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How new engines simplify production by Anthony Blascara

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One of the most eagerly-anticipated launches of 2012 will be that of Mazdaâ€™s all-new CX-5 compact crossover. After all, itâ€™s rare to drive a car which is completely new from the ground up â€“ even the nuts, bolts and washers have been examined and reworked where necessary to make them lighter and stronger.

Not only is it a new car, but itâ€™s a new manufacturing process which is quite an achievement for a company that, with around one million annual sales, is one of the car industryâ€™s mid-sized car makers.

Since SKYACTIV petrol and diesel engines have much more in common than Mazdaâ€™s previous generation engines, they can now be assembled on the same line. This has produced challenges and innovative solutions, as Susumu Niinai, the man in charge of the SKYACTIV petrol and diesel engines, explains. â€œThere is common architecture so now we have just one line from casting to assembly for both engines,â€• he says. The engines share the same high-pressure die casting while standard machining points make assembly easier.

There are other benefits to Mazdaâ€™s clean sheet approach. By sticking to its policy that simple is best, it has avoided the downsizing route of other manufacturers which adds complexity due to turbocharging and in some cases supercharging.

â€œThe customer doesn't care if itâ€™s a 1.4-litre or 2.0-litre engine so long as the economy is good,â€• s Niinai, adding that the three criteria for the SKYACTIV engines were pricing, performance and economy. Whatâ€™s more, itâ€™s a policy that seems to have worked.

â€œInitial media feedback on early drives of Mazdaâ€™s CX-5 has been very positive,â€• says Niinai. He especially encouraged about the combination of the diesel engine and automatic transmission, something that has been missing from Mazdaâ€™s powertrain line-up.

â€œWe are very confident; it is quiet and accelerates well,â€• highlights Niinai. Expectations are high for the diesel-automatic to be a popular choice in the UK and across Europe due to the historical demand for diesels.

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Anthony Blascara is a writer and fan of the a CX-5.

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