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Running on Hot Air?

The topic for this month's column percolated out of a message about the air car from a *Tech Directions* subscriber. Before you read the rest of the column you might want to view the video he referred to at www.youtube.com/watch?v=QmqpGZv0YT4.

After watching the video, my initial impression was that the two technologies it shows were interesting and might be environmentally friendly. These air-drive technologies could power future U.S. golf carts, forklift trucks, and a new type of shared rental or ownership Pod car for transportation within amusement parks or other types of closed communities. But when you add the weight necessary to make this vehicle U.S. road worthy, in its present design you would need tanker-sized compressed air cylinders to hold enough energy to move the vehicle a viable distance. Anyone espousing this technology in its present design as a near-future replacement for the internal combustion engine is, at least in my opinion, full of hot air.

However, with gas prices inching toward \$5 per gallon, everyone is now very interested in inexpensive and environmentally friendly alternatives to gasoline-powered vehicles. When I Googled "Blogosphere Air Car," I found so many people with so many opinions that I concluded that the topic is the perfect opener to a good classroom discussion on the future of the automobile. After research on the topic, students could build their own compressed-air vehicles. Grade level could determine if the compressed air would be contained in a balloon, an air tank, or something more exotic.

In the real, commercial world, Stephanie Lardon, the executive assistant to Miguel Celades, chief executive officer of Air Car Factories S.A., has informed me that the air car designed by Guy Nègre has hit a speed bump. Her exact words, "because of disagreements concerned with the current commercial policy of Guy Nègre, we have decided to discontinue the representation of MDI Enter-



prises S.A. [Nègre's company]."

Nègre's original design, shown in the video, has compressed air directly pushing the pistons on a small 80-pound engine. The video didn't mention whether the car would have air conditioning. The design actually calls for the use of exhaust air from the car's engine to cool the passenger compartment. It sounds crazy, but you must remember that this car's exhaust is free of pollutants since its fuel is atmospheric compressed air.

To energize air enough to power this vehicle, Nègre is compressing the air to 4,350 lbs. and storing it in specially designed carbon fiber cylinders. You don't break any laws of thermodynamics when you change one form of energy, say electricity, into another form of energy, in this

case, stored compressed air. You also don't get more energy out than you used to perform the compression.

So how environmentally friendly is Nègre's compressed air car? It depends on what power source is used to compress the air. If your electric pump receives its electricity from a coal-fired power plant, the car in the end is not so environmentally friendly. If your power source is solar, wind, or a new regenerative



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energy system, your vehicle is totally green.

Guy Nègre's air car is still a work in progress. If you go to his web site, www.mdi.lu, you will see that he is now considering turning his pure air car into an air-gas hybrid. Such a hybrid, if it is a fuel miser, could change the future direction of the automobile. Please note that the web site is in French, but Google is ready to translate its content into English for you.

Recalling the Facts

1. If a vehicle's exhaust doesn't contain any air contaminants, should the car automatically be labeled environmentally friendly? Why or why not?

2. An air-gasoline engine hybrid would eliminate the battery storage system found on today's gas-electric hybrids. Do you think that an air-hybrid car will soon appear and prove superior to current hybrid technology? Why or why not? ©

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