GT-SUITE NEWS FROM GAMMA TECHNOLOGIES
January 2008 Issue

This issue of the GT-SUITE Newsletter contains the following topics:

GTI is 1st US Company to be Accepted as a Member of FVV

It is official: as of November 28, 2007 GTI has been accepted, to be a member of the prestigious German research group FVV. According to FVV, GTI is its first member from USA. (More information about FVV: www.fvv-net.de). This will be a mutually beneficial partnership between FVV and GTI. In it, GTI will get involved in various FVV German and European research projects. In the process, GTI will incorporate important FVV research results into GT-SUITE models, which will be preferentially available to FVV members. If you are interested in knowing more about our projects with FVV, please contact us at: C.Armbruster@gtisoft.com (tel: +49 711-222-54146).

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Aftertreatment Highlighted at 6th International CTI Exhaust System Forum

GTI is a featured presenter at the 6th International CTI Exhaust System Forum in Stuttgart, Germany on Thursday, January 31st, 2008. It will present in a special session devoted to simulation of exhaust aftertreatment, which also includes papers by BMW, Daimler, EMCON and Umicore. We hope to see you there, and please also note the GT-POWER aftertreatment class held the next day in Stuttgart.

Conference Program: http://www.abgastechnik-forum.com/engl/programm3_08.html

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COOL-3D Successfully Validated in Practical Applications

COOL-3D is the underhood-flow module for GT-COOL. It starts with a CAD generated representation of the module (containing grille, various flow obstructions, multiple heat exchangers in parallel and in series, fans, shrouds with flaps, engine, etc). From this CAD model it automatically creates a 3-D mesh, and then solves the 3-D flow. It is very rapid and accurate.

COOL-3D has been introduced in v6.2, and since then we have been working with customers on practical applications of this new technology. Based on the experience to-date, we can report that in all the comparisons the overall mass flow and heat transfer have been found to be within several percent of those obtained in detailed (and very lengthy) 3-D CFD simulations. It should be stressed that these results have been obtained in blind tests, with no model adjustment! .

Thus the main advantage of COOL-3D is that it can actually predict the flow through the underhood module, instead of imposing the flow using the results from CFD or from tests, as is necessary when using any of today's widely used 1-D underhood flow tools. This results in impressive savings in time and cost - and at the same time gives far more accurate results.

At this year's GT-SUITE conference BMW presented how it uses COOL-3D and other GT-SUITE tools for design of their cooling systems. A copy of the presentation can be downloaded at http://www.gtisoft.com/confarch/BMW_Cooling-Systems.zip
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2007 GT-SUITE Conference: The Largest Ever

The 11th GT-SUITE Conferences were held in October in Frankfurt and in November in Dearborn. Over 260 engineers attended these two conferences. The paper topics were very diverse, addressing a wide variety of simulation applications, including not only cutting-edge engine simulation, but also vehicle thermal management, hydraulics, controls and hardware-in-the-loop (HIL), aftertreatment, lubrication circuits, vehicle dynamics, crankshaft dynamics, and more.

A big "Thank You" to all of the presenters, whose innovative projects and willingness to share with their colleagues make these conferences such a great success. Presenters included the following organizations: BMW, Cummins Engine Co., FEV, FKFS (Stuttgart), GM Powertrain Europe, International Truck and Engine Corp., Liebherr, Politecnico di Torino, PSA, Robert Bosch, Tampere University of Technology, University of Cambridge, and Volvo Corp. A copy of their presentations can be found at: www.gtisoft.com/confarchive.html.

Due to the rapidly increasing number of attendees at the European conference and the need for larger meeting facilities, it was moved this year to the Steigenberger Frankfurt Airport Hotel. The 2008 GT-SUITE European Conference will be held at the same hotel on October 20th, 2008. The 2008 GT-SUITE North American Conference will be held in Birmingham, MI on November 10th, 2008. Please save the dates.
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GT-POWER Basic Training: Southfield, Michigan, March 10-11, 2008

This two-day course is designed for new users of GT-POWER and GT-SUITE and will focus on the simulation of internal combustion engines through the use of GT-POWER. A 1-day GT-POWER Advanced Training class follows this class.
More information: http://www.gtisoft.com/training/training.php
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GT-POWER Advanced Training: Southfield, Michigan, March 12, 2008

This one-day course is designed for users of GT-POWER who want to learn some of the more advanced features including: Turbochargers, Cylinder Pressure Analysis, Controls, Optimization/DOE, and others..
More information: http://www.gtisoft.com/training/training.php
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Customer Survey Results:

In a survey of attendees of our recent GT-SUITE Conference, we were pleased to tabulate that 99% were satisfied with the conference. Other questions help us to understand how our software is used by our community of users. For example, we found that 62% of the attendees are using our built-in optimization solution. A very high percentage of attendees also showed interest in Mean Value Cylinder Modeling for fast running engine models, typical for subsequent use in controls design and Hardware-in-the-Loop (HIL) testing. These results are being used to help us plan our training classes for 2008. The survey also helps us to gauge quality control and new areas of interest. Thanks to all who completed the survey.
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Quick Tip: Using Variable Profiles (ProfileDependencies) in your GT-SUITE Models

Recently, we have had several inquiries asking if it is possible to input a set of varying profiles (say for valve lift, combustion burn rates, injection profiles), where the profile may be changing as a function of engine speed and load, or some other factors. This is especially relevant to the case of studying VVT systems, in which the user may have available a set of varying valve lift profiles, with a different profile for several discrete speeds and loads. For many years now, GT-SUITE has had a feature

available that enables the use of these sets of profiles, and dynamically looks them up during a simulation. Again using the VVT example, within the ValveCam object, in the Options folder, there is an attribute named “Variable Profile Dependency Object”. This attribute allows the user to point to an RLTDependence, in which the user may enter a set of profiles that depend on one or more independent RLT variables (let’s say engine speed and manifold pressure, for example). In this case, the RLTDependence will point to an XYZMap, in which the X value would be engine speed, the Y value would be manifold pressure, and the Z values of the map would be names of XYTables which contained the valve lift vs theta data corresponding to the valve profile at each discrete engine speed and manifold pressure. During the simulation, GT-SUITE will constantly be evaluating the engine speed and manifold pressure, and looking up a corresponding valve profile from those quantities. The user has the option for the code to interpolate a new profile if the current independent variables do not exactly correspond to ones entered in the table (which is usually the case), or they can have the code use the closest input profile it finds. So that’s all there is to it. If you need assistance using this advanced capability of GT-SUITE, please do not hesitate to contact us at support@gtisoft.com.
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