

POWERTRAIN

Isuzu takes high-level approach to T4F solutions

Depending on which off-highway engine manufacturer you're talking to, it is either an advantage that its teams of engineers design specifically and solely for the off-highway industry, or it is an advantage that its teams of engineers design for both the on- and off-highway industries. In this case, it is a rare example of both sides of the argument being just about right. And to put a little twist on one side of this argument, it's not such a bad thing either to design for multiple geographical markets, at least in terms of the long run.

"In terms of our design criteria, fuel economy and noise are at very high levels, which doesn't always match the U.S. demand, but which certainly matches the Japanese and European demands as fuel is very expensive in those markets," John Dutcher, Director, Sales & Marketing, **Isuzu Motors America**, recently told *SAE Off-Highway Engineering*. "We expect that to change."

Unfortunately, Dutcher is not implying that fuel is going to get less expensive outside of the U.S., but more expensive inside, and thus making fuel economy more of a design incentive for all the off-highway engineers who have barely been able to catch a breath since meeting Tier 4 Final (T4F) demands. And in fact, Isuzu is one of the companies already on its way to improved fuel economy compared to Tier 4 Interim engines via the elimination of a diesel particulate filter (DPF) (and thus dosing) on its recently released T4F engines.

Fuel economy will essentially no longer be an issue unique to on-highway applications, and neither will noise. "Most of our off-highway engines are derivatives of Isuzu's truck engines, and on-highway demands are much, much more strict, particularly on noise," said Dutcher. "So we have an inherent benefit when we apply one of those engines to industrial because it maintains that low noise level."

Possibly even more than an emphasis on fuel economy, Isuzu engineers have a very high interest in maintenance-free designs. "Our engines are engineered for worst-case scenario environments, so maintenance will be minimal. Specifically, our DOC should be good for the life of the engine without maintenance," said Dutcher. "Our high-volume catalyst originated with our truck business and it was re-packaged for robust off-highway and industrial applications. We have a long history with that on-highway technology, so we're pretty confident it's going to be a good solution."

To make integration easier for customers, Isuzu will be "offering an engine-mounted exhaust catalyst, so the OEM doesn't have to make design and validation decisions for that system," said Dutcher. "We deliver the engine package preassembled and prevalidated, so the equipment maker is not responsible for that, and that saves them time, effort, and cost. Of course, it's



Isuzu's 4LE2 and other Tier 4 Final production engines can be customized to a "customer's exact requirements" while maintaining what it believes will be a maintenance-free experience for end users.

not a one-size-fits-all, but it is a one-size-fits-many. The packing is compact and logical, and it can be applied to a wide variety of applications."

Does such technology transfer go the other way; that is, from off- to on-highway? Dutcher would not discuss any specifics on what Isuzu's on-highway engineers may have learned from the off-highway team. But if off-highway engineers have been able to eliminate the DPF while meeting regulations, maybe it's just a matter of time before DPFs disappear from trucks as well.

Jean L. Broge