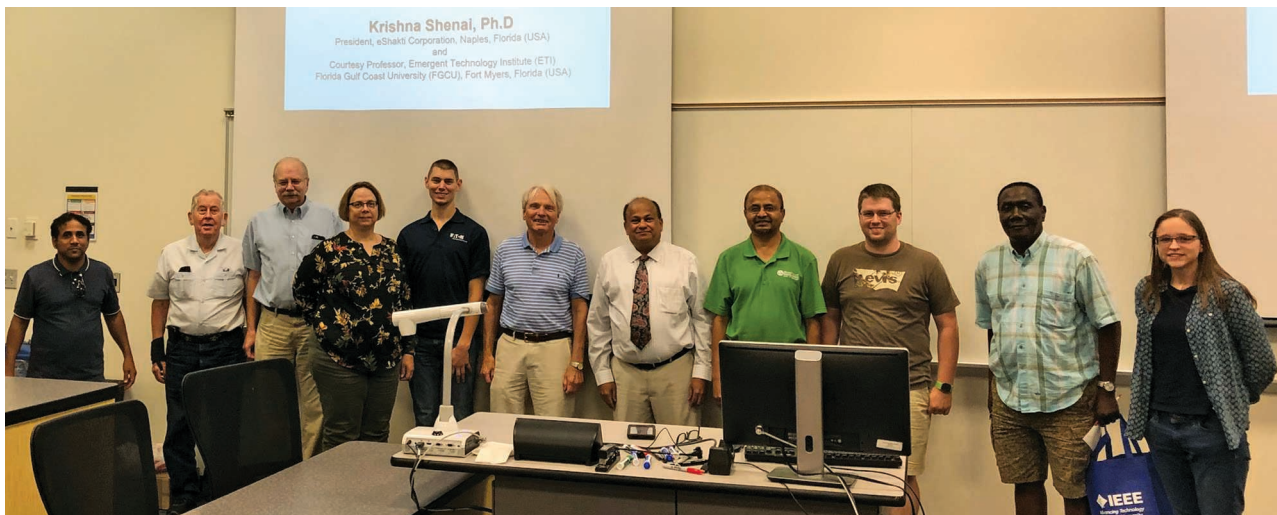


FIG 1 Prof. Shenai (fifth from right) pictured with members of the audience, at the end of his insightful presentation.