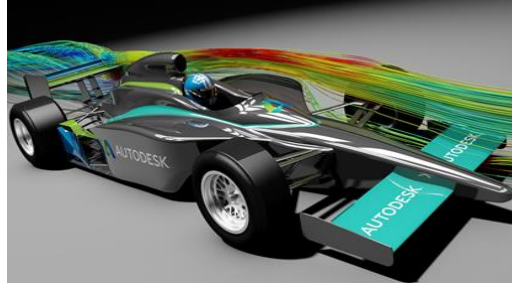
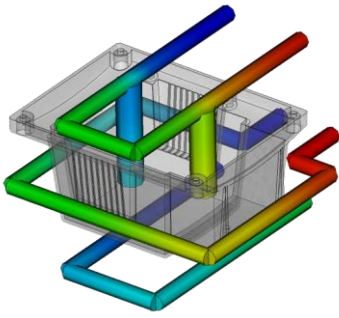


## Autodesk Sustainability Solution Brief: Green Product Design- Vehicle Efficiency



### The Imperative

Market pressures from multiple directions are forcing automotive OEMs and their supply chain partners to explore ways to manufacture more efficient vehicles. In a [2014 KPMG worldwide survey](#), 92 % of automotive executives said their buyers' top priority is fuel efficiency.<sup>1</sup> Concurrently, regulatory standards for vehicle fuel efficiency continue to climb. In 2014, the US announced aggressive new efficiency targets starting with model year 2017, and in July 2013, Europe began requiring passenger vehicles to reduce tailpipe CO<sub>2</sub> by 40% more over targets already set for 2015. Fortunately, making vehicles lighter-weight and more aerodynamic can achieve 50% or better fuel economy; even with no major advances in technology and without exploring alternate types of propulsion (ex. Hybrid).<sup>2</sup>

So how can OEMs and suppliers experiment with lighter-weight, more aerodynamic designs and materials to ensure they perform well, manufacture easily, and stand the test of time and warranties?

### The Solution

The key to success lies in the ability of engineers to simulate and examine a range of effects on vehicle operation and efficiency at the earliest stages of design. Autodesk's simulation solutions support early-stage explorations for lightweighting and aerodynamics.

- **Autodesk Simulation Composite Design** allows for consideration of new composite materials, such as carbon-fiber. It gives the automotive engineering team access to an extensive materials database, the most common composite failure analysis methods, and a host of simulation solutions for idealized composite structures.
- **Autodesk Simulation Composite Analysis** enables the user to predict progressive, nonlinear composite failure with unsurpassed accuracy and reduced overall run times to reach solutions which meet design constraints and requirements by integrating with your existing finite element solver.
- **Autodesk Moldflow**, the market leader in plastic part design and manufacturing simulation, offers advanced algorithms for predicting production flaws, such as warpage, manifested by the part design and/or the molding process. Users also have access to Autodesk's state-of-the-art testing facilities for comprehensive thermoplastic material characterizations as well as global direct support teams with decades of relevant expertise.
- **Autodesk Simulation CFD** helps optimize exterior aerodynamics in the concept stage by putting a real-time virtual wind tunnel on the user desktop. This engineering-friendly tool simulates flow and heat transfer through mechanical systems and can also be used to characterize cabin ventilation for efficiency and passenger comfort.
- **Autodesk Simulation DFM** offers easy-to-understand indicators that provide near real-time feedback regarding your plastic part design's manufacturability, cost, and environmental impact by seamlessly integrating into your 3D design environment.

1- <http://www.kpmg.com/Global/en/IssuesAndInsights/ArticlesPublications/global-automotive-executive-survey/Documents/2014-report.pdf>

2- <http://www.rmi.org/Transportation>

### For More Information

Contact [sustainability.solutions@autodesk.com](mailto:sustainability.solutions@autodesk.com)

Autodesk is a registered trademarks or trademarks of Autodesk, Inc., and/or its subsidiaries and/or affiliates in the USA and/or other countries. All other brand names, product names, or trademarks belong to their respective holders. Autodesk reserves the right to alter product and services offerings, and specifications and pricing at any time without notice, and is not responsible for typographical or graphical errors that may appear in this document.

© 2013 Autodesk, Inc. All rights reserved.