

FLUID PERFORMANCE



Afton Chemical creates fuel additives to increase efficiency

For Afton Chemical Corporation, solutions are the solution. Many car and motorcycle owners don't realize the wear and tear that simply filling their tank has on the life and quality of their vehicles. Reducing fuel emissions, improving fuel economy, extending equipment life and improving operator satisfaction are just a few of the goals Afton has when it comes to their fuel and engine oil additives.

Afton Senior Research and Development Engineer Joshua Moore studies what molecules will be most effective in preventing deposits from building up on critical surfaces of vehicles.

"We're trying to design new molecules to improve performance," Moore said. "As an example, for an engine oil, we want to design new additives, new molecules which improve engine performance in terms of friction/fuel economy, wear, or fatigue."

Since modeling the molecules used in the company's additives takes a substantial amount

"I was looking for an external computer resource with the latest hardware capabilities... and finally found that OSC had the best resources for the best price."

— Joshua Moore, Afton Senior Research and Development Engineer

VIRTUAL DESIGNS. REAL BENEFITS.

of computing power, Afton turned to OSC to give them advanced hardware power.

"We knew our local resources would benefit greatly by working with a supercomputing center. I was looking for an external computer resource with the latest hardware capabilities... and finally found that OSC had the best resources for the best price," Moore said.



AUTOMOTIVE



THE CHALLENGE

Many factors can decrease the fuel efficiency of a vehicle, such as worn out tires, poor maintenance and over speeding, but one of the main causes of poor fuel efficiency is poor quality fuel. Afton Chemical Corporation scientists create new additives and formulations to stay on the cutting edge of fluid performance and meet industry standards.

THE APPROACH

Afton worked with AweSim to get down to the molecular level of their fluids. They used OSC resources for molecular modeling of additives to adjust their formulas as well as system-level modeling using computational fluid dynamics.

THE SOLUTION

By harnessing the power of HPC, Afton was able to skip time-consuming physical prototyping. Their researchers are able to examine the characteristics of their additives relating to oil performance at a mechanistic level, therefore allowing changes that can improve engine performance and fuel efficiency.

