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Casting: An Analytical Approach

For a long time, the die cast industry has used trial and error as a leading development method, resulting in tremendous growth in the utilisation of available CFD (computational fluid dynamics) software. This software allows the development of better products that maximise the advantages the die cast process has to offer. *Casting: An Analytical Approach* will refresh knowledge of the governing laws of the fluid dynamics that have an effect on die cast die and die cast process design.

MATLAB® (MathWorks, Inc.) and Visual Basic® (Microsoft) code are listed in *Casting: An Analytical Approach* for every stage of product, die and die cast process design; providing better understanding of die and process design and simplifying calculations of the die cast die as well as the die cast process. Gas ventilation system calculations and fundamentals of compressible gas flow are also included. Readers will learn about:

- the advantages and limitations of the die cast process;
- the implications that product design has on the quality of the die cast part;
- how die cast die and process design can affect the physical properties of the casting;
- the calculations die cast die and process designers have to do;
- choosing the die cast machine size and the proper gate size; and
- how to properly design gas ventilation systems, identify an ideal fill time, and calculate fast and slow shot velocity.

The use of MATLAB® and Visual Basic® code to illustrate every stage of the design will help readers to gain a better understanding of the importance of collaboration throughout the entire process. Therefore, *Casting: An Analytical Approach* will be of interest to product designers who design die cast parts, and die cast die and process engineers and designers.

Contents: Introduction.- Introduction to fluid dynamics.- Part design.- Die design.- Process design.- Quality.- Computer simulations.

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