

Mazda announces gasoline engine using compression ignition

9 August 2017, by Nancy Owano



(Tech Xplore)—A new car engine will eventually come on the scene. This week's car watching sites have reacted to Tuesday's announcement from Mazda with interest. At a time when the total focus appears to be on electric cars as our driving future, Mazda is ushering in a type of car engine that they call Skyactiv-X.

The Hiroshima, Japan-dated Tuesday announcement from Mazda said it is introducing the world's "first commercial [gasoline engine](#) to use compression ignition."

Reuters quoted what Mazda R&D head Kiyoshi Fujiwara told reporters. "We think it is an imperative and fundamental job for us to pursue the ideal internal combustion engine." He said, yes, [electrification](#) was necessary but "the [internal combustion engine](#) should come first."

Mazda's company release elaborated that this was a commercial gasoline engine using compression ignition, where the fuel-air mixture ignites spontaneously when compressed by the piston.

Mazda's combustion method is tagged Spark

Controlled Compression Ignition.

Jalopnik said "Mazda's powertrain team has brewed up a fancy new engine that, like a diesel, uses compression to activate the combustion process." David Tracy in *Jalopnik* explored what their Spark Controlled Compression Ignition is all about. Tracy said, "it's a homogenous charge compression ignition engine sometimes, but it seamlessly changes over to a regular spark-ignition engine under certain engine operating [conditions](#)."

The Mazda release said the method overcomes two issues that impeded commercialization of compression ignition gasoline engines: "maximizing the zone in which compression ignition is possible and achieving a seamless transition between compression ignition and spark ignition."

The company said that compression ignition enabled "a super lean burn" (condition in which the ratio of gasoline to air is reduced to a level that would not ignite in a spark-ignition engine) that improved engine efficiency up to 20 to 30 percent over the current Skyactiv-G.

Autoweek's Jay Ramey similarly said reliable operation of these engines had eluded automakers until now.

Ramey wrote that "A homogeneous charge compression ignition (HCCI) [gasoline engine](#) has been something of a holy grail for internal combustion [engineers](#) for decades."

Interestingly, Mazda's design will use spark plugs to achieve [ignition](#) under conditions such as low temperatures. CNET's Andrew Krok: "The engine will function like a traditional gas engine at low revs, using spark plugs to ignite the air-fuel mixture in the [combustion](#) chamber. At higher revs, though, the plugs will deactivate and the gas will ignite under piston [compression alone](#)."

Top Gear's Craig Jamieson also commented that "developing plugs that can sit idle, then work, for instance, is a massive engineering challenge on its [own](#)."

Reports said that the new engine 'SkyActiv-X' will debut in 2019.

More information:

[insidemazda.mazdausa.com/press ... able-zoom-zoom-2030/](https://insidemazda.mazdausa.com/press-releases/2017-08-09-skyactiv-x-able-to-remain-idle-for-extended-periods)

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