

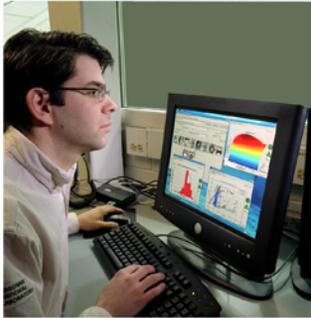
# PSAT Models Tomorrow's Vehicles Today

## What is PSAT?

Hybrid-electric vehicles offer much better fuel economy and emissions performance than conventional vehicles, and they are being seen as a viable near-term approach to reducing oil consumption. Because of their growing popularity, vehicle manufacturers are racing to introduce such vehicles in increasing numbers. There are, however, literally hundreds of powertrain configurations that need to be considered in developing each new model type.

Consequently, vehicle makers and their suppliers require modeling software to help them narrow their choices to a manageable number to be implemented in actual test vehicles. Argonne National Laboratory's Powertrain System Analysis Toolkit (PSAT) is the only simulation package on the market that can meet all of their needs.

PSAT allows users to accurately model advanced vehicle components, their control strategies, and component interactions in a systems context, enabling them to conduct detailed laboratory benchmark testing of advanced components as they are being developed. PSAT provides accurate performance and fuel economy simulations, permitting automotive and truck manufacturers and their suppliers to quickly select the advanced technologies that will best meet their needs, thus helping them bring their advanced vehicles to market as quickly and cost-effectively as possible.



## How is PSAT Distributed?

PSAT is distributed through the Argonne Software Shop website operated by Argonne's Office of Technology Transfer. There, Argonne maintains a description of PSAT and a downloadable video demo that offers an extensive review of PSAT capabilities, showing how PSAT can solve a variety of sample problems.

Soon after the nonproprietary version of PSAT became available, Argonne applied for and won an R&D 100 Award, which distinguished PSAT as one of the most significant innovations across the globe. That helped provide the initial impetus for licensing sales, causing PSAT to become the most profitable software ever licensed by Argonne. Since then, most marketing has come through word of mouth as users have recommended the software to others. Papers published in peer-reviewed journals and presented at automotive conferences have also increased awareness of PSAT as a research tool.



## Who Uses PSAT?

Although the impetus to transfer the technology came from the Big Three automakers, the task of actually transferring PSAT to new users around the world fell to Argonne, with support from the Department of Energy's FreedomCAR and Vehicle Technologies Program. The main strategy in transferring PSAT was to make the software as flexible and user-friendly as possible. That meant strengthening PSAT's analytical capabilities, maximizing the number of configurations PSAT could simulate (currently >400), and permitting the effortless integration of virtually any proprietary models, controls, and driving cycles. The achievement of these goals makes PSAT truly unique and largely explains why, just a year after being made available for licensing, PSAT became the most profitable software ever licensed by Argonne. Since its introduction as nonproprietary software in September 2003, PSAT has been transferred through licensing agreements to more than 200 users worldwide.

*"OEMs have limited resources and research funds for new technologies. We have to pick and choose very carefully where we put our money and in what technology. In PSAT, DOE and Argonne have developed a tool that helps speed up the process and allows us to look at many different technologies much sooner than we would otherwise. We need a model that's intuitive, easy to use, and provides accurate results. PSAT gives us that."*

— Randy Yost, Engineering Specialist in Analytical Tool Development at General Motors Corporation



*In 2004, PSAT received an R&D 100 award, which highlights the one hundred best products and technologies newly available for commercial use from around the world.*



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