

## Car of the Future?

-- General Motors has revealed a first look at HyWire, the first drivable vehicle that combines a hydrogen fuel cell with by-wire technology. --

### **BACKGROUND:**

General Motors is looking at introducing two world firsts with their latest prototype -- an environmentally-friendly hydrogen fueled car that allows drivers to change the chassis design according to their mood.

The HyWire, named for its combination of hydrogen and drive-by-wire technology, is an alternative to gasoline or diesel fuel. And because just one wire connects the chassis, which contains all the electrical controls, to the car body, substitute body designs can be swapped whenever the driver feels like a change.

Some may have concerns because the element hydrogen is very combustible (remember the Hindenburg), but Chris Borroni-Bird, GM HyWire project director, alleviates some worry by explaining that "Although hydrogen is explosive, it is safer than gasoline or diesel fuel for the simple reason that if the tank should leak hydrogen, it's going to want to go very rapidly into the atmosphere. It's so much lighter than air. The beauty of hydrogen is that it can be made from electricity and water and electricity can be made from natural gas or renewable energies like solar cells.

The drive-by-wire technology, used in most aircraft, uses electronics to operate the vehicle, instead of cables, gears and hydraulics so there is no engine, instrument panel or foot pedals above the car's floor. Drivers will use a videogame-style controller, called the X-drive, to operate the vehicle. The driver can accelerate by twisting a motorbike-style handgrip with either the right or left hand and brake by squeezing, which is

an intuitive thing to do. All of the touring sedan's propulsion and control systems are contained within an 11-inch-thick skateboard-like chassis, maximizing the interior space for five occupants and their cargo. There is no engine to see over, no pedals to operate - merely the X-drive.

The X-drive, which allows steering, braking and other vehicle systems to be controlled electronically rather than mechanically, provides greater freedom for the driver. Drivers now have the option to brake and accelerate with either the right or left hand. The driver accelerates by gently twisting either the right or left handgrip, and brakes by squeezing the brake actuator also located on the handgrips. The handgrips glide up and down for steering. The X-drive shuttles easily from side-to-side on a horizontal bar that stretches across the full width of the vehicle.

And if you get tired of the way the car looks, you can change it anytime you want because everything that propels the vehicle and controls the way it behaves is inside the chassis. A single wire connects the body of the car and the chassis, so the shell is easily removed.

GM has more than 30 patents in progress covering business models, technologies and manufacturing processes related to the HyWire concept. HyWire is not scheduled for release until 2010.

### **STORY:**

Ford widened its appeal in Europe with a sports car and convertible. DaimlerChrysler set new levels for luxury with a \$310,000 Maybach. And drivers won't

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find any brake or gas pedals on General Motor's new prototype HyWire everything's electronic.

The Paris Auto Show opened on Thursday with plenty of dazzle and drama as hundreds of manufacturers presented their newest models, ranging from basics like Mazda's latest hatchback to concept cars that may never see the road.

For scientific wizardry, it was hard to beat GM's HyWire, which the company claims is the first drivable vehicle that combines a hydrogen fuel cell with by-wire technology, which replaces steering, brake and acceleration mechanisms with electronic controls. GM was eager to put itself on the technological cutting edge. Company officials said they developed the prototype less than a year after unveiling the AUTOnomy concept vehicle at the Detroit Auto Show.

Larry Burns, GM vice president in charge of development and planning, said the company was spending hundreds of millions of dollars to create "clean, efficient, very compelling and potentially more affordable vehicles."

HyWire's fuel cell means it produces no exhaust, only water. And with all the electronics fit into the chassis and no engine in front of the driver, there is plenty of storage space.

"It holds the promise of eliminating the automobile from the environmental equation," Burns told reporters. He said GM hoped to start using some of the technology for marketable cars by 2010.

Ford, meanwhile, aimed its presentation at widening its product line in Europe with sportier models: The 3-door Fiesta and two new incarnations of its Ka, which debuted in 1996, the SportKa and the StreetKa, its first convertible in Europe.

Mazda as well was aiming for the middle of the market on Thursday, touting the Mazda 2, which replaces the Demo. Bigger

than a hatchback but smaller than a van, the car seats five adults comfortably without taking up much space on the road.

And there was plenty of luxury available. Jaguar debuted its latest XJ saloon the seventh generation since the series was begun in 1968. With greater use of aluminum and magnesium, the body is 40 percent lighter than a steel shell.

Then there's the DaimlerChrysler's Maybach a comeback of the old Maybach luxury vehicles of the 1920s and 30s. On Thursday, the Maybach 57 appeared at its first auto show, joining the Maybach 62 which debuted earlier this year.

Extras abound: 10 air bags, refrigerator and TV reception in the back seat, a dust and pollen filter, a DVD player, heated seats, even a pollution sensor to tell you when to roll up the windows on the smog.

All that luxury doesn't come cheap. The Maybach 57 retails for \$310,000 before taxes Ñ a bargain compared to the Maybach 62, which costs an extra \$50,000.

### **SIGNIFICANCE:**

As concern for the environment is ever increasing, the GM HyWire may be the key that ignites the automobile industry into developing cars that are more environmentally friendly, and may in fact develop cars that, like the HyWire, are environmentally pure.

The progression toward a "clean" car has been in the works for over a decade, with the latest development on the market being the "hybrid" cars that combine gasoline-electric technology that potentially lets you travel up to 650 miles on a single tank of gas.

In addition to the environmental factor, the GM HyWire, with its digital design and changeable chassis, will change the way that people (the 1.4 million visitors and 8,500 journalists who attended the Paris Auto Show might agree) think about cars in general.

# 10 Year Anniversary of Critical Mass

-- San Francisco celebrates 10 years of bike awareness. --

## **BACKGROUND:**

The first Critical Mass ride was in September 1992 in San Francisco. There were 48 people. The ride increased in size by about 75% each month so that by the time 1993 came about, Critical Mass had almost 500 riders and was becoming well known among bicyclers in the city--although city officials still hadn't registered its existence. A couple months later, people in other cities started noticing and began other Masses.

The name "Critical Mass" is taken from Ted White's documentary film about bicycling, "Return of the Scorcher". Part of the film shows this phenomenon: In China, cyclists often cannot cross intersections because there is automobile cross-traffic and no traffic lights. Slowly, more and more cyclists amass waiting to cross the road, and when there is a sufficient number -- a critical mass -- they are able to all move together with the force of their numbers to make cross traffic yield while they cross the road.

Critical Mass has a very different flavor from city to city; there's a big variety in size, respect of traffic laws (or lack thereof), interaction with motorists, and intervention by police.

## **STORY:**

With howls and horn-blowing, bicycle enthusiasts were gearing up to manhandle city thoroughfares. Friday night marked the 10th anniversary of Critical Mass, the cycling movement aimed at reshuffling the order of the streets. Starting with 48 riders in San Francisco, it has grown to more than 1,000 each month and has spread to 300 cities around the world. Where they are not given

one, Critical Mass uses strength in numbers on the last Friday evening of every month, often halting traffic and setting drivers' nerves aflame to lobby for "a place to ride."

On Friday it was more of the same, as the armada of riders -- several times larger than the usual crowd -- brought traffic to a halt along a circuitous path that led past City Hall and up Market Street. The anniversary ride added to the traffic fears of incoming San Francisco Giants baseball fans (who, by the way, recently clinched their place in the playoffs with a win over Houston), many of whom chose ferries or BART to avoid the gridlock.

A throng of riders crowded into Justin Herman Plaza at the bottom of Market -- accountants and designers, bike messengers, activists, a unicyclist in a pink hooded leotard. They gathered with flowers in their hair or cell phones at their ears, forming a massive group of wheels, handlebars and helmets.

It has been five years since a summer ride turned chaotic, with about 100 people arrested after a group of 5,000 disrupted traffic for hours, some clashed with police and others complained of being punched, swerved into or spat upon.

The city held its own auto-avoidance celebration earlier in the day, shutting off a five-block stretch of Montgomery Street for a rare display of midday frivolity through the heart of the financial district. Surprised downtown workers wandered around stilt-walkers, unicyclists, an Elvis impersonator on roller skates and motorless vehicles dolled up in pink fur. People picnicked squarely in the middle of the street, staking proud claim to the asphalt, if only for one cool day.

The city-run Car Free Day, modeled after efforts in other cities, was the first of its kind for San Francisco. A few people sniffed at the timing, landing on the same day as the Critical Mass anniversary ride.

**SIGNIFICANCE:**

Before Critical Mass emerged in 1992, bicyclists were nearly invisible. On the streets and in the political landscape, they were less than a minority. The ride has helped people question the rules set forth by an auto-dominated society.

While some activism and confrontation remain a small part of the ride, Critical Mass provides an opportunity for average people to gather surrounded by other cyclists on the streets that otherwise threaten them. It is an expression of how many people think differently from mainstream society. Critical Mass originally intended to bring people together, at the same time and place, to ride home. That it grew and transplanted to cities all over the world says something about the collective frustration people feel about the streets.

But with new bike lanes, bike routes, bike parking and public promotion of the bicycle as a practical mode of transportation, it might seem that Critical Mass has served its purpose. The fact remains that only a small part of the bike plan for San Francisco was implemented, and many proposed bike lanes were rejected by merchants and City Hall. Pedestrians and cyclists continue to be injured and killed by an increasing number of angry and careless drivers. Bicycles are still an afterthought when new buildings and transportation plans are proposed.

In the end, the ride is likely to continue as long as people need a place to express frustration about invisibility and, conversely, to celebrate human-scale community.

The question is whether or not the demonstrations do more harm than good by frustrating drivers who are already annoyed at rush hour traffic. Though interest in Critical Mass is growing, bike advocates have nowhere near the numbers as car advocates. If the bike advocates alienate the car advocates, nothing will be accomplished. If

the bike advocates annoy authority too much by disrupting traffic, nothing will be accomplished. Fortunately or unfortunately, we do live in an automobile-dominated society that will probably stay that way due to economical and time concerns no matter how much we wish for another way.

**For more information, please visit:**

**<http://CriticalMassHub.com/>**

**SPORTS:**

The Hall christens a new \$36 million home this weekend, starting with the enshrinement of the Class of 2002: Johnson, Petrovic, the Globetrotters, Philadelphia 76ers coach Larry Brown, North Carolina State women's coach Kay Yow and Arizona coach Lute Olson.

All of the inductees had to pick a current Hall of Famer to present him, and Johnson chose Bird a nod to recognize the impact they had on each other's careers, making each other better and driving the NBA to unprecedented heights. The two have become friends since their playing days, when Johnson led Michigan State to the 1979 NCAA title by beating Bird's Indiana State, and the two met three times in the NBA Finals.

Johnson did his job at every level, winning championships in high school, college, the Olympics and NBA Ñ five, in fact. And he did it from every part of the court, a 6-foot-9 point (206-centimeter) guard who redefined the position and played the others, too, when needed.

But it was the rivalry with Bird and the Boston Celtics that helped define Johnson and, both said, made them the players that they were.

**THIS WEEK IN HISTORY:**

September 30, 1938

**MUNICH PACT  
SIGNED:**

British and French prime ministers Neville Chamberlain and Édouard Daladier sign the Munich Pact with Nazi leader Adolf Hitler. The agreement averted the outbreak of war but gave Czechoslovakia away to German conquest.

In the spring of 1938, Hitler began openly to support the demands of German-speakers living in the Sudeten region of Czechoslovakia for closer ties with Germany. Hitler had recently annexed Austria into Germany, and the conquest of Czechoslovakia was the next step in his plan of creating a "greater Germany." The Czechoslovak government hoped that Britain and France would come to its assistance in the event of German invasion, but British Prime Minister Chamberlain was intent on averting war. He made two trips to Germany in September and offered Hitler favorable agreements, but the Fuhrer kept upping his demands.

On Sep 22, Hitler demanded the immediate cession of the Sudetenland to Germany and the evacuation of the Czechoslovak population by the end of the month. The next day, Czechoslovakia ordered troop mobilization. War seemed imminent, and France began a partial mobilization on Sep 24. Chamberlain and French Prime Minister Daladier, unprepared for the outbreak of hostilities, they gave in to Hitler's demands on Sep 30.

Daladier abhorred the Munich Pact's appeasement of the Nazis, but Chamberlain was elated and even stayed behind in Munich to sign a single-page document with Hitler that he believed assured the future of Anglo-German peace. Later that day, Chamberlain flew home to Britain, where he addressed a

jubilant crowd in London and praised the Munich Pact for bringing "peace with honor" and "peace in our time." The next day, Germany annexed the Sudetenland, and the Czechoslovak government chose submission over destruction by the German Wehrmacht.

**ENTERTAINMENT:****Twiggy Returns to the  
Catwalk**

Twiggy, the skinny British model who came to epitomize the 1960s, returned to the catwalk on Saturday, saying she felt short and fat next to the new generation of models.

"I was a baby last time I did this," she told reporters, wearing a silver dress she paraded for Roman fashion house Gattinoni more than 30 years after moving on from modeling to pursue a singing and acting career. Twiggy confided she was now about 20 pounds heavier than her 1966 weight of a mere 96 pounds.

Gattinoni designer Guillermo Mattiolo said he was awe-struck to see the idol he had gazed at in fashion history books arrive to model his dress but added the doe-eyed blonde model had calmed nerves backstage. "She was calming down the younger models and smoothing their hair, told them to stay off drugs and think about their future and having a family.

Now 53, Twiggy has made a name for herself on stage, screen and in song and has launched her own range of aromatherapy creams. But her "Face of 1966" title still colors the way people think of her. "It used to bother me because it detracted from the other things I was doing but then I thought 'Well, just run with it'. And now, because of my past I get to do great things like this," said the former Vogue cover girl.

"The 1960s were great, they allowed many things to start but I've been in much better shape emotionally over the last 15 to 20

years -- happily married, great kids," she said. "You don't have to be perfect to be beautiful. Beauty comes from the inside, it shines out of your eyes," she said.

#### WHO YOU NEED TO KNOW:

## Lesley Hornby

### (Twiggy)

Twiggy is still the person most synonymous with "swingin' London" and fab Carnaby Street fashions, ninety-pound Twiggy was the most famous model during the '60s.

She was born in '49, so spent most of the decade as a teen, which makes her global success even more remarkable. Her exotic birthplace: Neasden, a suburb of London, England. Her name at birth is Lesley Hornby (sometimes seen as Leslie) and as a young girl she was called Sticks.

Twiggy was discovered when she was in her early teens while working at a hairdresser's salon. She was given a Vidal Sassoon haircut, put into mod clothes, and her career took off. That career really was only from 1966-'69. During that era she was on the cover of Vogue four times. So popular was she, she made records (the single "When I Think of You"/"Over and Over" in '67), and she wrote a book (Twiggy: How I Probably Just Came Along on a White Rabbit at the Right Time and Met the Smile on the Face of the Tiger). Then, all of nineteen, she retired at the end of the decade to devote herself to her acting career.

As the first teen to become a supermodel, her impact was instant and international. She's one of the most recognized names in the fashion world, though her prime years came three decades ago.

#### FEATURE:

## 'Heat Shrinking' Material May Prove Blessing

One of the world's most unusual chemical compounds may prove a godsend for dentists, chefs and even Formula One drivers as it defies the normal laws of physics with a rare ability to shrink, not expand, when heated. Nestling in the middle of the periodic table, zirconium may not be a household name, but it has been known since ancient times by older names: jargon, jacinth and hyacinth, some mentioned in the Bible.

But more recently, one of the element's compounds has amazed scientists with its weird behavior and variety of potential commercial uses. Its name is zirconium tungstate and it could make many everyday annoyances a thing of the past.

Wild temperature swings can crack a plate as easily as dropping it on a hard kitchen floor. Also, one of the main causes of broken fillings is thought to be thermal expansion and contraction as teeth get routinely exposed to temperatures ranging from ice cream to piping hot coffee. But that may change with the exploitation of non-toxic zirconium tungstate's main feature: a tendency to shrink, uniformly, when heat is applied.}

Schoolchildren learn at an early age that solids expand when they are heated and contract when cooled, like wooden doors that are more difficult to open in the summer due to swelling. But a handful of solids violate this supposedly inviolable rule and contract when heat is applied.

One of world's few known "heat shrinking" compounds, zirconium tungstate demonstrates its strange behavior over an impressively wide temperature range, from

near absolute zero (-273 degrees Celsius) up to a red-hot +777 degrees. Water also shrinks a little as it is heated, but only from freezing point to just above freezing point. Although several materials exhibit this unusual property, zirconium tungstate is the only one known so far to show the behavior at a constant rate and at room temperature. Unlike the other compounds, it also shrinks equally in all directions.

The possibilities for commercial applications appear huge. Scientists say the new material may help overcome serious problems in electronics, metallurgy and ceramics, and eliminate distortions in optical applications such as telescopes and laser devices where very low thermal expansion is needed so that precise focusing is not lost with temperature fluctuations.

Another possible use might be to improve performance of the high-precision engines used in Formula One racing cars by compensating for heat-induced changes in size and shape. With 10 times the horsepower of a normal road car, the complex Formula One engines have around 900 moving parts and must operate at very high temperatures -- thus rendering them liable to over-heating and distortion, leading to metal fatigue.

Silicon chips, the backbone of modern electronic circuitry, are another target for improvement, as they have been known to "burn out" and self-destruct because of heat generated during use. At present, the heat problem is worsening as smaller and smaller chips are developed and circuits get more densely packed. If the chips are mounted on material that cannot match the expansion, the silicon can crack and peel off its base. Zirconium tungstate could guard against this, as manufacturers blend it with other materials into circuit boards to reduce the expansion of the new compound created until it matches that of silicon.

*Quote of the Week:*

Great estates may venture more  
But little boats should keep near shore.  
-Benjamin Franklin  
*Poor Richard's Almanac*

*Fact of the Week:*

There are 6,500 windows in the Empire  
State Building.

*Word of the Week:*

*Fuhrer* n. Ger. leader, as in Adolf Hitler.

**Thank You for  
Reading  
And Have a Great  
Week!**