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Aftertreatment in GT-POWER Popular; More Classes Scheduled

Advanced aftertreatment capabilities were introduced into GT-POWER V6.2, including DPF modeling (for diesel engines) and chemistry kinetics for modeling catalysts and gaseous reactions (for both DI and SI engines). The built-in chemical kinetics capabilities are similar to those available in the industry-standard Chemkin. Alternatively, users can couple GT-POWER directly to the Chemkin KINetics API. By integrating aftertreatment into GT-POWER's engine system modeling and with GT-SUITE's powerful optimization, DOE, and distributed computing tools, an unprecedented aftertreatment modeling capability is now available.

In our last newsletter, we announced Aftertreatment Training classes in Paris, Frankfurt, and Chicago for January, February, and March, respectively. All three classes proved to be very popular, completely filling very quickly. To accommodate the additional demand, **additional training classes have been scheduled: Paris on March 14 and Frankfurt on March 15. An announcement for additional training in the US will be made soon as well. Please register as soon as possible at: <http://www.gtisoft.com/training/training.php>**

P.S. One challenge to aftertreatment modeling is that engine performance groups and engine-out emissions groups usually do not work closely together on modeling since there has been no software that could serve both. Since many emissions departments are not familiar with GT-POWER, could you please forward to them the information about these new capabilities. Please don't hesitate to have your emissions specialists call us with their technical questions.

GT-POWERLab: New GT-SUITE Product forTest Engineers

Yes, GT-POWER is not just for simulation engineers anymore. GTI is proud to introduce a new product: **GT-POWERLab**. **GT-POWERLab** is a low-cost licensing option available for the subset of GT-POWER features needed for TPA (Three Pressure Analysis) cylinder pressure analysis. GT-POWERLab is intended primarily for test engineers who can use the sophisticated TPA technique to enhance the value of engine tests and obtain accurate information about combustion rate, trapped residuals and valve flows. This is increasingly important for modern engines featuring increased levels of internal EGR and at part load. GT-POWERLab is a natural tool of choice for this type of test data analysis, since GT-POWER is already widely used for engine analysis in engine development.

How do you use GT-POWER in the laboratory.....?? We thought a few of you might ask that. TPA includes special options to enable integration into the test cell computers. This enables GT-POWERLab to be called directly by the laboratory computer and to report back the TPA results so that they are stored together with all other measurements.

Of course, GT-POWERLab can also be used for TPA at the desk, as all the capabilities in GT-POWERLab are also available in regular GT-POWER V6.2. To see an example of a typical TPA model and associated documentation, please refer to \GTI\6.2.0\examples\GTPower\1cylTPA in your installation directory.

GTI to Present at Munich Conference on “Hardware-in-the-Loop Simulation”

HIL simulation is invaluable to controls engineers, who use it for development, validation, and calibration of engine control units (ECU's) without the need for a physical engine, transmission or vehicle ("The Plant"). This approach requires simplified, fast-executing, plant models and for this, typically, a map-based modelling approach is used. However, the latest trends in control strategies and engine technologies require new tools, involving physically-based models.

GTI has introduced a novel solution to this problem, involving the use of neural network based engine cylinder models, combined with physically based fluid dynamic models for the intake and exhaust systems and turbochargers. The neural network based cylinder models provide highly accurate representations of engine breathing quantities, torque, and exhaust temperature, while the fluid dynamic models represent simplified versions of the highly robust flow solver used in high-fidelity GT-POWER models. This combination provides a fast running (RT capable), robust, and accurate plant model for use in the control engineer's HIL system.

GTI will present these capabilities on February 27-28, 2007 in Munich during a conference on “Hardware-in-the-Loop Simulation” and show how this solution can be integrated into a Real-Time platform, with the example of the LabCar RT system of ETAS. (Detailed agenda: <http://www.hdt-essen.de>)

New Tutorial for GEM3D

When we released our new V6.2 GEM3D preprocessor last October, it only included the "reference" documentation because we hadn't had time to complete the step-by-step tutorial. As promised, the GEM3D Tutorial is now ready and included in the most recent software patch (Build 4). You can get it by selecting "Update GT-SUITE" from the help menu in GT-ISE or directly from our web site downloads. After you install the patch, the tutorial can be found at %GTIHOME%\6.2.0\tutorials\GEM3D. **For those of you with impenetrable firewalls that prevent you from getting Build 4, please just e-mail or call to request a copy**—we will figure out some way to get the files to you. We hope you will find it worth the wait!

For those of you unfamiliar with GEM3D, it is our newest tool for importing, building, and discretizing mufflers, exhaust systems, intake systems, air boxes, etc.

March GT-POWER Basic Training Classes

There will be a Basic Training Class for GT-POWER in Paris on March 13-14, 2007 and another in Detroit on March 26-27, 2007. Please visit our website for more information and to register. (<http://www.gtisoft.com/training/training-event.php?id=54>)

Gamma Technologies Sponsors Training for FormulaSAE

Gamma Technologies hosted a GT-POWER training class for FormulaSAE teams at our office in January. The training was attended by teams from the United States and Canada including: Case Western Reserve University, Purdue University, University of Illinois, University of Windsor, and Wayne State University. This class is part of our larger effort to support students around the world in learning about engines and powertrain modelling. As an unofficial sponsor of FormulaSAE, we make GT-POWER licenses available to FormulaSAE teams for a very minimal fee (even much lower than the standard university research price). **If you know professors or students involved in FormulaSAE, please let them know about this great opportunity.**

Quick Tip: GT-SUITE in Windows VISTA

We've been testing GT-SUITE V6.1 and V6.2 on the newly released Windows VISTA Operating System and find that they run just fine. This surprised us a bit because the JAVA folks at SUN report some compatibility issues, especially with the 3D libraries. If you run on VISTA and see any problems, please let us know.

Despite the good news on GT-SUITE itself, our installation software, InstallAnywhere, has not fared as well...it does not natively run on Windows VISTA. A new VISTA-compatible InstallAnywhere version was just released, and so we hope to have new CD's with the upgrade available by our next Build. In the meantime, it is still quite possible to install on Windows VISTA by just changing a setting to run in "Windows 2000 Compatibility Mode". Here's how:

1. The installation must be done locally from the CD or a temporary copy of the CD in a local hard-disk directory. This will NOT work if the CD resides on a network location.
 2. Explore (i.e. My Computer) to the root directory of the CD
 3. Right-click on the setup.exe file and select "Properties"
 4. Select the "Compatibility" tab
 5. Click the first option at the top that reads "Run this program in compatibility mode for:"
 6. Select "Windows 2000"
 7. Click OK on the Properties to continue
 8. Proceed with the installation as usual by double-clicking on setup.exe
 9. Please note that the compatibility information is not saved once you remove the CD. You will have to set this again next time you insert the CD.
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