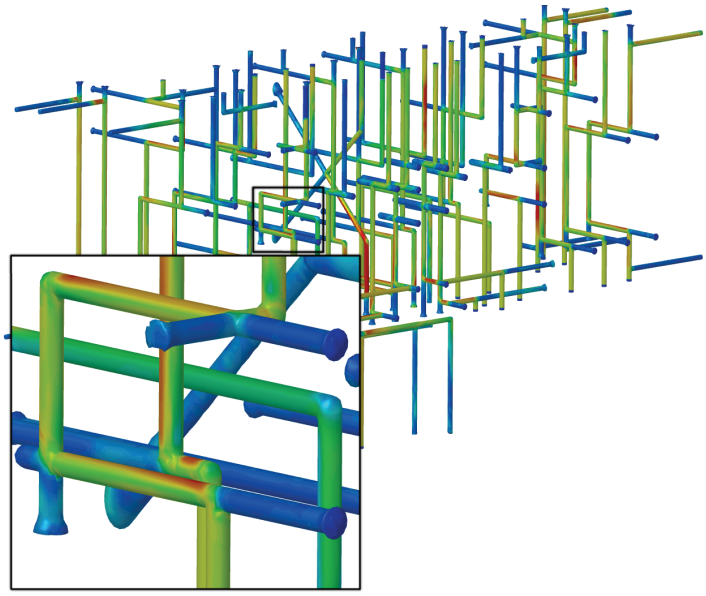
EKKcapcast

Recent Improvements

At EKK, we are firmly committed to bringing you the very best and newest advancements in casting simulation software. Our team of engineers is constantly developing new features and capabilities; we go out of our way to accommodate user requests.

Cooling Line Flow Analysis

Cooling media are commonly employed to control temperature gradients and casting solidification in permanent molds. The intricate designs of cooling make it often difficult to predict their efficacy. EKK has been researching ways to gain insight into this by analyzing the flow of water within cooling media directly.

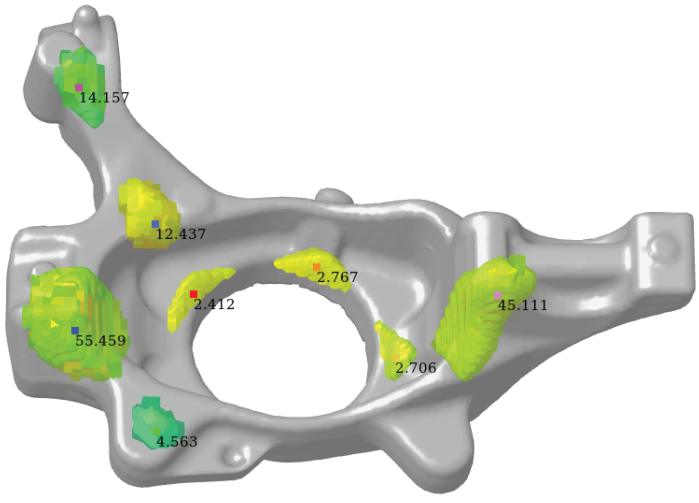


- Different areas in cooling lines are more effective than others. Analyzing the flow of the water helps indicate where the most heat can be removed from the die.
- Often, software simulation will idealize cooling media as simplified, homogenous components. While adequate in some cases, in others it can be too simplified and hide possible problems.
- Cooling lines are often numerous in advanced designs. Our procedure automates this process. The example shown ran in 1.5 hours.

Final Separation Tracker

When identifiying the places to last solidify in thermal simulations, it can be tricky finding exactly which areas are noteworthy.

EKKcapcast now has a tool that automatically finds and plots all the areas that take significantly longer to solidify than their surroundings, indicating where shrinkage is most significant.



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EKK, INC.
Metal Casting Simulation Software & Consulting Services

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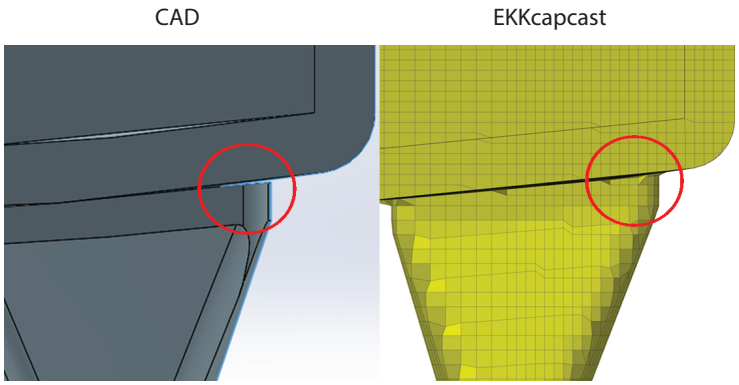
Robust Meshing

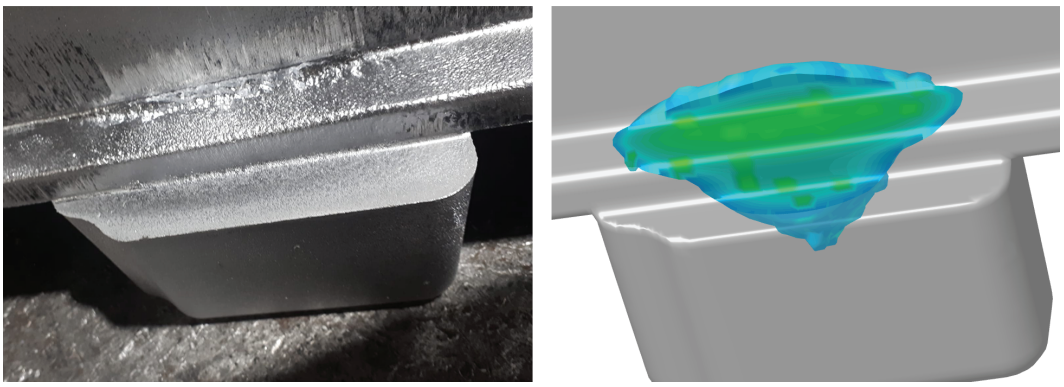
Simulation requires a sound mesh, which is based on 3D CAD models. Often when preparing a simulation, problems with the mesh can appear. These problems, such as gaps between components, localized rough surfaces, and other issues, can degrade the quality of the mesh and negatively affect subsequent simulations. EKKcapcast has been continually improved to be resilient to CAD errors.

As seen here, an erroneous gap between the in-gate and the casting was found in the CAD. Despite this gap, the mesh is able to be produced correctly with no gap in the real simulation mesh data.



A good mesh can also drastically reduce the simulation time. Improvements to our mesh generator yield a 30 - 100% increase in speed without additional changes needed.

Pipe Shrinkage: In Action



Improvements to EKKcapcast's pipe shrinkage calculation has allowed for unparalleled accuracy in its results. This calculation is used for finding areas within the casting that are susceptible to shrinkage and surface suck-in during solidification. The software takes into account the effect of gravity on the potential for shrinkage to accurately predict pipe shrinkage. Shown here is an example of the pipe shrinkage calculation successfully identifying piping below a riser in a low pressure casting, highlighting not only the location but the severity of the problem area as well.

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