

PhD in Electrical, Electronics and Communications Engineering

Research Title: Analysis, Design and Measurement of the Performances of Electronic Power Conversion Applications

Funded by	Vishay Semiconductor Italiana S.p.A.
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Context of the research activity	<p>Electronic Power Conversion is a key element for the development of sustainable modern lifestyle, and represents both an interesting field of research and a challenging market. The optimization of the power conversion applications is a process running since several years, and the efforts required to achieve significant benefits are constantly growing, while gradually evolving towards complete re-design of the systems. This means that for small system performance variations, very different requirements for the single components may be necessary, involving completely different technologies and manufacturing capabilities. Different technologies require time and investments for the industry to be implemented efficiently on a large production scale required by electronics, so understanding the various possibilities for the market and being able to predict the next steps of evolution of the applications is key to have the right technology ready to kick in when the market requires it.</p>
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Objectives	<ul style="list-style-type: none">• Analysis of emerging power applications and identification of technical and marketing goals• Figure of merit (FOM) definition for power conversion critical applications• Development of placement method for applications within the defined FOM• Definition of relevant parameters for the components used in the application and how they affect the FOM
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	<ul style="list-style-type: none"> • Definition of measurement conditions for relevant parameters of components • Experimental validation of application FOM dependence on component features (involving different design approach for applications)
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Skills and competencies for the development of the activity	<ul style="list-style-type: none"> • Some experience and willingness for laboratory activity • Background in power and/or analog electronics • Teamwork mindset • Ability to work in multi-disciplinary environment • Good logical and analysis capability, including good self-organizational mindset • Good technical communication capabilities (Italian and English)
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