

Engineers work on car engine redesign

31 May 2007

U.S. engineers have created the first computational model to track engine performance from one combustion cycle to the next for a new type of engine.

"We're talking about a major leap in engine technology that could be used in hybrid cars to make vehicles much more environmentally friendly and fuel stingy," said Purdue University Assistant Professor Gregory Shaver.

A key portion of the research, said Shaver, involves designing engines in which intake and exhaust valves are no longer driven by mechanisms connected to the pistons. That's a departure from the way automotive engines have worked for more than a century.

Since the valve timing would no longer be restricted by the pistons' movements, it could be finely tuned to allow more efficient combustion of diesel, gasoline and alternative fuels, such as ethanol and biodiesel, Shaver said.

The concept, known as variable valve actuation, would enable significant improvements in conventional gasoline and diesel engines used in cars and trucks and for applications such as generators, he said.

The research team included graduate students David Snyder, Gayatri Adi and Anup Kulkarni, as well as undergraduate students Armando Indrajana, Elena Washington, Justin Ervin and Matt Carroll.

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APA citation: Engineers work on car engine redesign (2007, May 31) retrieved 14 October 2019 from <https://phys.org/news/2007-05-car-redesign.html>

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