Synopsys Accelerates Power Electronics System Design with Virtual Prototyping Solution

SaberEXP Delivers Fastest Convergence for Early Power Component Design and Seamless Export to High-Fidelity System Validation

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Highlights:

- Power electronics component and system complexity is growing rapidly driven by electrification of automotive, aerospace and industrial systems
- Virtual prototyping enables design teams to start development early and validate their designs prior to physical implementation, leading to better products and lowering development costs
- SaberEXP delivers fast simulation convergence to enable early power component design and seamless export flow into high fidelity large system design using SaberRD

Synopsys, Inc. (Nasdaq: SNPS) today announced the industry's most comprehensive virtual prototyping solution to accelerate power electronics system design from concept to validation for power components to large complex systems. As part of the solution, Synopsys introduced SaberEXP to deliver fast simulation convergence and higher productivity for early power component design, such as power converter and motor drive. SaberEXP also provides a seamless export flow into high fidelity large system design using Synopsys' industry-leading power electronics tool, SaberRD.

Electrification of automotive, aerospace and industrial systems is accelerating. According to McKinsey & Company, automotive is fueling the power electronics market expansion with an expected 15 percent compound annual growth rate between 2020 and 2030. Such systems require increasingly complex and efficient power electronics subsystems to ensure maximum power delivery and use. These changes have increased the development cost and reduced the productivity of developers. Better methodology and tools addressing concept design studies, electrical component selection, scalability to large systems including validation in the context of software, and dependency on expensive physical testbenches are required. The use of a scalable virtual prototyping solution from concept to validation of power electronics systems enables design teams to start development early and validate their design prior to physical implementation, leading to better products and lower development costs.

"As power electronics continue to advance in complexity, it's essential to validate designs early, well before physical implementation," said Peter Wilson, Professor of Electronics and Systems Engineering at University of Bath. "Fast simulation is absolutely essential to performing validation early and ensuring design fidelity. Synopsys SaberEXP provides a fast and efficient way to carry out rapid evaluations of design concepts before carrying out system level and complex multiple-domain analysis using SaberRD."

SaberEXP's high abstraction models and piecewise linear (PWL) solver provide high accuracy and convergence for power converters and motor drives for fast time to result. Key capabilities and benefits include:

- Comprehensive general-purpose high-abstraction model library
- High-speed mixed mode solver to verify the stability of switched mode power supplies
- Parametric and statistical design capabilities to accelerate the optimization and verification of design robustness
- Easier to use, with minimal simulation tuning, and more robust than SPICE-based tools

SaberEXP designs can be seamlessly imported into SaberRD allowing high-fidelity simulation, handling of large systems and leveraging a rich feature set for robust design. SaberEXP and SaberRD are part of Synopsys virtual prototyping products including Silver and Virtualizer™. They enable the comprehensive design, development and verification of electronic systems including software.

"Automotive, aerospace and industrial embedded systems integrate increasingly complex and feature-rich power electronics, digital hardware and software," said Tom De Schutter, vice president of Engineering at Synopsys. "The introduction of SaberEXP enables our customers to deploy a faster, more productive and standardized solution for power electronics from concept to validation and leverage its integration with our broader virtual prototyping products for embedded system verification and validation."

Availability

Synopsys SaberEXP is available now.

About Synopsys

Synopsys, Inc. (Nasdaq: SNPS) is the Silicon to Software™ partner for innovative companies developing the electronic products and software applications we rely on every day. As the world's 15th largest software company, Synopsys has a long history of being a global leader in electronic design automation (EDA) and semiconductor IP and is also growing its leadership in software security and quality solutions. Whether you're a system-on-chip (SoC) designer creating advanced semiconductors, or a software developer writing applications that require the highest security and quality, Synopsys has the solutions needed to deliver innovative, high-quality, secure products. Learn more at www.synopsys.com.

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