The Gunma Industrial Technology Center, a public industrial testing and research organization, has undertaken cutting-edge initiatives to address and support the new and emerging technological challenges faced by small- and medium-sized organizations in the region. These initiatives include:

- Research and development of technology to span diverse industries and further the state of the art
- Creating rapid, high-quality analysis and testing systems
- Providing technical support and related tools and documentation

These closely inter-related initiatives become key factors in raising the success, awareness, and satisfaction level of Gunma clients. According to the results of a 2008 survey on public industrial testing and research organizations, Gunma ranked the most effective for four consecutive years. In individual classifications, it ranked number one nationally in testing and equipment development. Recently, the center has launched new initiatives in simulation and manufacturing.

HISTORICAL AND CURRENT CHALLENGES

Plastics production in Gunma has traditionally catered to the local automobile industry. Many of these manufacturers are creating custom designs for their clients, and, to optimize designs, mold flow analysis is a critical step. Many manufacturers don’t have the tools in-house to perform these simulations, so they outsource the simulation to the Center’s specialized analysis team.

Gunma has observed that preparing the geometry for simulation is the main bottleneck in their process. In particular, translating, repairing, and simplifying the geometry, all prior to setting up the actual simulation, are the most time-consuming tasks.

Once the simulation is complete, the geometry typically requires editing. Although Gunma had several CAD systems, they were not effective at editing the geometry, so they’ve had to go back to the manufacturer for every change. The manufacturer must then make a change to the CAD model, leaving Gunma to repeat the entire cleanup process with each iteration. This process becomes even more tedious when the manufacturer has received the part from its customer and is not permitted to make changes to their model. Not only must Gunma document the results of the simulation for the manufacturer to present to their customer, but they must be able to suggest the optimal design in a way that’s acceptable for the customer. Therefore, geometry became a bottleneck both when preparing and returning the customer geometry.

INTRODUCING SPACECLAIM

Gunma found that SpaceClaim was the ideal tool to repair, simplify, and manipulate CAD data and communicate simulation results back up the supply chain.

Everyday CAD geometry contains small faces that can cause undesirable meshes, the first step to making a simulation. SpaceClaim’s model preparation tools can automatically find and remove the small faces, so analysts can rapidly create well-crafted meshes.

“We were very impressed with SpaceClaim’s model preparation capabilities.” Hiroki Kuroiwa, Product Systems Researcher, Gunma Industrial Technology Center.

ABOUT THE GUNMA INDUSTRIAL TECHNOLOGY CENTER

Established in 1922, the Gunma Industrial Technology Center is a public testing and research organization located in one of Japan’s most important manufacturing regions. The Center has consistently promoted leading technology, supported local research and development in the region and, for many years, has also supported all of Japan.
Gunma Industrial Technology Center Introduces SpaceClaim as a Powerful Modeler for Mold Flow Analysis

Using SpaceClaim to make a change to an imported plastic part. In this case, the optimal design involved changing the position, breadth, and height of a rib.

“Using SpaceClaim is so easy and intuitive that we have been able to quickly acquire it and apply it to many different research areas. As a result, we are now providing support not only for analysis preparation but also as part of the strategic research we perform in partnership with small- and medium-sized enterprises. SpaceClaim has extended our reach as well as enabled us to research and develop new technologies and new products.”

Hiroki Kuroiwa
Product Systems Researcher
Gunma Industrial Technology Center

OPTIMIZING THE DESIGNS
Gunma integrates SpaceClaim with Noesis Optimus simulation optimization software and Autodesk Moldflow manufacturing simulation software. Gunma engineers add custom parameters to the models in SpaceClaim. Optimus can then edit the SpaceClaim model based on results from Moldflow and iterate, so designs become optimized automatically.

“We like that SpaceClaim enables us to easily add dimensions that could be used to drive the designs. Not only can we make these edits within SpaceClaim, but our simulation tool, Optimus, can make changes directly to those custom dimensions, optimizing the model the way we wanted. This is a major advantage.” Hiroki Kuroiwa

RECENT DEVELOPMENTS
Where most files Gunma receives originate from a variety of CAD products, they aren’t able to work with the data. SpaceClaim has become a valuable tool for Gunma because it can edit CAD models, regardless of origin. When sending analysis results back to the CAD team, SpaceClaim automatically highlights the modifications, so Gunma’s clients know exactly the changes that need to be made to the master models.

“When performing optimization analysis during joint research, SpaceClaim enables me to contribute to the process with much improved results. We are now able to shorten project times and analyze more cases than we could previously.” Fukushima Yoshio, Industrial Systems Department Head, Gunma Industrial Technology Center.

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