Engine improvement and efficiency gained by teamwork

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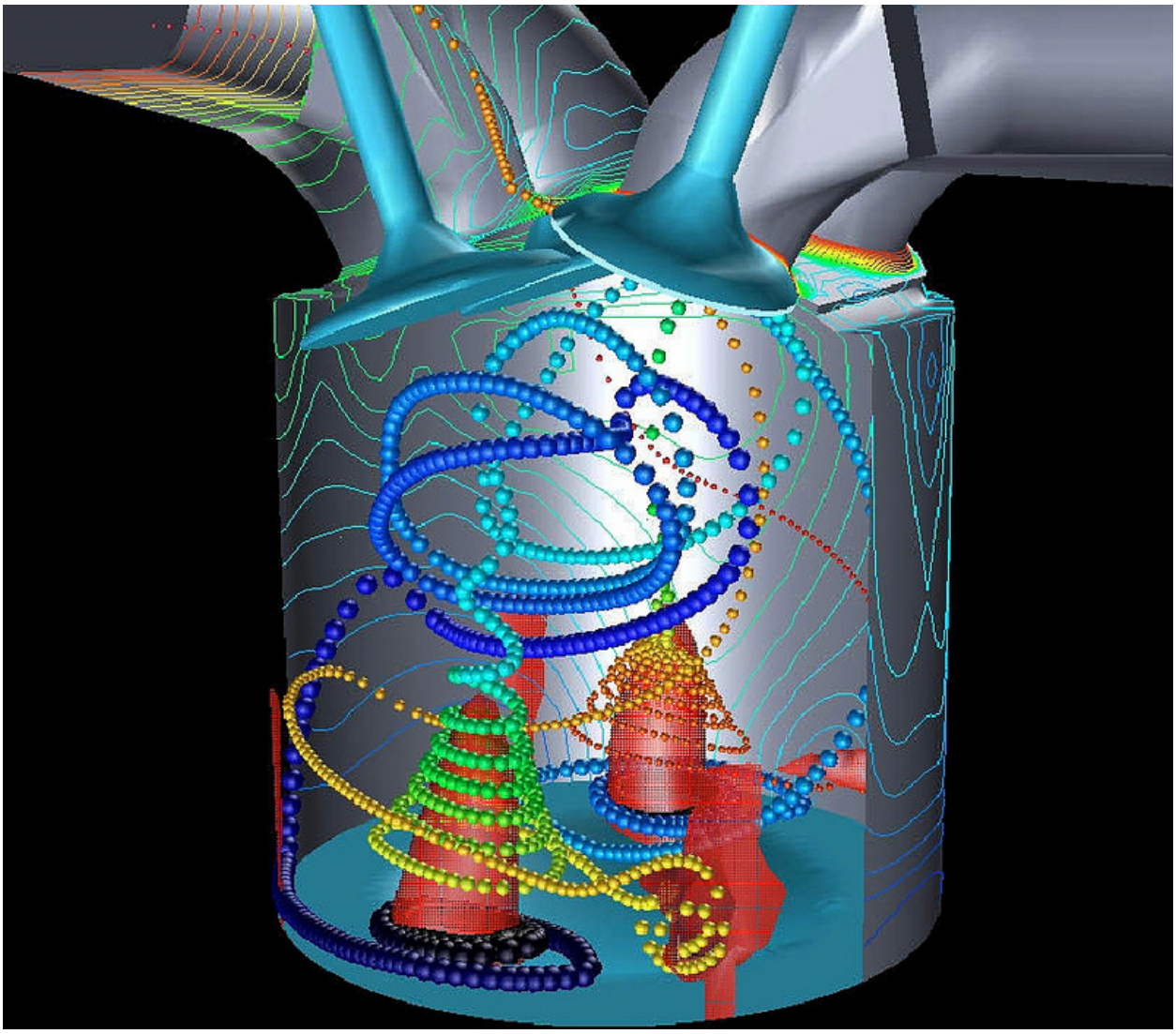

Car companies come calling to research and develop highly efficient, clean engines

Cummins, Inc., is a U.S. corporation that designs, manufactures, distributes and services engines and related technologies, including fuel systems, controls, air

handling, filtration, emission control and electrical power generation systems. Headquartered in Columbus, Indiana, Cummins sells in approximately 190 countries and territories through a network of more than 500 company-owned and independent distributors and approximately 5,200 dealers.

In the 1950s, LANL developed the Computational Fluid Dynamics (CFD) technology to support its nuclear weapons mission. Later, the KIVA version of the code was developed as a robust, predictive model of internal combustion engines.

In a project sponsored by the DOE Offi ce of Vehicle Technologies, Cummins and LANL further refined the code, permitting Cummins to reduce development time and cost by 10%–15% when it introduced its high-efficiency 2007 ISB 6.7-L diesel engine, an engine that met 2010 emission standards in 2007. At the same time, the company realized a more robust design and improved fuel economy while meeting all environmental and customer constraints.

The DOE Office of Vehicle Technologies-sponsored Advanced Combustion Engine R&D Vehicle Technologies Program supports research on advanced low-temperature combustion strategies for high efficiency, clean engines, and future fuels for these engines. The Program partners include General Motors, Ford, Chrysler, Cummins, Detroit Diesel, Caterpillar, John Deere, General Electric, Chevron, ExxonMobil, ConocoPhillips, and BP.