Aluminum Casting Design Essentials

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Learning Made Simple, Visual, and Interactive

The THORS *Aluminum Casting Design Essentials* course introduces the key considerations involved in aluminum casting design, focusing on early decisions that shape cast part development. This course covers design requirements, cost, annual usage volume, and other design considerations, including Design for Manufacturability (DFM), Design for Serviceability (DFS), and process ideation. It also explains the material selection criteria and the common aluminum casting alloys used in casting applications. Presented in a visually engaging and interactive format, this course provides a clear understanding of what it takes to design reliable aluminum cast parts.

Credit Hours **2.0**

Learning Objectives

- Identify the key design considerations involved in aluminum casting design.
- Describe design requirements, cost, annual usage volume, and other key design considerations in aluminum casting design.
- Explain the importance of Design for Manufacturability (DFM), Design for Serviceability (DFS), and process ideation in aluminum casting design.
- Recognize the material selection criteria used to select aluminum casting alloys.
- Differentiate between common aluminum casting alloys.

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I. Design Considerations

- **Design Requirements**
- **Cost**
- **Annual Usage Volume**
- **Dimensional Footprint**
- **Safety Factor**
- **Corrosion Resistance**
- **Load Changes**
- **Design for Manufacturability (DFM)**
- **Design for Serviceability (DFS)**
- **Process Ideation**

II. Casting Materials

- **Material Selection Criteria**
  - Material Properties
    - Tensile Strength
    - Yield Strength
    - Elongation
    - Elastic Modulus
    - Hardness
    - High Temperature Strength
    - Fracture Toughness
    - Fatigue Performance

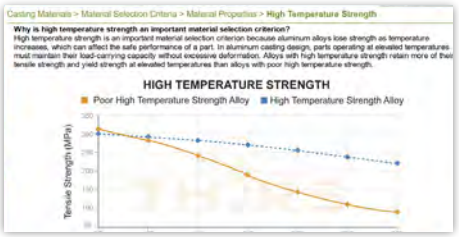
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II. Casting Materials (Cont.)

  - Casting Characteristics
- **Common Aluminum Casting Alloys**
    - 100 Series
    - 200 Series
    - 300 Series
    - 400 Series
    - 500 Series
    - 600 Series
    - 700 Series







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