Student-built appliances made to do more with less

Energy Savers Blog

Although today's home appliances are designed to be far more energy efficient than those made in the decades past, there's always room for improvement. Industry leaders are building energy-saving appliances because consumers demand high-performance products that do more with less energy. Fostering this trend toward innovation in energy efficiency, the Department of Energy (DOE) recently recognized the winners of a university-based student design competition to build more efficient appliances—products that can be manufactured at a lower cost and outperform comparable best-in-their-class products already on the market.

The Department's first Max Tech and Beyond Appliance Design Competition [1] aims to inspire the nation's brightest young minds to pursue energy efficiency improvements in home and commercial appliances and other equipment, helping to develop innovative ultra-efficient products. The competition also supports the Energy Department's broader efforts to train and educate a new generation of engineers and entrepreneurs who will help solve our national energy challenges and bring cutting-edge energy technologies to the global market.

The winning team, from the University of Maryland, chose to simplify the design of a standard wall-mounted air conditioner by separating the systems that remove humidity and provide cooling. After the students tested a fully functional prototype, they found that the design reduced energy use by 30% compared with typical wall-mounted air conditioners already on the market. Since the largest consumer of electricity in most homes nationwide is the air-conditioning system, this innovative design has the potential to substantially decrease residential energy use and save consumers money.

The runner-up team from Marquette University developed a prototype of a natural-gas-fired combination water heater and clothes dryer that can use the waste heat from the clothes dryer to heat water for the next washing load. The team demonstrated that with this approach, they could get a 10% dryer efficiency improvement compared with the best comparable products on the market.

Learn more about the competition from the EERE progress alert [2].

So why are these gifted engineering students so bent on boosting energy efficiency to the next level? Because energy efficiency sells. These students see more and more Americans paying attention to their energy use, looking to save money, and doing their part to improve our energy security and protect our air and water. Participating in a team design competition can also help students hone the skills they need to find high-level jobs in the industry or get a head start on their peers in starting a new business.

The Department supports a variety of student competitions that drive innovation in energy efficiency and renewable energy—including graduate-level geothermal energy research, undergraduate clean energy entrepreneurship, and DOE's signature student challenge, the U.S. Department of Energy Solar Decathlon, which will be held in Irvine, California, in the fall of 2013. The Solar Decathlon challenges student teams to design and build highly efficient homes that blend energy efficiency and renewable energy systems, and it demonstrates how attractive and comfortable efficient living spaces can be to the hundreds of thousands of people who visit the student-built homes. Not coincidentally, one of the mainstay events in which Solar Decathlon teams must excel to win the overall competition is in the performance of home appliances, underscoring the importance of high efficiency appliances in optimizing whole-home energy use.

But why focus on appliances? One of the biggest chunks of most people's energy bill is the power used to run your refrigerator, dishwasher, and washer and dryer. Appliances typically account for 13% of a family's energy bill. Reducing the power you use operate appliances, not to mention heating and cooling systems (another 54% of the average bill), will save you considerably on your energy costs. One of the best ways you can tackle your high utility bills—after performing basic improvements in your home, such as sealing ducts and air leaks, improving insulation, and installing programmable thermostats—is to start replacing your older appliances with energy-saving ones. Look for the ENERGY STAR® label. Also, consider retiring that extra refrigerator in your garage that was made in the '80s. It uses a lot more power and has less room than a new model.

Get the most out of your home and support America's manufacturers, innovators and entrepreneurs: next time, buy yourself an energy-saving appliance. And view more Energy Savers tips [3] for more ways you can save money by saving energy.

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