# Simulation in the News

ELECTROMAGNETIC SIMULATION SUITE FOR PCB DESIGN

Interference Technology
interferencetechnology.com, January 2014

New technology from ANSYS delivers end-to-end signal integrity analysis in a single user interface. ANSYS SIwave-DC targets the DC analysis of low-voltage, high-current PCB and IC packages, enabling the assessment of critical end-to-end voltage margins for reliable power delivery. SIwave-PI adds AC analysis to accurately model power delivery networks and noise propagation on PCBs.
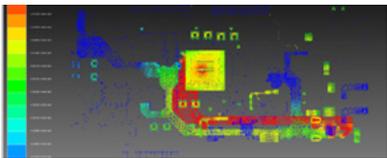
▲ ANSYS SIwave-DC accurately identifies excessive current in the layout.

RIDING THE RAILS AT 200 MPH
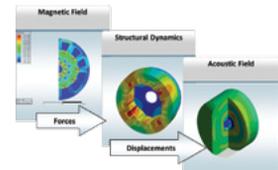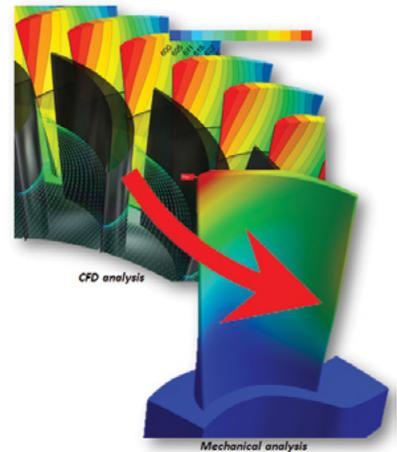
Peninsula Publishing
penpubinc.com,
November 2013

With European high-speed rail incidents making headlines, Eric Bantégnie from ANSYS discussed how systems designed to protect train passengers are being greatly scrutinized. Today's complex software systems control speed, help avoid other trains on the track, and make sure that the train travels as intended. These systems work very well if properly implemented. Systems and software engineers design elaborate automated systems, and errors can result from a misunderstanding of the requirements and specifications for the system in development. Engineers continue to refine these electronic systems, moving toward more-automated systems that greatly improve passenger and train safety.

ANSYS 15.0 RELEASED

Engineering.com
engineering.com, December 2013

The new ANSYS 15.0 focuses on pre-processing, structural, fluid and electromagnetic simulation capabilities. Improvements, including pre-processing and meshing capabilities, allow for better use in many different physics simulations regardless of range, size or complexity of the model. Structural analysis enhancements enable easy design of composites materials; fluid dynamics includes upgraded reliability for turbomachinery flow; HPC is improved by a factor of five. Electronics analysis offers an improved electric motor design process. In addition, specialized meshing for silicon substrates, printed boards and redistribution layers is available. For systems-level analysis, ANSYS 15.0 can embed mechanical control code using the SCADE suite.

CFD analysis

Mechanical analysis

Magnetic Field *Structural Dynamics* *Acoustic Field*
Forces *Displacements*

The new release of ANSYS improves on core technology employed by many users, including pre-processing, structural, fluids and electronics.

USING SIMULATION TO DEVELOP OFFSHORE WIND TURBINES

Konstruktion.de
konstruktion.de, November 2013

When developing offshore wind farms, engineers face considerable challenges in designing turbines and towers that will withstand specific forces — high wind speed, water currents and waves — as well as realizing the least expensive option. REpower Systems turned to ANSYS simulation software to design, test and optimize virtual models before building expensive prototypes.

OVERCOMING DESIGN CHALLENGES OF NEXT-GENERATION UASs

SAE International
sae.org, October 2013

Successful unmanned air system (UAS) design plans must incorporate advanced power and thermal management strategies in the earliest stages of the design process. The driving technologies are low-power design and 3-D integration, according to Rob Harwood of ANSYS.

HOT BOX

R&D Magazine
rdmag.com, October 2013

In developing its high-bandwidth real-time oscilloscope (the first to reach the 60-GHz barrier), Agilent Technologies utilized ANSYS software to model challenging electrical, mechanical and thermal requirements. The major obstacle in designing the calibration head was cooling; by using simulation, the team delivered a successful first-pass model.

To optimize the design of an electrical calibration source as a new standard for measurement accuracy, Agilent Technologies engineers turned to simulation to exceed challenging requirements. ◤

ANSYS AND REACTION DESIGN ANNOUNCE MERGER AGREEMENT

Wall Street Journal
wsj.com, December 2013

A leading developer of chemistry simulation software, Reaction Design signed a merger agreement with ANSYS. The flagship product, CHEMKIN®-PRO, is the gold standard for modeling and simulating gas-phase and surface chemistry, offering engineers the ability to predict the effects of chemistry in a combustion system. This is critical to developing competitive products in transportation, energy and materials processing applications.
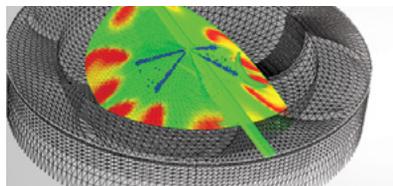
WHAT'S NEXT FOR POWER OPTIMIZATION

Semiconductor Engineering
semiengineering.com, December 2013

A survey of the chip industry indicated that no segment is exempt from reducing its product's power profile. Pressure from sectors such as mobile is forcing more companies to explore techniques such as dynamic voltage and frequency scaling, and power gating to reduce leakage power. In this round-up article featuring industry thought leaders, William Ruby of ANSYS suggested that widespread clock gating — baseline entry into power optimization — has reduced dynamic power usage up to 40 percent, while back-end optimization techniques are responsible for another 10 to 20 percent savings. Companies want to take the existing optimization further. Virtual prototyping is one way that hardware and software can be executed together to solve this kind of problem.

VETTEL, VICTORIES AND ... CFD

Automotive Design and Production
autofieldguide.com, December 2013

Infiniti Red Bull Racing wrapped up its fourth consecutive championship in 2013 F1 competition. Its most recent car, finishing with 13 victories, was optimized using ANSYS CFD and HPC. The team's chief technical officer said the improvements were "all in the details. We've tidied up some bits we thought could be improved. Our simulation results tell us we've taken a step forward."


▲ Consecutive four-time F1 world title holder, Infiniti Red Bull Racing used ANSYS CFD and HPC software.

STARTUP SETS SIGHTS ON RAPID TRANSIT HYPERLOOP PROTOTYPE BY 2015

NBC News
nbcnews.com, October 2013

Hyperloop Transportation Technologies plans to produce a working Hyperloop prototype by 2015 — a concept developed by Elon Musk to transport humans between cities in pods that are accelerated to near-supersonic speeds. Key partnerships have been developed to help with the design process, including ANSYS, which created some of the earliest simulations of the rail. "Cost is paramount," said Marco Villa, coleader of the project.
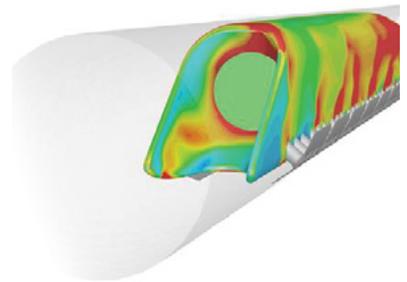
SIMPLIFIED HPC CLUSTERS FOR ANSYS USERS

Desktop Engineering
deskeng.com, November 2013

A major barrier to improving simulation speed is how detailed simulations become, resulting in slow runs and days or weeks to get final simulation analysis. However, high-performance computing is an option that some organizations have been hesitant to adopt. In a survey conducted by ANSYS and IBM, 59 percent of the respondents said they need evidence that HPC has technical benefits before adopting HPC capabilities. In a webinar hosted by ANSYS and IBM, the benefits of HPC were presented so that organizations don't have to fret over the hardware, expertise or support tied to upgrading to an HPC system. In engineering disciplines, there are tides in the affairs of technology, and HPC is the next wave.