Electric Car Articles

November 2, 2012, *11:57 am*[19 Comments](http://wheels.blogs.nytimes.com/2012/11/02/mystery-at-port-newark-why-did-17-plug-in-cars-burn/#postComment)

**Mystery at Port Newark: Why Did 17 Plug-In Cars Burn?**

*By* [*JOSIE GARTHWAITE*](http://wheels.blogs.nytimes.com/author/josie-garthwaite/)

Amid all the damage left in [Hurricane Sandy](http://topics.nytimes.com/top/reference/timestopics/subjects/h/hurricanes_and_tropical_storms/index.html?inline=nyt-classifier)’s wake is an automotive whodunit, or rather, what-dunit? What caused more than a million dollars-worth of plug-in hybrid vehicles, including 16 Fisker Karma luxury sedans, to catch fire Monday night at Port Newark?

Fisker, based in Anaheim, Calif., has had problems with vehicle fires in the past, including one incident this year that prompted the recall of more than 2,000 Karmas to replace a faulty cooling fan.

But the circumstances during the big storm were clearly unusual, raising the question of whether this latest incident is a sign of design flaws, of possible risks associated with plug-in vehicles generally or simply a result of the abuses wrought by extremely rare weather conditions — or some combination of the three.

In a separate incident during the storm, three [Toyota Prius](http://autos.nytimes.com/2010/Toyota/Prius/286/3326/310054/researchOverview.aspx?inline=nyt-classifier) hybrids at Port Newark also were damaged by fire. “One Prius out and out burned, the others just kind of smoldered and got really hot,” Cindy Knight, a Toyota spokeswoman, said in a telephone interview on Thursday. The smoldering cars included a plug-in hybrid Prius and a conventional hybrid Prius. The car that burned was a plug-in. That’s three cars out of the 4,000 Toyotas that were at Port Newark during the storm, including more than 2,128 plug-in or hybrid models. According to Ms. Knight, the fire “likely started because saltwater got into the electrical system.”

“We can’t be certain exactly what happened at the port,” Russell Datz, a Fisker spokesman, said in a telephone interview. “But we think being submerged in 13 feet of saltwater had something to do with it.” The company said the cars were not charging at the time of the fire and there were no injuries.

Based on photographs of the scene obtained by the blog Jalopnik, Fisker’s cars were parked fairly close together, so whatever the initial cause, a fire in one car could quickly spread to others. The cars are made of aluminum, which has a lower melting point than steel, and experts said this would likely contribute to the destruction seen in the photographs. And for any modern cars loaded with electronic components, exposure to saltwater can be a problem because it is highly corrosive and conductive.

“Picture a charged AA battery,” suggested Daniel Abraham, a [lithium](http://topics.nytimes.com/top/reference/timestopics/subjects/l/lithium_metal/index.html?inline=nyt-classifier)-ion battery expert and chemical scientist at Argonne National Laboratory. “If you connect the positive and negative terminals with a wire, it will short the battery and generate tremendous heat in the process.”

Seawater can act like that wire. “The conductivity of saltwater is much, much higher than that of freshwater because of all the salt,” Mr. Abraham said. Salts dissolved in water break into positively and negatively charged ions, which then act as conductors. So if seawater connects both the positive and negative electrical terminals of a battery, it will tend to short.

“These were definitely extraordinary circumstances,” Ms. Knight said. “Once the salt gets in there, it’s ready to do damage.” Corrosion from the salt can damage wiring, for example, and the harness that holds the wiring, elevating the risk for fire, she said.

“This is a very large facility that inspects the vehicles, installs any accessories,” Ms. Knight said. “There’s seaweed everywhere, all kinds of stuff that came floating in.”

Although lithium catches fire in water, this volatile reaction would almost certainly not be the culprit here because the lithium is sealed inside the Karma’s battery cells, a transportation research engineer who tests plug-in vehicles said in an interview Thursday. “The fact that these cars have big batteries in them may or may not have contributed to the issue. Any electrical system can short and cause a fire – it doesn’t need a high-voltage battery pack for that to happen.” He spoke on the condition of anonymity because his employer does not allow members of his team to be named in the media.

The Port Authority of New York and New Jersey did not respond to questions about the fires.

October 29, 2012, *3:54 pm*[8 Comments](http://wheels.blogs.nytimes.com/2012/10/29/hybrids-and-electric-vehicles-do-well-in-reliability-survey/#postComment)

**Hybrids and Electric Vehicles Do Well in Reliability Survey**

*By* [*CHERYL JENSEN*](http://wheels.blogs.nytimes.com/author/cheryl-jensen/)

Toyota Motor Sales The Toyota Prius V was above average in predicted reliability.

Hybrid vehicles, and those powered by electricity in one form or another, have good predicted reliability in the Consumer Reports 2012 Annual Auto Reliability Survey.

The survey predicts the reliability of 2013 models based on tracking of the reliability of vehicles up to 10 years old.

This year’s analysis is based on data from 1.2 million 2003-12 model-year vehicles leased or owned by Consumer Reports subscribers.

Magazine editors noted that reliability is a high point this year for all hybrids but the [Hyundai Sonata](http://autos.nytimes.com/2011/Hyundai/Sonata/250/2853/323889/researchOverview.aspx?inline=nyt-classifier) Hybrid. It was the only one that had a worse-than-average rating for predicted reliability.

The Toyota Prius, the Prius V (the larger hatchback Prius) and the new Prius Plug-in were all above average in predicted reliability.

The [Chevrolet Volt](http://autos.nytimes.com/2011/Chevrolet/Volt/238/4117/329463/researchOverview.aspx?inline=nyt-classifier), a plug-in hybrid, also has above-average predicted reliability.

The all-electric Nissan Leaf has above-average predicted reliability, and the editors said it was the Nissan model with the best predicted reliability.

“There’s no rocket science to electric cars,” said Jake Fisher, director of automotive testing for Consumer Reports. “There were electric cars before there were gas-powered cars; it seems to be a reliable technology.”

And despite dire predictions about the longevity of nickel-metal hydride batteries and the high cost of replacing them in hybrid vehicles, there have been few problems.

“We’ve got Priuses out there with 200,000 miles on them and 12 years in service,” and if a battery has a problem, it is very inexpensive to fix, Mr. Fisher said.

“So the whole thing about the sky falling and the $10,000 battery hasn’t happened,” he said.

The jury is still out, however, on the longevity of the new [lithium](http://topics.nytimes.com/top/reference/timestopics/subjects/l/lithium_metal/index.html?inline=nyt-classifier)-ion batteries that power the Leaf, Volt and Prius Plug-in, he said.

Subscribers can view the survey results at the [Consumer Reports Web site](http://www.ConsumerReports.org/cars). Nonsubscribers will be able to get access to a preview of the survey there. The complete survey will appear in the December issue of the magazine, which goes on sale Nov. 6.

# Questions Linger on Battery Prices in Electric Cars

THE battery maker A123, a producer of lithium-ion cells for hybrid cars made by [General Motors](http://topics.nytimes.com/top/news/business/companies/general_motors_corporation/index.html?inline=nyt-org) and Fisker Automotive that was founded in 2001 by MIT scientists, filed for bankruptcy on Oct. 16. ReVolt Technology, a maker of zinc-air batteries with a North American headquarters in Portland, Ore., called it quits last week. Another battery company, Ener1, went bankrupt in January.

Companies fail all the time, of course, for various reasons, and the incidence is bound to be high among start-ups in fledgling industries. But bankruptcies of companies that have received millions of dollars in government grants and loan guarantees — in the cause of promoting electric vehicles and independence from foreign oil — are another matter, especially in the cauldron of an election year.

Beyond the inevitable birthing of new targets for political point-scoring, the failures contribute to the doubts that have arisen from lethargic sales of plug-in hybrids like the Chevrolet Volt, which recently took a four-week vacation from manufacturing because of excess inventory, and electrics like the Nissan Leaf. In an avalanche of new hybrids, plug-in hybrids and battery-only models — 21 fresh models by the end of 2015 from [Toyota](http://topics.nytimes.com/top/news/business/companies/toyota_motor_corporation/index.html?inline=nyt-org) alone — industry executives have been faced with questions over whether there will be sufficient production capacity to meet the demand. China has shut down some battery makers who have violated environmental standards, and popular consumer electronics like the iPad and latest iPhones corner a lot of battery production.

“We do not see any supply difficulty,” said Anand Sankaran, executive technology leader for energy storage and high-voltage systems at Ford Motor. “There is no shortage of raw materials but there is a time frame to capacity,” he added, referring to the time lag in achieving production capacity.

More critical in the long term is the question of whether the crucial lithium ion cells will become cheap enough, at a fast enough pace, to make pure electric and plug-in hybrid cars economically practical. After a rapid rate of price declines in the 1990s, the rate has slowed.

“Our view is that battery costs are coming down,” Mr. Sankaran said, adding that there is consensus that by 2020 battery prices will have reached an economically practical level — in the range of $200 to $250 a kilowatt-hour. That is a significant decline from the $1,000-a-kilowatt-hour cost that was the auto industry’s rule of thumb until recently.

To understand the effect that price drop would have on the window sticker of a new electric car, keep in mind that the Ford Focus EV has a 23-kilowatt-hour battery. Tesla’s new all-electric Model S sedan is offered with battery packs as big as 85 kilowatt-hours, which gives the car a range of 265 miles according to its official rating by the [Environmental Protection Agency](http://topics.nytimes.com/top/reference/timestopics/organizations/e/environmental_protection_agency/index.html?inline=nyt-org).

Battery prices are not a one-size-fits-all matter, Mr. Sankaran explained, but vary according to vehicle type and intended use. He made a distinction between so-called power batteries that can be discharged rapidly to give great acceleration, as might be used in sports cars, and energy batteries, which would be better suited vehicles whose priority was frugal operation and long driving range. This specialization affects the cost of lithium-ion batteries, because the differences require tailoring the production process to each type.

Battery experts caution against the oversimplification of battery price into dollars-per-kilowatt-hour of storage capacity because there are additional necessities, including the assembly of individual cells into a single large battery pack and the cooling and heating provisions. The more densely batteries are packaged to minimize how much space they take up in the vehicle, the more they need a method of extracting the heat they generate while in use.

The electronic control systems that regulate the motors can also be a costly part of vehicle electrification. Batteries deliver direct current electricity — the familiar positive and negative connections of flashlights are a good example — but efficient drive motors need alternating current, the kind that household appliances use. Power supplies convert the one into the other using large transistors, while delivering power according to the driver’s demand.

For the moment, Mr. Sankaran said, the highest volume of batteries will go into hybrids. Plug-in hybrids, because they are driven greater distances on battery power alone, typically require three times the battery mass (and cost) of a hybrid. Electrics must carry much more.

As a result, Mr. Sankaran said, “Ford’s approach is what we call power of choice. People have different needs.

“We are not dictating one solution over another,” he said. “Hybrids will be more appealing to most customers.”

In other words, Ford will let the market decide.

Mr. Sankaran noted that a prime source of sales resistance to hybrid or electric cars has been an impression that performance or amenities must be sacrificed in exchange for the new green technologies.

In an effort to counter this, Mr. Sankaran said, “We try to give a complete package, with no sacrifice.”