

Mount Desert Island Living

SHOCKING!

'Heart' transplant performed in garage



By Earl Brechlin

By all accounts, the patient's body was old, creaky and decrepit — her heart lacked the oomph to power her up even the slightest of inclines on the road of life. She was long past her prime, a scant shadow of those days so many decades before when her sensuous curves were the envy of all who tried, and failed, to compete against her Scandinavian charms.

But thanks to a heart transplant performed by Dr. Mark Kandutsch of Bar Harbor, this old girl's got a new lease on life. She gets up and running in the morning with the flick of a switch and without a groan or a complaint. She's still in need of a little more cosmetic work, but other than that she's nearly as good as new; with a bright yellow lightning bolt emblazoned across her backside to boot.

If the neighbors only knew that all those flashing lights and screeching noises on long winter evenings and over weekends in Dr. Kandutsch's garage were evidence of the radical surgery needed to bring a geriatric patient back to life.

Who knew that a man who works all day to heal human patients had the skills needed to transform a compact 1972 Saab sedan from a decaying relic of the Internal Combustion Age into a fully electric vehicle that can run effortlessly for only pennies per mile?

"I love projects. I looked around for something to do and building an electric car seemed like it would be fun," said the soft-spoken doctor. He began back in September when he purchased the Saab from a guy in Bangor. "I always kind of liked those cars. I got a good deal," he said.

The vehicle is ideal for an electric conversion, he noted, as it is light-weight, streamlined, has front-wheel drive and narrow tires that produce less friction with the road than bigger tires would.

Out came the engine. Then it was on to dozens of hours of bodywork. "I had to patch a lot of holes," he said.

Fortunately for backyard tinkers like Dr. Kandutsch, there are numerous Web sites and small companies where people can buy parts for building their own electric cars. Much of the necessary equipment, including 15 golf cart batteries, a converter, gauges, wire and the electric motor itself, Dr. Kandutsch purchased new. When it came time to buy a pump for the hydraulic system that controls the power brakes, he went online and got it off eBay.

Being no stranger to working with metal after building his own 31-foot sailboat out of aluminum, Dr. Kandutsch did most of the work with just a few simple power tools.

"Mostly it was a drill press and a Sawzall," he said.

He admitted that he didn't



ISLANDER PHOTOS BY EARL BRECHLIN

The engine compartment in the car that Mark Kandutsch of Bar Harbor recently converted to run on electricity.

"know all that much about electrical work" but he found a lot of support in magazines published for backyard inventors, and from local electrical experts Dwight Lanpher and Steve Lambert.

The fussiest work, constructing an adapter between the electric motor and the existing transmission in the Saab, required using a metal lathe to machine a round chunk of aluminum to fairly tight tolerances, but Dr. Kandutsch reported "it bolted right on when I was done."

To drive the car, he flips a switch, and steps on the accelerator. The pedal is connected to a rheostat that controls the current to the motor. The transmission shifts with a lever on the steering column. There is no clutch. "Mostly I just drive it in third or fourth gear," he said.

The engine compartment of the vehicle looks like a closet in a nuclear power plant. There are three batteries mounted underneath the

hood. Other banks of batteries are stored in boxes that fill the backseat and the trunk. "They weigh quite a bit," he said. "I had to beef up the suspension."

On the road, the motor makes little noise. When the Saab comes to a full stop, it is unnervingly quiet. "When you get it up to speed it sounds a lot like an electric drill," Dr. Kandutsch said.

No stranger to mechanical systems, Dr. Kandutsch some years ago installed a bank of solar panels to generate electricity in his garage. The array is not powerful enough to charge the car batteries quickly, so he relies on Bangor Hydro Electric Company to "top off" overnight. He figures the cost of operating the car will be only a few cents per mile. Eventually — four or five years down

the road — the batteries will have to be replaced.

"Battery technology is what is holding up the electric car industry," Dr. Kandutsch said. "It seems a breakthrough in batteries is always just around the corner."

In all, it cost about \$5,000 to get the electric car on the road. Compare that to prices of between \$30,000 to \$500,000 for truly road-worthy commercially produced electric cars.

Once Dr. Kandutsch was finished with the electrical conversion, the vehicle had to pass the same inspection as other vehicles before it could be put on the road. It took its first official 5-mile drive from Dr. Kandutsch's home to the office the first week in March. So far he's only dared put 20 miles or so a day on it until he gets a better idea of how much energy the batteries can store. "Right now, without further testing, I wouldn't drive it to Ellsworth because I'm not sure I could make it back."

He also won't use it during bad weather. "The car runs on 136 volts so I don't think it's a good idea to have all kinds of salt and water spraying up from underneath," Dr. Kandutsch said. "It's going to be a summer car."

Dr. Kandutsch credited information available at evmaine.org, a Web site devoted to electrical car conversions in the state, with helping him get the conversion done.

"It was a fun project. It really wasn't that hard to do. It's a lot of fun to drive around." ebrechlin@mdislander.com



Mark Kandutsch of Bar Harbor shows off the 1972 Saab sedan he recently converted to run on electricity. It only costs a few cents per mile to operate.