

Engineering Electronics Team Takes Third in International Energy Challenge

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A Utah State University Engineering club returned from an international competition in Germany, tying for third place overall and taking home a \$2000 prize for their efforts.



The IFEC team recently from an international competition in Germany, tying for third place overall and taking home a \$2000 prize for their efforts.

The International Future Energy Challenge is a competition sponsored by the Institute of Electrical and Electronics Engineers Teams from universities across the world compete to create innovative solutions focused on the conservation and effective use of electrical energy. USU participated this year with an eight-person team for the competition, consisting of six undergraduate students and two graduate students, all of whom currently work at the ASPIRE Engineering Research Center.

“Participation in this challenge has been an amazing learning experience for our team, providing us with hands-on experience with the design, simulation, assembly and testing of power electronics circuits,” said Luke Andersen, an undergraduate student of the team. “For me personally, it has propelled me into undergraduate research and helped solidify my choice to pursue a graduate degree and a future career in power electronics.”

The objective for this year's competition was to design and create a single-phase solid-state transformer. Solid-state transformers are power converters that use high frequency switching to greatly reduce device size and cost. In addition, they have more versatility than conventional transformers, allowing them to be used in emerging smart grid applications.



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The yearlong competition consisted of three rounds. The first round consisted of a written proposal with designs and simulations to satisfy the project requirements. The semi-final round was held in March at the Applied Power Electronics Conference in Orlando, where teams presented their project progress and initial hardware results. The final round was held this past July at the University of Leibniz in Germany. Each team gave presentations on their finished projects and demonstrated the capabilities of their prototypes through a series of rigorous tests.

“Creating a working prototype from scratch in only one year is a huge challenge,” said team lead Jaron Bono. “We couldn’t have done it without the tools and support generously provided by the College of Engineering, alongside our local sponsors: Rocky Mountain Power, Space Dynamics Laboratory and Cache Valley Electric.”

Abhilash Kamineni, Assistant Professor in the Department of Electrical and Computer Engineering, served as the faculty mentor for the team.

“I am beyond proud of the students on this team and amazed by what they were able to accomplish,” he said. “Ultimately, the team’s determination to overcome technical challenges is what helped them succeed.”

More information about the IFEC team and competition can be found at [this link](#).

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Writer: Sydney Dahle, sydney.dahle@usu.edu, 435-797-7512

Contacts: Luke Andersen, luke.andersen@usu.edu