CUSTOMER STORY

THE WAY FORWARD TO IMPROVED CASTING

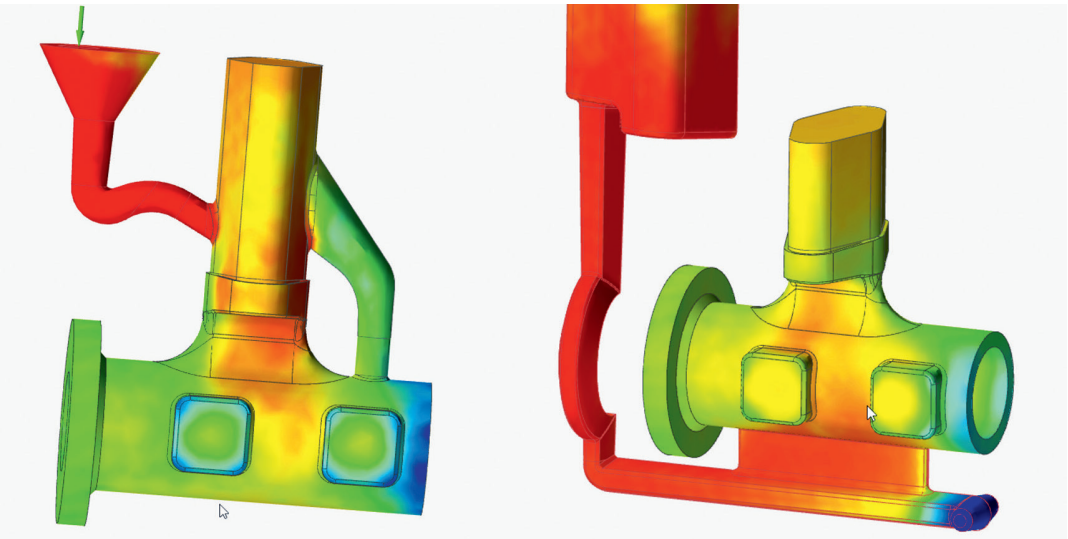
SKAIGH ENGINEERING USES CASTING SIMULATION TO ADVANCE PROCESS DEVELOPMENT

About the Customer

Skaigh Engineering, based in Devon, U.K., specializes in high-quality aluminum gravity die castings for customers in various industries. With a turnkey delivery approach covering casting design, simulation, and manufacturing, the company offers a range of on-site services, including sand cast prototypes, die and tooling manufacture, sand cores, heat-treatment, various surface finish treatments, and fully machine-customized castings. The organization is committed to giving its customers an edge in a competitive market by providing excellent products and services the first time around.

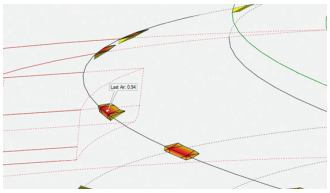
> “Simulation is the way forward in the foundry industry – and we are delighted with Altair® Inspire™ Cast. It helped us resolve casting issues that can’t be resolved by our experience and helped us overcome real-world production challenges, save time, and reduce costs.
>
> Mike Haper, foundry director, Skaigh Engineering

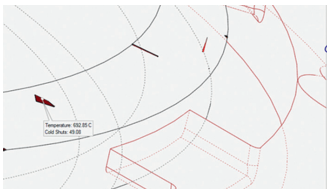
Try Altair® Inspire™ Cast Today: **Download Now**



Old Technique

New Technique





LEFT: Using Inspire Cast, the Skaigh team redesigned the gating and sprue system to improve the manufacturing method and reduce the scrap rate. **RIGHT:** Inspire Cast's last air analysis revealed air entrapments that had to be removed.

Their Challenge

While casting is one of the oldest manufacturing methods, industrial cast parts and foundry processes are undergoing major transformations due to increased customer demands and increasing part complexity. To be successful and grow in a competitive global market, casting manufacturers have to address many challenges, including the need to reduce development and manufacturing costs. Skaigh set out to solve several typical problem areas, such as wasted time spent improving customers' poor manufacturing techniques and long lead times due to trial-and-error development methods involving inherited dies. To improve the development process, the team started investigating using simulation.

Our Solution

Skaigh turned to Origin Engineering Solutions, an Altair partner that provides design and simulation solutions, support, and training. Working with Origin, Skaigh implemented Altair® Inspire™ Cast, which enabled them to reduce costs and lead times. One specific use case they were able to solve was the new design of a tool to replace a 15-year-old, worn-out actuator die that was producing too much scrap. Using Inspire Cast, the Skaigh team simulated the old method, visualized the part filling, and corrected casting defects such as air entrapment. As such, the team redesigned the gating and sprue system to improve the manufacturing method and reduce scrap output. In another use case, Skaigh addressed the challenge of foundry problems – striving to find out what caused surface defects (small holes) – on a cast rim. Conducting a filling analysis with Inspire Cast showed turbulence in the middle of the part and predicted macro and micro shrinkage, which wouldn't account for the quality problems. Inspire Cast's last air analysis, however, revealed air entrapments that had to be removed. Based on these results, Skaigh changed the manufacturing, redesigned the part, and eliminated the air entrapments.

Results

Implementing the easy-to-use Inspire Cast software, Skaigh can now explore more concepts faster and earlier in the development process, spot and eliminate defects, reduce lead and development times, and improve the quality of cast parts. Simulation helped the company gain a better understanding of the casting process, let it try out theories without prototypes, increase customer confidence, and save money by reducing scrap and improving yields. In addition to producing an interface between product design and the casting process, simulation bridges skill and knowledge gaps and enables users to think outside the box so they can get things done right the first time.

To learn more, please visit altair.com/inspire-cast

Origin Engineering Solutions

ALTAIR CHANNEL PARTNER

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