ANSYS Drives Design Of New Mazda SKYACTIV-D Racing Engine

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PITTSBURGH, Dec. 11, 2012 /PRNewswire/ -- Mazda racing teams will zip around the track with greater fuel efficiency and fewer emissions thanks to the motorsports version of its new revolutionary SKYACTIV-D clean-diesel engine, designed by SpeedSource Race Engineering using ANSYS (NASDAQ: ANSS) simulation technology. SpeedSource, a motorsports research and development company, used ANSYS simulation software to quickly design the engine – in about one-third the time of the industry average – without compromising essential reliability standards for the engine's use in a competitive racing environment. The motorsports SKYACTIV-D clean-diesel engine is the first production-based, four-cylinder racing diesel engine on the market to be used in a major racing series.

(Logo: http://photos.prnewswire.com/prnh/20110127/MM38081LOGO)

A streamlined engine design process with ANSYS simulation decreased SpeedSource's time to market while the high-fidelity simulation results gave the company confidence that its engine would perform as expected in the real world. By spending less time - and money - on physical testing, SpeedSource was able to rapidly advance to in-house manufacturing and dynamometer testing in its Coral Springs, FL. facility.

"We've been working with ANSYS technology throughout this engine project and know that its software delivers fast and accurate results," said Sylvain Tremblay, president of SpeedSource. "We received one of the first production-block test engines straight from Mazda's production plant a bit later than originally expected, so we knew that we had to make strategic adjustments to the development process to compensate. With ANSYS, we were able to decrease the total solve time by around two-thirds, which was a huge time savings, and were completely confident that we had arrived at the optimal engine design."

ANSYS simulation software was instrumental in the design and validation of such SKYACTIV-D engine components and subassemblies as the racing piston geometry and bowl volumes. Specifically, SpeedSource used ANSYS Fluent® to model the in-cylinder combustion process for a full engine cycle and the results of this simulation, such as cylinder pressure and temperature. These results were then used to guide the design on other critical engine components such as connecting rods, pistons, and crankshaft. Fluent was also used to accurately model fuel injection, which is critical to engine performance and efficiency.

"The SKYACTIV-D is the most advanced and cleanest production-based diesel race engine the sport has ever seen," said Jay Amestoy, vice president of Mazda Motorsports North America. "We are confident that it will deliver outstanding performance and fuel economy coupled with the quality, durability and reliability needed to win endurance races."

"You don't have to be in the racing business to face tight deadlines," said Sandeep Sovani, director of automotive strategy at ANSYS. "Many of our customers face similar timeline challenges and ANSYS is committed to delivering results that will accelerate workflow efficiencies and ultimately product performance while reducing design costs."

On Thursday, Nov. 29, Mazda officially announced that the SKYACTIV-D clean-diesel engine will power the racing version of its 2014 Mazda6 in the upcoming Rolex Series new GX Class. The engine will be available to customer teams competing in the GRAND-AM racing series' beginning with the 2013 season and will make its official racing debut in the Rolex 24 Hours of Daytona on Jan. 28. At that time, it will be the first diesel engine to ever compete in the storied race.

Related images are available for download by media at www.ansys.com/newsimages.

About SpeedSource Race Engineering
Based in Coral Springs, FL. SpeedSource Race Engineering has been contracted by Mazda to lead the design, testing and development of their motorsports engine program. SpeedSource is one of the largest road racing teams in the country and are committed to developing emerging technologies and building each of its cars in-house to remain at the forefront of road racing in the US. Specifically, SpeedSource develops Mazda's RX-8 GT racing program in the GRAND-AM Rolex Sports Car Series (a subsidiary of NASCAR).

About ANSYS, Inc.
ANSYS brings clarity and insight to customers' most complex design challenges through fast, accurate and reliable engineering simulation. Our technology enables organizations — no matter their industry — to predict with confidence that their products will thrive in the real world. Customers trust our software to help ensure product integrity and drive business success through innovation. Founded in 1970, ANSYS employs more than 2,400 professionals, many of them expert in engineering fields such as finite element analysis, computational fluid dynamics, electronics and electromagnetics, and design optimization. Headquartered south of Pittsburgh, U.S.A., ANSYS has more than 65 strategic sales locations throughout the world with a network of channel partners in 40+ countries. Visit www.ansys.com for more information.

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