

For Nissin Kogyo, ESI ProCAST is an Indispensable Tool for Assuring Production Quality



Nissin Kogyo Co. Ltd., established in 1953, develops, manufactures, and sells brake equipment for two- and four-wheeled vehicles. Honda Motor Co., Ltd. and Toyota Motor Corporation are among their largest customers. One of their main challenges is meeting crucial demands of such OEMs, including reducing the weight by using lightweight aluminum – without sacrificing performance and durability.

Brakes are the primary safety device of an automobile and at the same time are often visible and must be aesthetically pleasing. They typically experience temperatures of 200° - 300°C as a consequence of friction during braking and must function well under the adverse environments of dirt, water, snow and salt. The challenge for many manufacturers, such as Nissin Kogyo, is to deliver, in the shortest time, optimal designs that meet the stringent requirements of automobile OEMs.

The level of defects Nissin Kogyo experienced in their product lines was too high and was delaying deliveries to their customers. With increase in production and product diversification, the problems amplified.

The main challenge was to produce a “quality casting” (right size, shape, weight, strength) without internal defects and with a good after-machining surface finish. At the same time, the manufacturing process had to be designed to provide the highest possible yield. Nissin Kogyo realized that

their success depended on understanding the casting process inside the mold cavity.

Choosing the right simulation software

Nissin Kogyo adopted ProCAST, which provides an accurate description of the complex casting surface, and the detail of the molten metal filling inside the mold cavity.

“Before the introduction of ESI ProCAST, the percentage of defects was relatively high, leading to a smaller yield. It was impossible to accept this with an increase in production and the diversification of products. We were able to reduce the percentage of defects to a very large extent thanks to a high accuracy simulation tool like ProCAST.”

Mr. Katsuhiko Ashida

Chief Engineer, Development
Operations
Nissin Kogyo Co. Ltd

One of the challenges in casting is that the wall thickness is always non-uniform. ESI ProCAST captures this non-uniformity very well, which is important to Nissin Kogyo as their product portfolio is diverse and they need to accurately predict flow and solidification in several designs and process variants.

Effective in-house implementation

Using ProCAST in the development cycle, Nissin Kogyo was able to produce high integrity castings and greatly reduce their scrap rate. By increasing production and diversifying their products, while maintaining quality, they gained the confidence of their customers. Future simulation work will focus on the design of molds, which compensate for change in geometry during solidification and cooling.

About Nissin Kogyo

Nissin Kogyo is a Japanese automotive parts company that specializes in the manufacture of braking systems. The Nissin Group as a whole, which has more than 9,000 employees, has evolved into an integrated brake system manufacturer able to globally provide brake systems for motorcycles and automobiles. The company was founded in 1953 and is listed on the first section Tokyo Stock Exchange.



for more information
www.nissinkogyo.co.jp/en/
www.esi-group.com/ProCAST