Simulation Trends in the Casting Industry

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Abstract

In the current competitive environment, the capability to produce casting components of high quality while at the same time reducing production cost and development times is a challenge the foundry industry faces today. Whether it is the design of a new component or redesign of existing products, computer aided modeling has proved that there are several cost savings to be gained in the process development and production stage. By eliminating product defects and reducing scrap and rework, the foundrymen can achieve improved and more consistent product quality and more efficient designs that produce higher yields.

Casting simulation provides predictive evaluation tools to be applied on the entire casting process, including filling and solidification defects, and also advanced analysis like thermal stresses & part distortion to assist in making the appropriate decisions at an early stage of the manufacturing process. The casting sequence also involves upstream steps like gating and die design operations and downstream steps like trimming, heat treatment & machining operations that will determine the main properties of the component. As a consequence these different steps will influence as well the effective performance of the part once assembled in the final product and submitted to real conditions of use.

ESI Group, world-leading solution provider in Virtual Prototyping software and services, has developed a complete set of solutions for the foundry industry in its Casting Simulation Suite, ProCAST. With more than 25 years of collaboration with major industry & research partners, ProCAST enables rapid visualization of effects of design changes and provides a basis for correct decision-making, from the earliest stages of the manufacturing process.

ESI Group offers Virtual Product Engineering to support the industrial innovation, and continuously evolves by being part of the major industrial & research consortiums.

This presentation provides an overview of advanced engineering and latest simulation trends in the industry.