

Carbon-Free Car Goes to 60 on Zero

No gas-guzzling, no carbon, no guilt

Driving a convertible Mazda Miata along sunny country roads in September is glorious. And when the car has "Powered by Renewable Energy" and "Zero Carbon Car" emblazoned on it, you don't even have to contend with eco-guilt.

"It's a nice feeling," said Bill Kemp, the renewable energy expert and author who built the electric/biodiesel hybrid as a concept car and is writing a book on it that will be published in October.

Along with no carbon emissions, there's also no noise pollution - it's so quiet, you can't even tell it's turned on. But hit the gas pedal and off you go, with the wind in your hair. Unlike other hybrids, this is a truly zero-carbon car, not only while driving but also while refuelling. When the big yellow cord is plugged into the outlet near the trunk to recharge the eight batteries (which take six hours to charge fully, but can be driven on a partial charge) under the hood, the electricity comes from photovoltaic solar panels on Kemp's roof and a wind turbine next to his off-grid home. He also purchased shares from Bullfrog Power - a green-electricity company founded in 2005 with outlets in Alberta and Ontario - so he can plug the car in elsewhere and know the electricity comes from renewable sources.

"If I plug this car in where electricity comes from coal, then there's nothing zero emissions about it," he said.

The batteries are depleted after about 60 kilometres. That's when the diesel engine, - modified to take 100 per cent biodiesel and mounted in the trunk - kicks in to recharge the batteries as you continue driving. He said that 80 per cent of all driving adds up to less than 60 kilometres per day.

"For most people, most of the time, a vehicle that could go 60 kilometres without using carbon-based fuels would be sufficient."

Kemp believes that society cannot afford to keep building and maintaining roads and bridges that only expand the number of drivers. He envisions a future where carbon-free electric trains, rather than cars and trucks, move goods and people between cities, and businesspeople use video conferencing rather than jumping on planes.

He proposes a substantial carbon tax that would put gasoline prices at \$3.50 a litre.

"People will curtail their driving habits," he said, and there will be eco-friendly vehicles, more carpooling, and mass transportation that people actually use.

Until society gets to that point, there's a need for transition vehicles like the Zero Carbon Car, he said. His car uses biodiesel to assist the electric power that drives the wheels, compared with hybrids like the Toyota Prius and Honda Civic, which use electricity to assist the primary gas power.

"It's a very simple technology. There's nothing that needs to be invented. The technology's available today."

Kemp and a group of friends bought a 2001 Miata and gutted it. Under the hood, they installed an electric motor, eight batteries and various controllers. In the trunk are an alternator and a \$15,000 diesel engine from Germany. The glove compartment houses a control panel and voltage and amp meters. The dashboard stereo was replaced with a touchscreen computer to monitor and control the various systems, including the music system and automatic garage door opener. Total cost: about \$35,000.

There's nothing exactly like it on the market today because there's no incentive for it, he said. "No need. Just go buy a Hummer. Fossil fuels are cheap."

General Motors' Volt is similar to Kemp's car, but it's still a concept that's not due on the market until 2010 at the earliest. Zenn Motor Company has its all-electric Zenn car with a top speed of 40 kilometres per hour.

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Tesla Motors has its high-speed all-electric \$98,000 US Tesla and Commuter Cars has its ultra-narrow Tango but, as with other all-electric cars, once you've driven the maximum range, you have to wait for batteries to recharge.

"The plug-in hybrid solves all those problems," Kemp said.

Even though the Miata body is heavy, he estimates the car costs five cents per kilometer to operate, compared with a more conventional car at about 9.2 cents. Top speed is 140 kilometres per hour and it's fully licensed and insured.

Kemp's book will show people how to build their own, without waiting for the car industry or government to lead the way.

"We can use this technology immediately and embarrass governments and the automobile industry into producing these cars because if homeowners and university and college students can do it, there's no reason why we shouldn't," he said.

The Zero Carbon Car will be published by Aztex Press and available across Canada at Chapters and Indigo.

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