

Femap

Sumitomo Electric Industries

High-value CAE solution leads to significantly enhanced product development capability

Industry

Electronics and semiconductor

Business challenges

Develop best-practice analysis methodologies

Improve CAE capabilities of engineers across the entire group organization

Reduce costs

Reduce end-user support workload

Allow more time to be spent on solving challenging engineering problems

Keys to success

Highly functional CAE software that meets cost objectives

Deployment of methodology combined with effective CAE solution across product development divisions

Results

Reduced end-user support workload by 50 percent during deployment of analysis methods

Superior usability and functionality of the Femap pre- and postprocessor contributes to the improvement of CAE competence of entire group organization

Analysis Technology Research Center drives the adoption of CAE across the entire Sumitomo Electric Group

The mission of the Analysis Technology Research Center (ATRC) of Sumitomo Electric Industries, Ltd, (SEI) is to develop and deploy a wide variety of computer-aided engineering (CAE) analysis methodologies across the entire SEI group, including stress, thermo-fluids, electro-magnetic and optical analysis. In recent years, it has become evident that effective use of analysis tools and associated technologies has actually influenced sales of end products, which has increased the importance of ATRC's role. One example of ATRC's work involved the development of an analysis approach to simulate deformation of a composite structure subjected to heat loading. Key to the solution of this problem was not only the ability of the solver to provide a multi-physics solution, but also the provision of high-quality model input data to the solver by Femap™ software from Siemens PLM Software. "The main reason we chose Femap was for its rich modeling functionality combined with excellent cost performance," says Isamu Makino, assistant general manager at ATRC.

Femap enhancements lead to dramatic cost-performance improvement

ATRC had been using a variety of solvers as well as pre- and postprocessors. Despite its mission to deploy tools and methods to its group of enterprises, cost had remained a major obstacle to successful realization. However, with the most recent release of Femap software and its significantly increased functionality, ATRC recognized that it could make the necessary changes.

One of the values ATRC thinks important about Femap is the significant functionality improvement from version to version. While ATRC sees value in other CAE products on the market, most are appropriate for use only by CAE professionals. ATRC feels that many CAE solutions are not well suited for design engineers, especially



Results (continued)

Substantially increased the number of new analysis method development projects

Significantly increased analysis skills in entire group company while reducing costs

“Femap provides excellent cost performance combined with rich functionalities.”

Isamu Makino
Assistant General Manager
Analysis Technology Research Center
Sumitomo Electric Industries, Ltd.

“We could reduce 20 percent of workload on average for each research theme. With Femap, now we can do even more research because our work is more efficient.”

Shigeki Shimada
Assistant Manager
Analysis Technology Research Center
Sumitomo Electric Industries, Ltd.

from a cost and functionality point of view. While Femap already had cost advantages relative to other CAE software, ATRC notes that particularly with recent releases, Femap has caught up with and overtaken other products. With Femap, ATRC can now implement a CAE tool with equivalent or better functionality at a reasonable cost.

Shigeki Shimada, assistant manager at ATRC, adds, “We are quite satisfied with Siemens’ customer support for Femap. Whenever we have questions, Siemens’ response is excellent. On top of that, Siemens has a very deep knowledge of Femap. I have no doubt that this measurably contributes to our productivity improvement.”

Enabling new ways to deploy analysis methods

Femap operates within the Windows® operating system. This means the engineers can work on CAE in an environment with which they are familiar. This is a great advantage for the end users, as now they can try out new ways to deploy the methods themselves. ATRC deploys the developed methods combined with Femap, allowing the end users to work by themselves without relying on ATRC support.

ATRC originally implemented several seats of Femap as a pilot project, but has now increased the seat count by more than five times. “I can say that Femap is now a commonly used tool for us and is the CAE standard for engineers,” says Shimada.

Powerful meshing functionality is the key to increased productivity

The CAE workplace is changing. In recent years, CAE has become more closely involved with engineering design, and used much earlier in the design process. Consequently, not only CAE analysts but engineers in general need to be able to



use CAE tools. 3D CAD is now a commonly used tool in design, and so CAE must also be able to use 3D design data efficiently. A highly valued capability in Femap is meshing of 3D geometry. According to Yuka Fukunaga, assistant general manager at ATRC, “The significant meshing enhancements for hexa-elements in Femap helped our productivity to increase by 30 percent or more. Even for difficult shapes, Femap performs well. Without requiring a complicated operation, a good quality mesh can be obtained.”

ATRC is also satisfied with the performance of Femap, as the average CAE model contains around 1,000,000 nodes, which Femap can manage easily.

Superior usability leads to improved productivity

ATRC spends about 50 percent of its overall workload developing new analysis methods that can be applied to simulate various challenging behaviors, such as ensuring the quality of crimping terminals used for electric wire.

Even though method development is driven by real needs in the field, deployment of the methods can be challenging and, in most cases hands-on support by ATRC staff is required. Previously, each ATRC engineer spent at least 20 percent of his or her workload for support activities, with an engineer working on more than one project at a time. So as the number of

Solutions/Services

Femap

www.siemens.com/plm/femap

Customer's primary business

Sumitomo Electric Industries, Ltd. specializes in the manufacturing of electric wires and cables, as well as a variety of other products.

www.global-sei.com

Customer location

Osaka

Japan

"The significant meshing enhancements for hexa-elements in Femap helped our productivity to increase by 30 percent or more."

Yuka Fukunaga

Assistant General Manager
Analysis Technology Research
Center

Sumitomo Electric Industries,
Ltd.

projects increases, more time is spent on support work and less on method development, which is the engineers' main task. Therefore the ability to release each project as soon as possible after deployment is crucial. With the superior usability of Femap, engineers in the field need minimal help, which substantially reduces the support workload of ATRC engineers. This allows ATRC to increase the time spent on method development projects. Shimada notes, "With Femap, now we can do even more research because our work is more efficient."

CAE reaches more engineers with Femap

CAE is not just a matter of meshing and constraining the model, applying loads and obtaining results. Simulating real-world conditions requires skillful CAE professionals. As more people adopt CAE, more professionally developed analysis methods and templates are required.

Consequently, the role of ATRC becomes increasingly important as it continues to enhance tools and facilities. Every single engineer in ATRC uses Femap, and they can now focus on CAE method development and can spend more time on the most important tasks.

As most modeling data exists in 3D form, even the CAE professionals have to modify the 3D geometry. ATRC therefore is looking to work in conjunction with Solid Edge, and developing a new approach to deployment combined with Femap. Makino points out, "There is no doubt that Femap is the key tool that enhances the CAE functionality in the SEI Group, that Femap strengthens ATRC's CAE capabilities."

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