

# Automotive News

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## Cummins, Tula to test cylinder deactivation on diesels

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While the industry pursues electrification programs, Cummins and a Silicon Valley tech company intend to give new life to diesels.

A version of a cylinder-deactivation system now used in many General Motors gasoline-powered light trucks could be applied to commercial diesel trucks.

Tula Technology Inc. and engine manufacturer Cummins plan to begin testing a six-cylinder semitruck diesel engine outfitted with Dynamic Skip Fire engineered for diesels.

The system is being tested on Cummins' 15-liter inline-turbo-six X15 semitruck engine. If testing yields positive results, the technology likely will see production first on semitrucks.

There is also a path for commercializing the technology for diesel engines that are used in consumer pickups.

The development is notable because it points in a different direction from most of the auto industry at the moment.

Powertrain programs around the world are focused on electrification strategies. The idea of applying Dynamic Skip Fire to commercial trucks suggests that automakers and truckmakers see potential in working with internal combustion engines — diesel engines at that — to stake out fuel efficiency gains in the future.

"When you look at commercial applications, electrification isn't practical for most long-haul trucks," said Tula CEO Scott Bailey. "From an environmental standpoint, you have to do everything possible to clean up the current engine.

"Every major country and region around the globe has NOx and CO2 reduction on the books or legislation pending. This is the segment that needs attention first," Bailey said.

Engine changes to allow the cylinder deactivation would center around modifying the valvetrain to allow the valves to stay closed when a cylinder is shut down.

"It's applicable to any diesel engine, and we intend to apply to it any size engine in any application," Bailey told *Automotive News*.

Tula, a Silicon Valley software controls company, is backed by Delphi Technologies, GM and several venture capital firms.

Bailey estimates that, if development of Dynamic Skip Fire continues with no snags, the system could be ready for production as early as 2024. He believes the rollout will be driven by tightening global emissions standards.

In the GM vehicles where it is now used, cylinder deactivation is intended to improve fuel economy. For diesel engines, the fuel gains are expected to be modest – around 1.5 to 3 percent. Early testing has shown that a semitruck such as a Freightliner could save around \$1,800 a year in fuel costs.

But the reduction in tailpipe emissions is significant.

Bailey said that precise management of exhaust gas temperatures allows an engine's aftertreatment systems to operate more efficiently more of the time.

"At low loads, we can increase the exhaust temperature by anywhere from 58 to 90 degrees Celsius, which keeps the aftertreatment systems exactly where it wants to be from a peak emissions standpoint.

"What we end up with is huge reductions" in carbon dioxide and oxides of nitrogen, he said.

In computer testing that simulates EPA drive cycles, a Cummins X15 engine running with Dynamic Skip Fire showed reductions in NOx emissions from 45 to 66 percent and CO2 reductions of 1.5 to 3.7 percent, the company said.

Inline Play

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