

User Case Study for CAM-TOOL

**Improve bottlenecks by introduction of “Surface Plus”,
reducing man-hours for mold model editing down by 40%!!**

SANKO LITE INDUSTRIES CO., LTD.

Our client, SANKO LITE INDUSTRIES CO., LTD., designs and manufactures the molds, and then processes, paints and assembles housing parts of communication devices, such as mobile phones and PHS phones, in addition to automobile components, plastic tableware and many others. While many Japanese manufacturing industries are developing their manufacturing bases outside of Japan, SANKO LITE INDUSTRIES CO., LTD. Takes “MADE IN JAPAN” as their policy and puts their best effort into manufacturing luxurious, high-quality products, based in Japan. Today, let’s hear from Mr. Takayama and Mr. Okada of the Sales Technology Department/Mold Section in the Nakahara Plant, where the Mold Manufacturing Division is located.

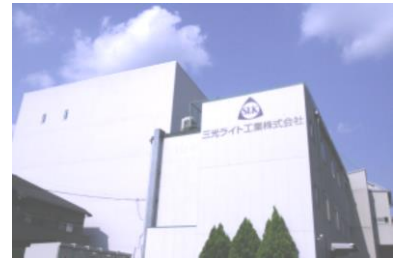


LIM (Liquid Injection Molding)

Silicone LIM achieves waterproof packing parts, which can not be produced by other methods.



High Adhesive Two-Color Molding



Nakahara Plant,
Sanko Lite Industries, Co., Ltd.

➤ CAM-TOOL supports the proprietary technologies, such as precise waterproofing and high-adhesive two-color molding

Mr. Takayama; “We are ready to supply our products all over Japan. In the Nakahara Plant where I work at, we are engaged in designing and manufacturing for mass-production molds and prototype parts, while in our manufacturing base, the Saitama Plant, the molded items are painted and assembled. We provide several types of molds, such as single-resin injection molds, two-color molds capable for different materials molding, LIM molds for injecting waterproof packing into molded plastic parts, and others. It has been basically challenging to achieve precise dimensions for mobile phones. Additionally, on the two-color mold, dimensional matching accuracy for each combination of 2 different movable side dies and 2 identical stationary side dies is required. An LIM mold is also a special mold that requires high precision on the sealing face, so as not to allow the resin to leak out. Furthermore, there also may be a request of mold correction of 1/100 mm after a trial shot. Since our molds can not be acceptable without high precision, CAM-TOOL, that achieves the desired machining accuracy, has been an indispensable tool for us.”

➤ Mold model editing, causes the bottleneck

Mr. Takayama; “Here’s how data flows for our company’s mold manufacturing. First, the design group designs a 3D mold model. Then, the model data is sent to us here at the Molding Division and the machining data is generated. Just after the cavity and core models are provided, many elements are added to the models. For instance, there are holes such as bolt mounting holes, tapped holes, the ejector pin holes in the core, and the wire-cut contours for oil grooves in the sliding portions or for inserts. If CAM operation is processed with the original model data, the generated toolpaths may not be always appropriate, with the possibility of incorrectly interfering with other holes, etc. Therefore, model editing needs to be performed to delete those unnecessary elements in advance. In fact, this editing operation has been a critical bottleneck for us.”

➤ **To solve the model editing problem**

Mr. Takayama; "For the hole filling operation, we can use "Fill Hole" or "N-Side Compensate Surface" command to fill a hole easily. However, considering the continuity of the surrounding surface for proper machining, it is best to restore the surface to the state before the holes to be filled are created. For example, when the core has a runner on it(Fig.1), the runner may need to be deleted and machined by another process. Previously, it was performed with a method to extend the surrounding surfaces by using the "Untrim Surface" command to cover over the runner. Although there may be cases where it is possible to create proper surfaces only around the target shape successfully, it really depends on the condition of the surface and on the complexity of the shape, especially on a free-form surface. There also may be cases where not only the surrounding area of the runner but also the whole surface returns to the original surface(Fig.2). In such cases, it is necessary to trim the surrounding surface with many other time-consuming operations, like extracting the contour of the surface or creating a new contour for trimming. This has been our problem about model editing.

Because of our needs, we received news in 2016 from C&G Systems (CGS) about a newly developed "Surface Plus" with a solid-like surface modeling function created, and then we attempted some testing. After 2 months of the testing, we were astonished that the product concept "Possible to Operate like Solid-Modeler" was true. "Filling holes (runners) on free surfaces" and "Restoring the surface to the previous condition when the holes (runners) did not exist", which had been our problem until then, could be done successfully, without any miss-processing that we were concerned about(Fig.3). We found that the option would reduce our labor and eliminate the bottlenecks, so we decided to install "Surface Plus" to all of our CAM-TOOL (4 systems)."

➤ **Model editing operations, such as deleting ejector-pins and mounting-holes, were drastically reduced**

Mr. Okada; "There are several unnecessary elements for CAM processing in the model received from the Design Group, such as the ejector-pins, runners and mounting-holes for bolts. The "Delete Surface" function in "Surface Plus" is very effective for deleting those elements. Especially the trimming operations after removing holes or shapes with trimmed contour across over multiple surfaces, have been reduced drastically, improving our operability(Fig.4)."

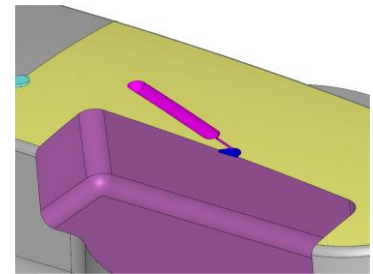


Fig.1) Deletion of runner/nozzle shapes

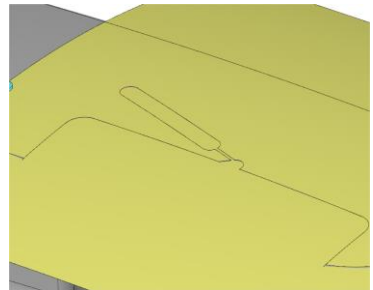


Fig.2) Entire surface extended by "Untrim Surface" command

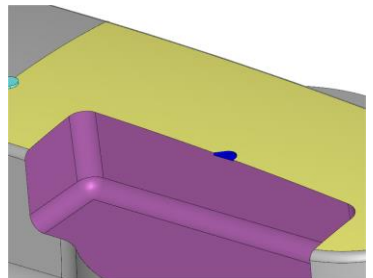


Fig.3) Surface Plus / deleting and filling-up with single operation

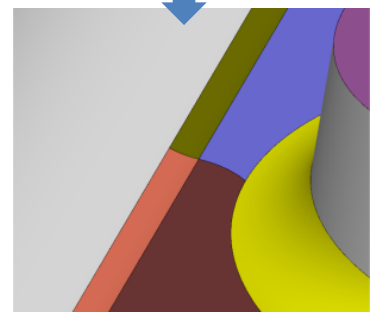
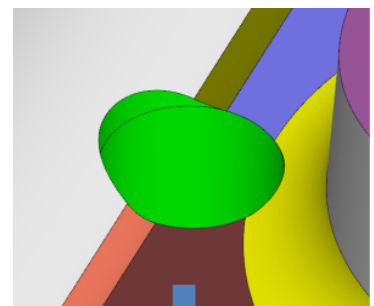
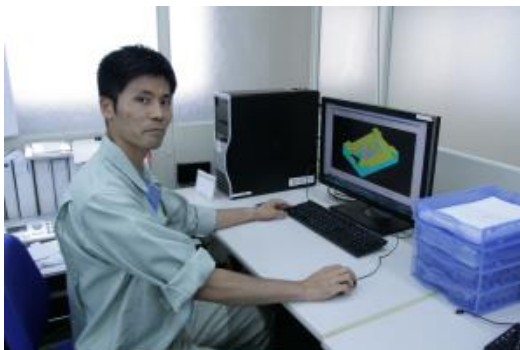


Fig.4) Deleting hole across over multiple surfaces



Mr. Okada operating "Surface Plus"

➤ **Model editing operations, such as deleting ejector-pins and mounting-holes, were drastically reduced**

Mr. Okada; "Unlike Solid-Modeler, "Surface Plus" creates intermediate shapes if possible, even if the deletion doesn't completely succeed, so all I need to do later is further correction on some parts. That has been one of the big advantages of using "Surface Plus"(Fig.5).

Moreover, we are recently utilizing the functions also to create additional surfaces for generating more efficient toolpaths. Previously, we were using "Expand Surface" and "Move/Copy" commands in combination. But now, by using the "Move Surface" command and specifying the target surface to move, it has been possible to extend multiple surrounding surfaces simultaneously with a single operation(Fig.6).

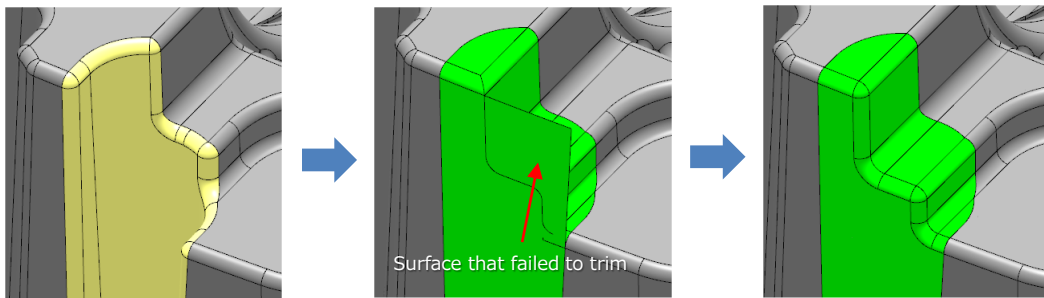


Fig.5) Example for creation of intermediate shapes when "Delete Surface" is not completed

Until now, surface deletion and surface extension functions have been used in various model shapes. My understanding about the functions is getting deeper every time I use them, and I feel those are flexible commands for users, as their usages are expanded for various cases. We are now also paying attention to the "Boolean Trim" function installed in the latest version(V13.1). We expect that it will be effective in such cases where parts must be divided during the post-designing step. We are aiming for further reduction of our labor time with it."

Mr. Takayama; "By installing "Surface Plus", model editing labor has decreased drastically and the required man-hours have been **cut by 40%** compared to prior to installation. This means that **lead time has been successfully shortened by around 15%** from the viewpoint of total man-hours for the Molding Division. I feel we have achieved great results."

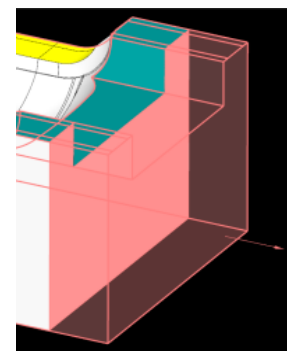
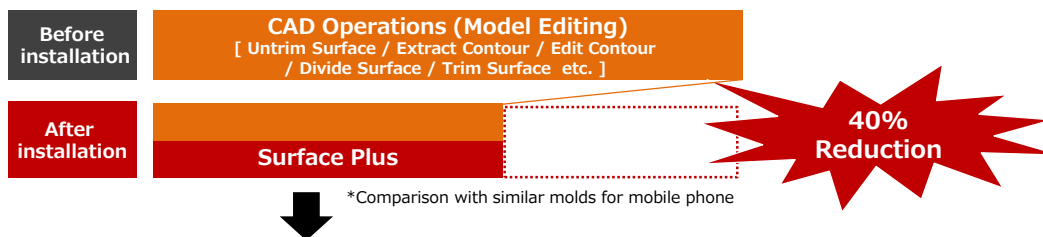


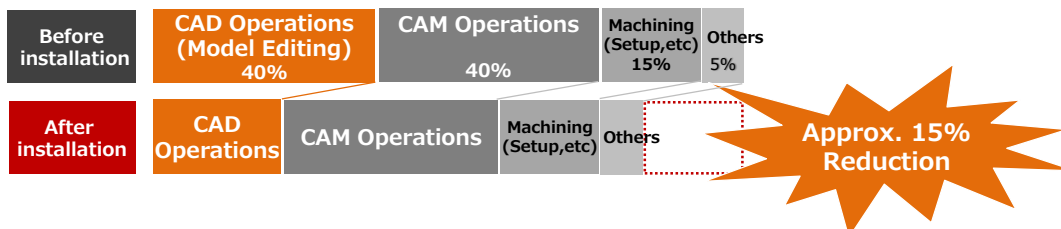
Fig.6) Surface extension by "Move Surface" (Temporary View)

* model: provided by CGS

《 Comparison of CAD Operations (Model Editing) 》



《 Comparison of Total Man-Hours for the Molding Division 》



➤ Future Prospects

Mr. Takayama; "Although so far we have already had high precision machine tools and equipment, we intend to positively install equipment that will bring new value needed to enhance competitiveness. Even for CAD/CAM systems, we are also seeking more efficient designs and machining data. We have been using CAM-TOOL for more than 15 years, and this time we were able to shorten our lead time by installing "Surface Plus". Now, we are expecting CGS will strengthen this function, as well as progressing further integration of CAD and CAM, hoping the system to evolve into an even more efficient system.

Until now, our company has been working on increasing work efficiency and cost reduction, with our motivation of delivering high precision and high quality. However in the current situation, where our competitors are not only in Japan but also spread across Asia, it is necessary to pursue increased work efficiency and further cost reductions while maintaining high quality. Our next challenge will be to shorten the lead time for mold manufacturing by 20%."

Thank you for your cooperation and time for the interview.



Company name : SANKO LITE INDUSTRIES CO., LTD.
 Representative : Daizo Nagamine
 Address : 6-22-10 Kamiotanaka, Nakahara-ku, Kawasaki-shi, Kanagawa Japan
 Phone : 044-733-6181
 URL : <http://www.slkco.jp/>
 Business : Manufactures and sells housing parts and precision components for communication devices such as mobile phones and PHS phones.

From CGS sales representative

Sanko Lite Industries Co., Ltd. is our valuable customer, having used our system for a long time since the era of TOOL-I, the automatic programming system, and CAM-TOOL C3 for UNIX OS. I have been proud and grateful to be part of this partnership since started working as a support engineer. Until today, we have been receiving many requests as well as patronages, which are reflected in our current systems. We are eager to maintain the strong and constant partnership in the future, continuing to develop the indispensable systems for Sanko Lite Industries. We wish the best for your company.



Akira Watanabe
@Tokyo Office

Thank you for your cooperation and time for the interview.

C&G SYSTEMS INC.

- | | | |
|---|--|-----------------------|
| ■ TOKYO HEAD OFFICE (Overseas Sales Dept.) | Tennoz Central Tower 19th floor, 2-2-24 Higashi-shinagawa, Shinagawa-ku, Tokyo 140-0002 JAPAN | TEL. +81-3-6864-0781 |
| ■ KITAKYUSHU HEAD OFFICE | 1-5-15 Hikino, Yahataku-ku, KITakyushu-shi, Fukuoka 806-0067 JAPAN | TEL. +81-93-642-4508 |
| ■ INDONESIA TECHNICAL CENTER | MENARA MULIA 27th floor, Jl.Jend.Gatot Subroto Kav.9-11 Karet Semanggi Setiabudi Jakarta 12930 INDONESIA | TEL. +62-21-2953-9512 |
| ■ CGS ASIA CO.,LTD. | 11th floor, CTI Tower, 191/83 Ratchadapisek Rd., Klongtoey, Bangkok 10110 THAILAND | TEL. +66-2-661-9620 |
| ■ CGS NORTH AMERICA INC. | 2160 Fasan Drive Oldcastle (Windsor) Ontario, N0R1L0 CANADA | TEL. +1-519-737-6009 |
- E-mail overseas@cgsys.co.jp URL <http://www.cgsys.co.jp/en/>