Newsweek

In The Slow Lane

Plug-and-play electric cars for urban drivers are pushing the envelope on green. Just don't try gunning them—yet.

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For Linda and Michael Pearce, the barrier to totally green driving was, literally, a hill. The Seattle couple had long eyed an electric car for ecofriendly jaunts around town, but required one that could comfortably reach their home, set on top of a moderate 3.2km slope. Until a few months ago, none of the pint-size vehicles could manage that at speeds faster than a crawl. Then, several manufacturers came to market with more powerful drive systems to replace the slower, weaker motors that have powered non-automotive vehicles from golf carts to forklifts for decades. Now the Pearces are weighing their options. He favors the Miles, a four-door import from China; she, a diminutive Canadian two-seater called the ZENN (for "zero emissions, no noise"). "I like the one that can haul stuff," says Michael. "She thinks the ZENN is cute."

It's the first time there's been as much momentum around plug-in vehicles since General Motors built—then crushed—a test fleet of electrical vehicles in the 1990s. Back then, there was plenty of hype around zero-emissions automobiles; this time around, manufacturers have been, as they say in

business, "managing expectations." Under the radar, a selection of zero-emissions cars has crept onto global markets over the past few years thanks to entrepreneurial start-ups that constitute the industry's green underground. Sales so far are tiny—only in the thousands—but mass-market production will begin this year. Billed as anti-muscle rides for urban drivers, their creations eschew expressways for traffic snarls and deliver energy efficiency that makes Toyota's Prius hybrid look like a Hummer.

These slow rides can't go far or fast, to be sure. But their proponents insist that's mostly a psychological barrier, given that city drivers do neither very often. Whereas internal-combustion engines perform worst in short-haul, stop-and-go driving, EVs excel at it. Indeed, today's plug-ins can accelerate off the line like gas-powered cars and stay with them in urban traffic, offering most of the same basic amenities. And they cost just a tenth of what the average car on the road does to operate. "These cars deliver what people are looking for in cities: mobility, ease of driving and low cost," says Chetan Maini, deputy chairman of Reva Electric Car Co., the world's leading electric carmaker, based in Bangalore, India. "They are not designed to go from Los Angeles to San Francisco."

But they go very well within either metropolis, or in Tokyo, London or Mumbai, for that matter. In Europe they're known as medium-speed vehicles; in North America, they're classified as neighborhood electric vehicles—a category of street-legal machines originally created in the 1990s to allow golf carts to operate within gated communities. The best of them now achieve top speeds of 64kph, have ranges up to 64km per battery charge and get the equivalent of 106km per liter of gas. Their biggest weakness—and proponents insist it's a red herring—is that EVs aren't subject to standard crash tests and lack modern safety features like crumple zones and airbags. Manufacturers argue that city rides shouldn't be held to the same standard as vehicles built for autobahns, and that with safety glass and seat belts, they are safe cars for the speeds at which they currently operate.

If you haven't heard of EVs yet, join the club. "This is not the mainstream automotive industry," says Ian Clifford, founder and CEO of the Toronto-based ZENN Motor Co. "The numbers we use to gauge success are very different from the ones General Motors would use." Yet in an era defined by $100-per-barrel oil and carbon-footprint-conscious consumers, those numbers are worth watching. EV makers will push their vehicles beyond select test markets in 2008. Reva, for example, has built about 2,500 vehicles in the four years since it began production, but by midyear will have

expanded its annual capacity to 30,000 with a new facility in Bangalore. Likewise, two California-based start-ups that manufacture in China—Miles and a rival called ZAP (for "zero air pollution")—are both expanding fast and ZENN plans "a significant ramp-up" in 2008, says Clifford.

Each maker is eying a market that, though still unproved, could be vast. On the cost side, EVs are expected to get significantly cheaper once mass production ensues; industry leaders say the average price could fall from today's $15,000 or so to below $10,000, or roughly a third the price of the plug-in hybrids major automakers are forecast to launch after 2010. They will be able to go highway speeds and run forever because they will be plug-in hybrids, with internal combustion engines aboard that will take on electricity and use their gas engines when electricity runs low to generate more electricity. These cars will be hybrids, not battery-only EVs. At that discount, "projected sales for the [medium-speed vehicle] segment are something like 500,000 vehicles per year globally," says Danny Epp, general manager for Dynasty Electric Car Corp. in Vancouver.

Today's plug-and-play EVs range from glorified golf carts to "real" sedans with all the standard amenities. Yet unlike the green concept cars that generate buzz at motor shows (one being the 320kph electric supercar called Testla), they rely on off-the-shelf technologies incorporated into vehicles designed for quick local trips. Their target consumers already own conventional cars and therefore don't mind the standard EV limitations, especially when fuel costs and emissions factor into purchasing decisions. "Our challenge from the outset was to reduce the cost of green motoring with low-cost, entry-level products," says Keith Johnson, founder of the largest zero-emissions auto distributor on the planet today, London's GoinGreen. "We're selling an idea, not just a brand."

Technology is moving in the EVs' favor. Just as the shift to AC motors last year made today's plug-in cars true hill-climbers, improvement in energy management and storage could push up vehicle speeds and ranges. Though comparatively costly, lithium-ion batteries cut recharge times to three to four hours from the standard eight or nine hours needed to juice conventional lead-acid battery packs, and they deliver ranges of 113 to 160km. Maini expects today's medium-speed vehicles to evolve into cars capable of traveling 160-plus kilometers per charge and attaining speeds of 97kph for occasional freeway use. "That's both doable and cost-effective," he says, "and the cars we build will slowly trend toward that."

As London's emergence as the world's most EV-friendly city illustrates, the popularity of plug-ins owes much to public policy. The city's market was born when the government imposed a $16-per-day congestion charge on drivers traveling into the terminally clogged downtown area, but exempted zero-emissions vehicles. In response, GoinGreen cut a deal with Reva to import its prototype minicar. Branded the G-Wiz, it now sells for $18,000 in London but saves a daily city commuter some $3,000 per year in congestion charges, taxes, insurance and fuel costs. As a further inducement, several London boroughs have offered EV drivers free or discounted parking and installed plug-in recharging outlets commuters can use during the day. "This shows that if the incentive is big enough, people will change their behavior," says Ben Lane, a green-vehicle analyst at Ecolane Ltd. in London.

The British capital is a microcosm of what could happen globally. GoinGreen—which markets its vehicles directly to Londoners over the Internet—has now sold enough of them (more that a thousand) to offer after-sales services akin to those expected from traditional automakers. And the G-Wiz's success has attracted rivals to the market. One of them, a start-up called NICE (short for "no internal-combustion engine") launched a French-built commuter EV and two plug-in trucks last year. Projections suggest that as many as 10,000 electric cars could be plying London's streets by 2010. "The lesson from London is that it has to be a combo of private investment and public policy," says Johnson.

Elsewhere, however, policies are a hodgepodge. In Continental Europe, rules vary country to country. The use of electric bikes and scooters in China has exploded since 1999 from almost nothing to more than 15 million units sold in 2007. EV proponents cite this as an example of the huge potential market for cars. In Canada, home to two EV makers, every province but British Columbia still bans them from public roadways. In the United States, five states prohibit them outright, and all but two of the rest (Washington and Montana) limit their top speeds to 40kph, which makes them a much harder sell outside gated communities.

But change is in the wind. California, a bellwether state for automotives and much else, could soon launch a pilot program that would permit as many as 15 EV manufacturers to test-launch thousands of cars a year through 2012. The study is the brainchild of the Medium Speed Vehicles Working Group, whose membership includes EV dealers, environmentalists and local officials in places like Santa Monica and Santa Barbara. "Our goal is to get a large-scale, real-life test for zero-emissions vehicles underway," says group

coordinator Russell Sydney. "We are confident that an advanced 35mph [56kph] electric car would be the safest thing on the road."

Steve Mayeda, head of sales and marketing at Seattle's largest EV dealer, MC Electric, knows what a regulatory opening can bring. Last August, the State of Washington approved a bill he championed that raised the legal speed of plug-in cars to 56kph. His business has since taken off as shoppers like Linda and Michael Pearce arrive in greater numbers. In December alone, the dealership sold 30 cars. "It was a Christmas thing," says Mayeda, confident that the rise of the electric city car is at hand. "It's happening, and we feel good about it." So will, no doubt, all those in favor of taking life slower, and greener.

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