

SPECIAL ELECTRIC-CAR REPORT (buzz, crackle, whirr)

CAR and DRIVER

JUNE 1981 • \$1.75

164-MPH FERRARI 512 BOXER

Take-your-breath-away red menace from Maranello

AMERICA VS. JAPAN

Buick Regal vs. Toyota Supra in personal-luxury shootout

MERCEDES-BENZ W201

Sneak preview of 1984 pocket battleship from Stuttgart

1983 CORVETTE

Exclusive: Our spies strip the camouflage from the next edition of America's only sports car



ALFA ROMEO GTV6 2.5

Italy's answer to enthusiast prayers

GM Electric Car

There is an electric car in your future, and here it is.



• It isn't every day that General Motors offers us a ride in one of its 1986 cars. Even when we heard that it will just barely break the double-nickel, we jumped at the chance.

They call it the Electrovette (a name there's still plenty of time to change), and it's a combination test-bed and showcase for GM's latest zinc-nickel-oxide batteries. Although the Electrovette isn't the General's first electric prototype—there were the Corvair-based Electrovaurs and an Electrovan in the mid-Sixties as well as the original Electrovette in 1977, and currently Ma Bell has a small fleet of GMC electric vans—it is the first to be built with eventual mass production in mind.

The current Electrovette, with its truncated 86.2-inch wheelbase, looks like a Chevette that someone has punched from behind. Under the odd-looking body (for packaging reasons and because it was "thrown together" mostly as a static display) lives a mish-mash of mechanicals: Chevette rack-and-pinion steering, leaf-spring rear suspension and brakes, minus the drive components; and in front, X-car MacPherson struts and disc brakes.

The 18-hp, 7000-rpm electric motor

drives through a 7.55:1 single-speed transmission and modified X-car half-shafts. A solid-state DC "chopper" (designed by GM Research Labs) controls the car's speed by rapidly interrupting the drive-motor current, letting through only an amount proportional to the throttle position. In simplified terms, it works something like the electronic voltage regulator in an ordinary car's charging system.

Inside, the Electrovette looks much like your basic Chevette except for a couple of strange controls, a state-of-charge meter in place of the fuel gauge, and a battery compartment where the rear seat used to be. On the right side of the steering column, opposite the turn-signal lever, is a similar lever marked "R-N-D." Between the seats is an L-shaped handle that is both a "go" switch and a parking brake.

To drive, you first turn on the "ignition" key . . . and nothing happens. Then you pull the L-lever back, out of the park position, which closes the drive-motor circuit. At this point you hear the distant hum of a small fan that ventilates the battery compartment. Now, select "D" or "R" on the column lever, and step on the watts pedal.

Acceleration is surprisingly sprightly, at least during the 7.5 seconds it takes to reach 30 mph. After that, gathering speed becomes more and more of a strain up to the 60-mph top end. There's a turbinelike whine, like a well-muffled Hoover, instead of the usual intake and mechanical sounds; otherwise there's almost dead silence at cruising speeds. Throttle control, coordinated by an on-board computer, is amazingly precise even when making minute adjustments for parallel parking.

Driving the Electrovette, surprisingly enough, is not at all awkward and takes little getting used to, except for the eerie lack of engine braking when you lift off the throttle—it's like coasting in neutral. Despite the car's 3450-pound heft, the steering is as light and precise as any production Chevette's. Stopping, though, takes considerable effort because the car lacks a brake booster and the regenerative braking found on some prototype electrics. We were discouraged from trying any high-g handling evaluation, but in everyday cornering the Electrovette feels just like a heavy fwd econobox.

When GM's EV reached the project-center plateau, it attained the same

status as any other serious new-car program. An awesome assortment of divisions and corporate staffs is involved, all pulling together to bring both a practical electric car and a commercial vehicle to market as soon as they can, possibly by late 1985.

GM's first marketable electric car will look a lot more like the Design Staff's wedgy clay model than the stuffy little Electrovette we drove. It will be a ground-up EV design (not a conversion), a little fwd commuter with good comfort for two and cargo space for four or five grocery bags. It will weigh about a half-ton less than the Electrovette thanks to aluminum body panels, plastic side and rear windows, less massive bumpers, and a liberal use of high-tech plastics, and will have a drag coefficient in the low .30s to help it part the air with minimum wasted power.

To aid replacement, the batteries will be housed in a removable tray inside the central tunnel that forms the chassis's structural backbone. Electrical accessories (windshield wipers, blower motors, etc.) will be handled by an auxiliary battery pack (recharged along with the pro-

GM ELECTROVETTE

Vehicle type: front-engine, front-wheel-drive, 2-passenger, 3-door sedan

Motor: Delco Products DC shunt type with separate armature and field excitation

Power rating 18 bhp
 Redline 7000 rpm
 Battery pack 150 Delco-Remy nickel-zinc cells, 240 volts
 Auxiliary power 8 Delco-Remy nickel-zinc cells, 12.8 volts
 Battery weight 780 lbs
 Speed control GM Research Labs solid state
 Wheelbase 86.2 in
 Length 150.9 in
 Curb weight 3450 lbs

Performance (manufacturer's goals):

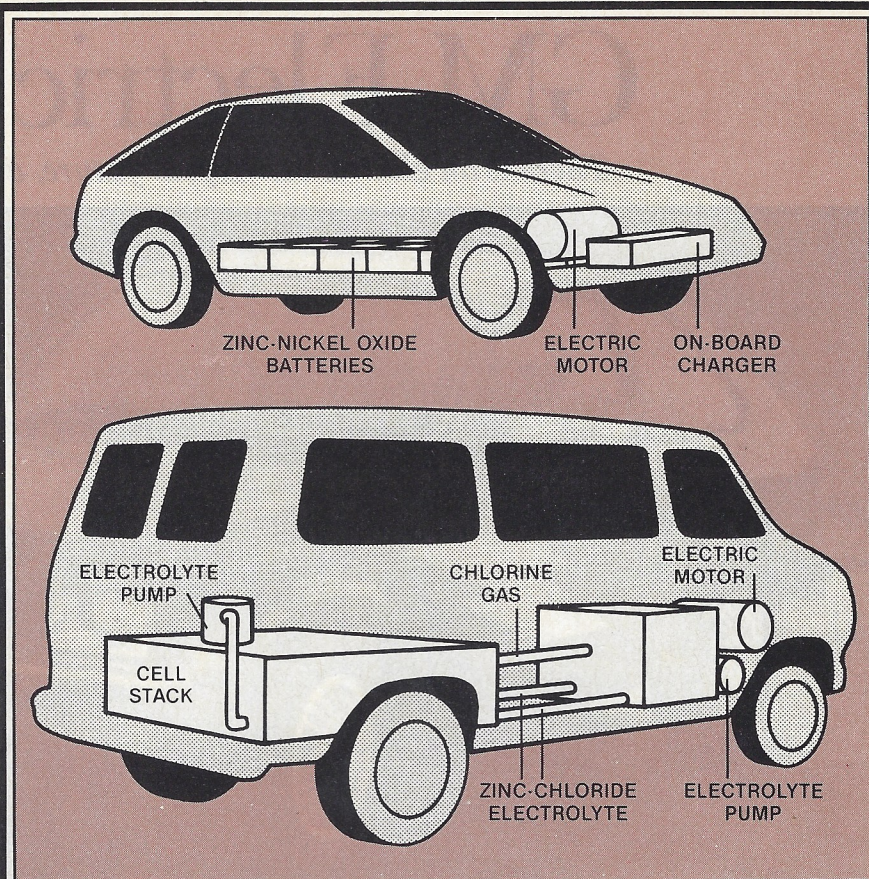
Acceleration, zero to 30 mph 7.5 sec
 Top speed 60 mph
 Range, city 60 miles
 Range, highway 85 miles
 Battery life 30,000 miles

pulsion pack), and heating and AC energy will come from a small amount of on-board liquid or gaseous fuel. Current goals are 60-mph top speed, 80-mile range, 30,000-mile battery life, and purchase and—most difficult of all—operating costs competitive with those of conventional small cars.

It's a tall order, but GM is already well on the way to pulling it off. Whether the buyers will be there, however, is a question GM is still struggling to answer.

—Gary Witzenburg

Witzenburg is a freelance automotive journalist who frequently contributes to Playboy, Popular Mechanics, and United Airlines' Mainliner.

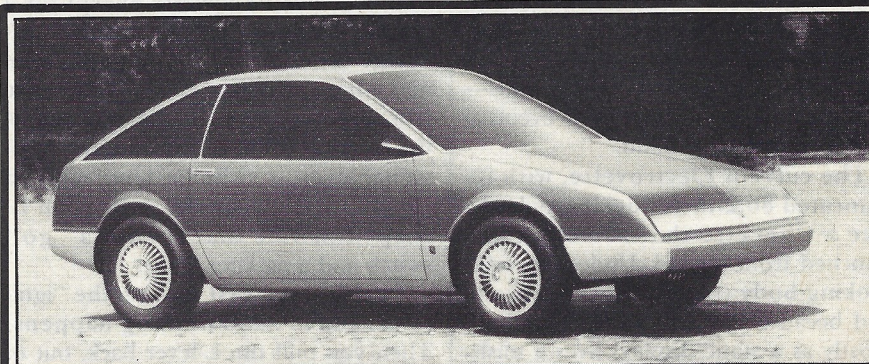


WILLIAM LABEDZ

Most Likely to Succeed

GM's nickel-zinc battery and Gulf & Western's zinc-chlorine storage system will probably both see production in the near term. The GM battery (top) is a more powerful version of conventional automotive storage cells. GM's EV will use a removable pack of nickel-zinc batteries replenished by an on-board AC-to-DC charger. The G&W system (bottom) is more like an on-board power station.

Pumps circulate a slushy electrolyte (kept cool by an on-board refrigeration unit) from the battery stack and back again. The G&W system must be recharged by a stationary charger. Because it is both powerful and bulky, it will likely find its way into light-duty electric trucks. GM favors its more compact, but very expensive, system for automobiles.



GM

What a Body

GM's first electric car will be anything but a sardine can on wheels, if this early design study is any indication. Careful attention will be paid to aerodynamics, and power-sapping weight will be kept down with aluminum bodywork and plastic side windows.