

DRIVING THE HYDROGEN FUTURE

HONDA'S NEXT-GENERATION FUEL CELL ELECTRIC VEHICLE IS COMING IN 2015

IT IS A CERTAINTY THAT ELECTRIC DRIVE will play an important part in our driving future. Whether powered solely by batteries or electricity generated by an on-board hydrogen fuel cell, vehicle electrification delivers high efficiency and zero localized emissions while presenting an ultra-low carbon strategy for the road ahead.

Honda has a long history with vehicle electrification, from its hydrogen fuel cell electric vehicle prototype in 1999 and Insight gasoline-electric hybrid production model introduced that same year, to the recently-unveiled Honda FCEV Concept hydrogen fuel cell electric vehicle. In between there have been many electrified Honda products including battery electric, hybrid, and plug-in hybrid models, two generations of FCX limited production hydrogen fuel cell electric vehicles, and the FCX Clarity. Now, Honda is poised to introduce its most advanced third generation fuel cell electric vehicle in 2015. [MORE >>](#)

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Honda FCEV Concept

Hydrogen fuel cell electric vehicles present an ideal answer to the need for sustainable mobility. They offer the efficiency and emissions benefits of battery electric vehicles with some important differences. In fuel cell vehicles, the electric motor is powered by a fuel cell where on board hydrogen meets up with oxygen to create electricity, without combustion or any emissions other than water vapor. Hydrogen is the most abundant element in the universe and can be created with many different energy sources including renewables like solar, wind, and hydroelectric.

The early developmental vehicles that marked this field's long trajectory have made way to production fuel cell electric vehicles like Honda's FCX Clarity. Offered to retail consumers in 2008, this remarkable fuel cell sedan featured crisp acceleration, excellent handling, and an accommodating four-passenger cabin.

Driving range is a real advantage with hydrogen fuel cell electric vehicles. The FCX Clarity could be driven 240 miles between fill-ups, with refueling at a hydrogen station taking about five minutes. The result? Anxiety-free zero-emission driving.

In other words, even though this sedan ran on hydrogen, it provided a satisfying, fun-to-drive, and familiar driving experience in every respect.

STAIRSTEPS TO THE FUTURE

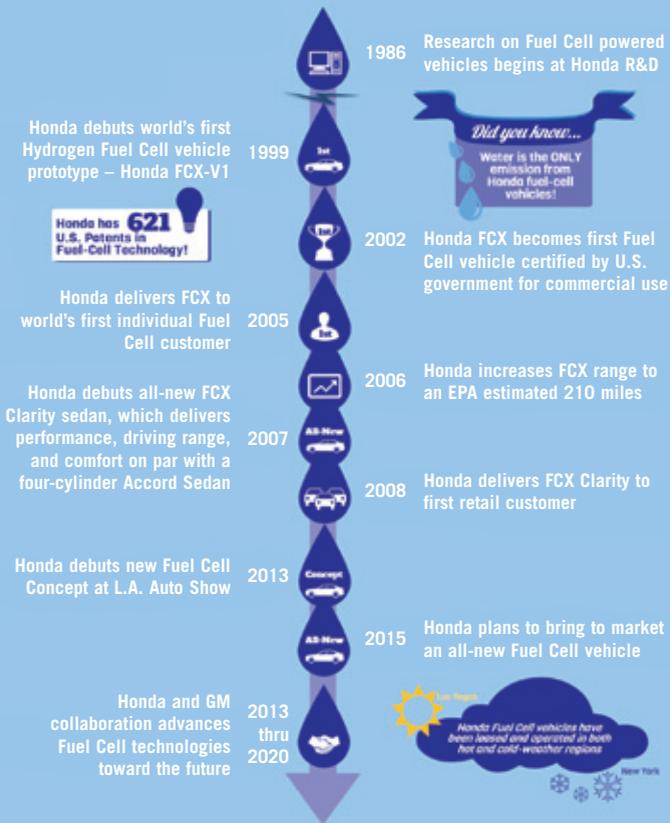
Several decades of fuel cell research and development at Honda have led to milestone achievements enabling this seamless operation on hydrogen. Honda's first-generation FCX fuel cell hatchback introduced in 2002 gained extensive real-world testing with government fleets and select individuals, paving the way for the consumer friendly FCX Clarity. The next-generation Honda fuel cell vehicle coming in 2015 benefits from the Clarity's real-world experience and that of the earlier FCX.

Along the way, Honda refined its fuel cell technology to operate in hot and sub-freezing temperature extremes and damp coastal environments. Additional breakthroughs were achieved in fuel cell stack size, efficiency, and packaging, plus fuel cell vehicle



Honda FCX Clarity

FUEL CELL HISTORY AT HONDA



assembly line production. The FCX Clarity benefited from these advancements, proving that hydrogen fuel cell technology could be successfully integrated into a sedan in ways invisible to a driver.

In contrast to the incremental development curve of electric car batteries, the pathway to hydrogen fuel cells is more a series of 'stairsteps' in technology leaps. These leaps include Honda's amazing 33 percent reduction in fuel cell stack size and 60 percent improvement in power density that now make it possible to package and integrate hydrogen fuel cell technology in the engine bay of a sedan, with assembly line speed and precision as is done today at Honda automobile production plants around the world. These leaps will continue and are being supported with development programs like Honda's recently announced joint research work with General Motors, which aims at fuel cell component cost reductions and further improvements at the materials science level.

Honda is leading the way toward sustainable mobility with its coming next-generation fuel cell electric vehicle and continuing electric drivetrain development. As government, industry, stakeholders, and consumers step up to drive the adoption of hydrogen fuel cell electric vehicles and be pioneers in this evolving field, we'll reach the goal of low carbon and sustainable transportation sooner than imagined.

For more information on Honda's hydrogen fuel cell activities see world.honda.com/FuelCell