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CoE's Fidan Returns from Oak Ridge

Energy-efficient buildings have become a growing priority for Americans, and Tennessee Tech University College of Engineering professor Ismail Fidan is developing technology to conserve energy. Fidan, a professor in manufacturing and engineering technology, was a researcher for several months last semester at Oak Ridge National Laboratories.

Fidan's team has been using mathematical models to study energy usage at three model houses in Knoxville's Campbell Creek area. The unocccupied houses have timers that run TVs, showers, microwaves, washers and dryers, lights, HVAC and appliances to simulate occupancy, all monitored remotely from ORNL.

The three houses were designed and built to use energy differently. One was built with conventional materials and designs, another was designed to be fairly efficient, and the third was built with the latest energy conservation technologies, including heat-pump water heaters, solar panels and other renewable energy concepts.

"They basically asked me to generate models for their heat pump water heaters in resistive, hybrid and heat pump modes," Fidan said. "Their objective is to develop a machine-learning algorithm that can predict energy consumption and other energy-related issues in the near future. "

Researchers at Oak Ridge put a heavy premium on energy efficiency for buildings. Studies show that in the U.S., buildings are responsible for 39 percent of carbon emissions, 73 percent of electricity and 55 percent of natural gas consumption.

There was, however, one distinctdown side to Fidan's time at ORNL.

"I can simply tell you that the only disadvantage was the drive," said Fidan. "I stayed some days, but most of the time I'd drive. At times it was horrible and I don't know how I made it, but it's over, my students didn't complain, my wife didn't complain, and I wouldn't trade the experience for anything."

*Last edited **2014.10.15** by **Davis, Cynthia**.*