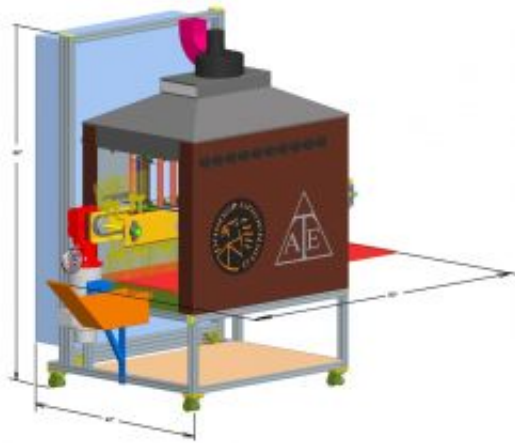


I can't believe it's not fried: New oven fries food without oil

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The radiant fryer, invented by Purdue food scientist Kevin Keener, is designed to quickly produce foods that appear and taste like they have been fried, except without using any additional oil. Engineers from partner Anderson Tool and Engineering Co. just completed this design and, in cooperation with Keener, plan to build a commercial prototype of the oven by the end of the year. (Anderson Tool image/Kevin Judd)

(PhysOrg.com) -- A new type of oven quickly produces foods that appear and taste identical to those that were fried, but, unlike traditional fryers, uses no additional oil. The "radiant fryer" could create products with 50 percent less oil, less fat and fewer calories than conventional fryers, said Purdue University food scientist and inventor Kevin Keener.

"The radiant oven has the capacity to replicate the frying process without

placing the food in an oil bath," said Keener, an associate professor. "If we're successful, when you put the product from our oven next to one that's been traditionally fried, you won't be able to tell the difference."

Keener partnered with the Indiana-based Anderson Tool and Engineering Co. to produce a commercial prototype. The company recently completed a computer design of the oven and has begun to assemble some of its parts, said company president Ted Fiock. The team plans to have the oven built and working by the end of the year, he said.

The oven, which the team also refers to as a radiant fryer, works by emitting wavelengths of radiant energy to precisely cook food products. It may, for example, heat the inside of a food without cooking its exterior, Keener said. Because of this precision, the system requires specific instructions on how to cook each item. This makes it ideal for cooking preformed, similarly-shaped products like potato chips, chicken nuggets or fish sticks – or anything square, round or boot-shaped, he said.

"If we precisely control a product's size and shape, we can produce the same thing every time, like a perfectly browned, round chicken patty," Keener said.

This uniformity allows the oven to be quite speedy: one could churn out 300 dozen donuts per hour, Keener estimated. It also rapidly reheats refrigerated or frozen products, he said.

"If it works like we hope, we could take donuts from the freezer to the countertop – hot and ready to eat – within two minutes," Fiock said. "Currently, this is all but impossible."

The oven would most likely cook foods that have already been partially fried, or par-fried. Such products are traditionally fried at a central food

manufacturer before being chilled or frozen and shipped to restaurants and retail outlets, where they're often refried before serving, Keener said.

"Many people don't realize that your typical French fry has been fried twice," Keener said.

If the prototype passes a series of tests later this year, the team hopes to commercialize the oven, Fiock said.

"All of these things we envision cooking with the oven are products the food industry would like to find out how to design with less fat," Keener said. "This might be one way."

Another benefit to the oven is that it would eliminate the use of hot oil, which is hazardous to discard, presents a fire risk and can burn workers if spattered or spilled, possibly causing serious injury, Fiock said.

Keener and Brian Farkas, a food scientist at North Carolina State University, are co-inventors of the patent-pending oven design. They completed a smaller prototype – about the size of a standard microwave oven – upon which many of the calculations for the commercial prototype are based, Keener said. Food from this first prototype proved indistinguishable from emergent-fried products to a panel of tasters, he said.

Provided by Purdue University

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