

# THE CAR— REINVENTED

By Barbara and Bill Schaffer



**I**magine that you are the head of research and development for the world's largest automaker, when the CEO tells you to reinvent the car. That order must have given GM Vice President of Research & Development and Strategic Planning Larry Burns sleepless nights. Where do you start?

We recently drove the latest chapter of the first four years of work, the Chevrolet Sequel concept. On the surface, it looks much like many of the new crossovers introduced recently by other manufacturers. There are no wings or glass canopies; visually the only features that identify the Sequel's innovative technology are large inlets and outlets in the front and rear used to pull in oxygen for the fuel cells and cool the system.

Under the attractive skin, however, lies the most technologically advanced automobile ever built. "General Motors is proving that advanced technology can remove the automobile from the environmental debate and reduce our dependence on petroleum," explains Larry Burns. "Chevy Sequel clearly shows that our vision for the future of the automobile is real and sustainable."

This is the first GM vehicle to integrate a fuel cell propulsion system with advanced technologies like wheel hub motors, brake-by-wire controls, lithium-ion batteries and a lightweight aluminum structure. The fuel is hydrogen and exhaust is water vapor.

Like most concepts, the Sequel interior is clean and simple. To make it easy for people like us to drive, the controls are traditional. The Sequel test vehicle came equipped with two engineers to explain how it works and to otherwise protect the multi-million-dollar concept from auto writers tempted to test quarter-mile acceleration or to see if it will do burnouts.

We expected the Sequel to glide silently over the roads, but instead there was a loud whine as the fuel cell converted hydrogen into electricity to power the electric drive motors. We were told much of the noise would be removed on future models. Engineers tell us this vehicle will accelerate from 0 to 60 mph in about 10 seconds and has a range of about 300 miles. The fuel cell system is also able to start and operate in sub-freezing temperatures and has a life expectancy of about 50,000 miles (very good for a fuel cell system). Specs like that make the Sequel more reality than scientific experiment.

"Sequel fundamentally changes the DNA of today's automobiles...exchanging an internal combustion engine, petroleum and mechanical systems for fuel cell propulsion, hydrogen and electrical system," Burns said. "In Sequel, GM has created a real vehicle that promises to excite customers and lead to long-term, sustainable automotive transportation."

This is just the start, future models will have unequalled traction capabilities on



all surfaces, better torque, shorter stopping distances and the ability to "talk" to other vehicles about traffic and road conditions.

Later the same day we were introduced to the next chapter in the reinvention process, the Chevrolet Equinox Fuel Cell. GM is building more than 100 Equinox Fuel Cell vehicles for consumer use. Labeled "Operation Driveway," the program will place these vehicles in different driving environments in three parts of the country: California, Washington DC and the New York metropolitan area, so engineers can test fuel cell propulsion in real world conditions and use the information to move to the next chapter in the process of reinventing the automobile that GM CEO Rick Wagoner challenged the company to do in 2002. ■

