ATA
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ATA Adds STAR-CCM+ to Software Offerings
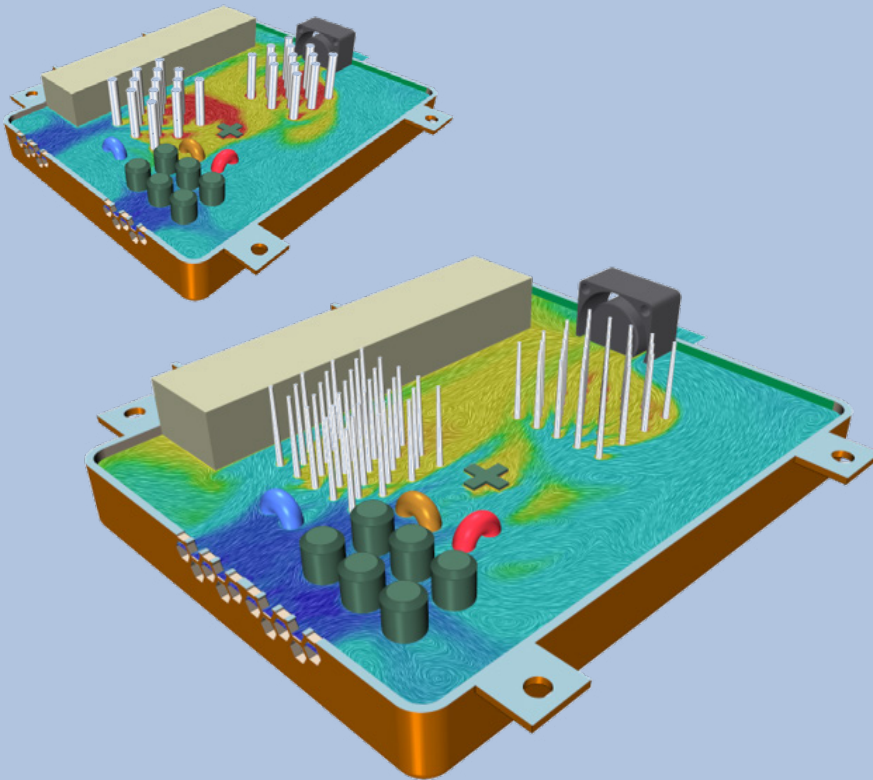
DETAILS INSIDE

Siemens Releases STAR-CCM+ 12.06

Last fall, Siemens released STAR-CCM+ 12.06, the software's third major release of 2017, which brings additional enhancements to this best-in-class simulation tool.

STAR-ICE is a new add-on that offers in-cylinder simulations for internal combustion engines. It features an automated mesh motion process, and it also automatically generates common plots and scenes for easier postprocessing. This release supports cold flow simulations that can predict trapped mass, bulk motion, and turbulence evolution, and future releases in 2018 will add capabilities for charge motion (fuel injection/mixing) and combustion and emission simulations.

This release also adds a Zip operation that enables faster and more local design changes by sewing free or selected edges and uniting open parts. Mass flow is now available as an outlet boundary condition for the coupled solver and compressible flows, a new capsule DEM particle has been introduced, and dynamic mechanism reduction enables complex chemistry simulations that are up to an order of magnitude faster.

Check out the 12.06 Fact Sheet for additional information on all the new features, and download the latest version from GTAC today!
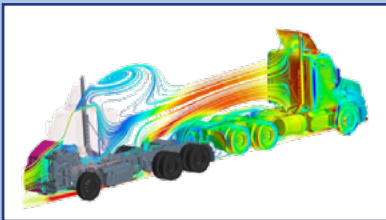
ATA
ENGINEERING, INC.

www.ata-plmsoftware.com
844-756-7638 (844-PLM-SOFT)
plm_sales@ata-e.com

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ATA Adds STAR-CCM+ to Software Offerings

Following Siemens' acquisition of CD-adapco with the ultimate goal of integrating several best-in-class simulation tools into their Simcenter portfolio, Siemens recently selected ATA Engineering as their first US value-added reseller authorized to offer STAR-CCM+ to software customers. This selection was made based on ATA's robust computational fluid dynamics (CFD) expertise and years of experience using this capable multiphysics simulation tool.

The addition of STAR-CCM+ to ATA's offering of simulation products, which already includes tools such as Femap, NX Nastran, Simcenter, and ATA|Suite, enables customers to greatly expand their CFD capabilities. Learn more about STAR-CCM+ here.

Calendar of Events

UPCOMING TRAINING CLASSES

ATA provides comprehensive training in the use of Femap, Simcenter (formerly NX CAE), and NX Nastran. Upcoming training classes are shown below. Please visit our website to sign up for these classes or request a custom class.

NX NASTRAN WITH FEMAP

FEB 21 **Introduction to Dynamic Analysis**

MAR 19 **Design Sensitivity and Optimization**

MAY 21 **Introduction to Finite Element Analysis**

MAY 30 **Introduction to Dynamic Analysis**

NX NASTRAN WITH SIMCENTER

FEB 21 **Introduction to Dynamic Analysis**

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MAY 21 **Introduction to Finite Element Analysis**
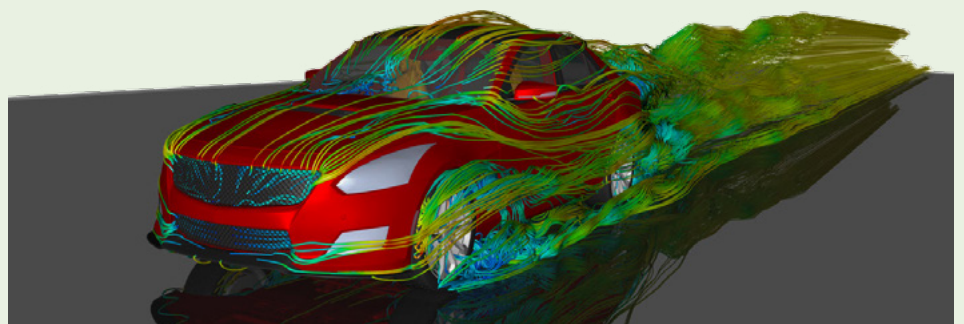
MAY 30 **Introduction to Dynamic Analysis**

JUN 11 **Response Dynamics**

FEMAP

MAY 08 **Introduction to Femap**

JUL 30 **Introduction to Femap**

ATA also provides a host of free training resources including tutorials, videos, and whitepapers.

Tips and Tricks

NX: BUNDLE SELECTION

Although a license file may contain many types of license bundles, only two can be simultaneously activated on a computer at one time. The bundles to use at launch can be set using the Licensing Tool located in the NX directory. Bundles can also be updated for an individual session of NX by going to File → Utilities → Select Bundles. Note that licenses are not returned until the NX session is completely closed; simply closing all the files but leaving NX open will not release the licenses for others to use.

FEMAP: RIGID ELEMENTS WITH THERMAL LOADS

When working with thermal loads, it is important to define the coefficient of thermal expansion (CTE) for rigid elements to avoid inducing undesired thermal stresses. In addition, thermal expansion is only calculated for rigid elements when RIGID = LAGRAN is defined in case control. Note that the Lagrange method adds artificial stiffness terms to RBE3 elements.

An alternative approach is to use the default linear method and convert RBE2 elements to stiff, massless beams that reference a material card with the desired CTE. This can be quickly accomplished using the Convert Rigids to Active Beam API that comes with Femap and is available under Custom Tools → Element Update. In this case, the RBE3 elements would not cause thermal stresses since they remain interpolation elements.

NX NASTRAN: RUN BATCH FROM COMMAND LINE

Nastran can easily be run in batch mode from the command line by creating a simple .bat text file with the following format:

```
<path to Nastran executable> <job I file name> <command line options>

<path to Nastran executable> <job 2 file name> <command line options>

<path to Nastran executable> <job 3 file name> <command line options>
```

It is advisable to have the .bat file in the same directory as the job files unless you wish to include the jobs' full file paths. By default, Windows will run each of the three jobs sequentially in the foreground. For a Linux system, add the command line option 'bat = no' to run the jobs sequentially in the foreground.

New Resources

Femap: Find Missing CTEs and Reference Temperatures

For analyses that include thermal loads, it is important to have an appropriately defined CTE and reference temperature for every material and rigid element. This API checks all materials and rigid elements for CTEs and reference temperatures of 0 (default) and creates groups for the user to examine. The message window will note the total number of materials and elements identified, and the data table will show whether materials were flagged for their CTE, reference temperature, or both.

NX: Renumber Labels

This tool, which simplifies the process of renumbering nodes, elements, materials, properties, and coordinate systems, has recently been updated for NX/Simcenter 3D II and I2. These new versions fix a few bugs and improve speed compared to the previously released versions for NX 9 and I0. An updated tutorial is also available.

NX Nastran: Checksums and License Types

There are two main types of NX Nastran licenses: desktop and enterprise. Desktop licenses have checksum control and are intended for use on the same computer that generated the input file. Enterprise licenses are more general and can be used with a dedicated solver computer, with high–performance computing, and across computers and platforms. Three new whitepapers discuss these topics: an introductory whitepaper compares the two license types and gives an overview of checksum control, and separate Femap and NX/Simcenter 3D whitepapers explain how users can select a license type and even generate a valid checksum without roundtripping a model using those programs.

Recent News

ATA Launches New Services Website

Earlier this year, ATA launched a new engineering services website that features updated information on our capabilities and experience, along with more efficient navigation. Visit our new site at www.ata-e.com to learn how our team can help meet your toughest engineering challenges.

Register for Siemens PLM Connection 2018

This annual gathering of over 2,000 customers, partners, and Siemens representatives offers great networking opportunities in addition to technical sessions and hands-on product training. This year, the conference is being held June 4–7 in Phoenix, Arizona. Attendees can customize their experience by selecting from hundreds of sessions spread across ten Connection groups that focus on topics such as business process, deployment excellence, Simcenter, and more. Visit the PLM Connections site today for early bird registration and for additional information on scheduling and this year's new Connections areas.

Siemens Named *Forbes*' Top-Regarded Company of 2017

Last fall, *Forbes* released their first-ever Top-Regarded Companies List, and Siemens came away with the top spot. The list features public companies from 58 countries. Companies were evaluated based on trustworthiness/honesty, social conduct, the company as an employer, and the performance of the company's product or service.

Why choose **ATA?**

ATA Engineering, Inc., (ATA) is a nationwide provider of innovative, high-value, test- and analysis-driven mechanical engineering design solutions.

With more than four decades of experience working with our customers to solve the most challenging design, test, and analysis problems, we have gained a reputation for excellence in the engineering community.

Our work on a wide range of products across a broad spread of industries has been recognized with numerous technical and service awards for excellence. This expertise and support is a key part of the added value we offer to all customers who purchase Siemens products from us, whether you are an independent contractor or a large engineering team. To provide best-in-class support to our VAR software customers, we have established a formal hotline system that provides on-demand support to resolve technical issues encountered by our customers in their implementation of the tools.

The hotline is staffed by experienced engineers, all of whom use these applications on a regular basis. ATA is also the Siemens PLM Software-preferred training provider and official developer of courseware for all NX Nastran training.

ATA Technical Support

Need technical assistance? Call our hotline staffed by engineers at **877-282-4223**, or visit us online. Even if you're not a current ATA customer, try us out for free.

Free Software Trials

Interested in trying out Siemens PLM software? Visit our website to access free trials/demos of Femap and NX Nastran, NX CAD, CAM, and Simcenter, Teamcenter, and Solid Edge.

Featured Instructor

Jonathan Buck

Jonathan Buck is a project engineer at ATA Engineering's San Diego office.

His work involves developing innovative test- and analysis-driven design solutions to solve a wide range of structural dynamics challenges. His experience ranges from thermoelastic analysis of composite spacecraft structures to dynamic vibration analysis of consumer electronics products. He is also significantly involved with ATA's Small Business Innovation Research efforts, where he has focused on developing and implementing machine learning methods to characterize unknown material properties of composite materials. Particular technical interests include spacecraft design and analysis, composite materials, numerical methods, and statistical learning techniques. In addition, Jonathan shares his expertise through ATA's CAE hotline and by leading classes, webinars, and other presentations.

He has BS and MS degrees in mechanical engineering from Georgia Tech, where he investigated the dynamic behavior of heterogeneous materials for his master's thesis.

www.ata-e.com

ata-engineering

@ataengineering

sales@ata-e.com

858.480.2000

www.ata-plmsoftware.com

San Diego
Corporate Headquarters

Albuquerque   Denver   Huntsville   Los Angeles   San Francisco   Washington, D.C.