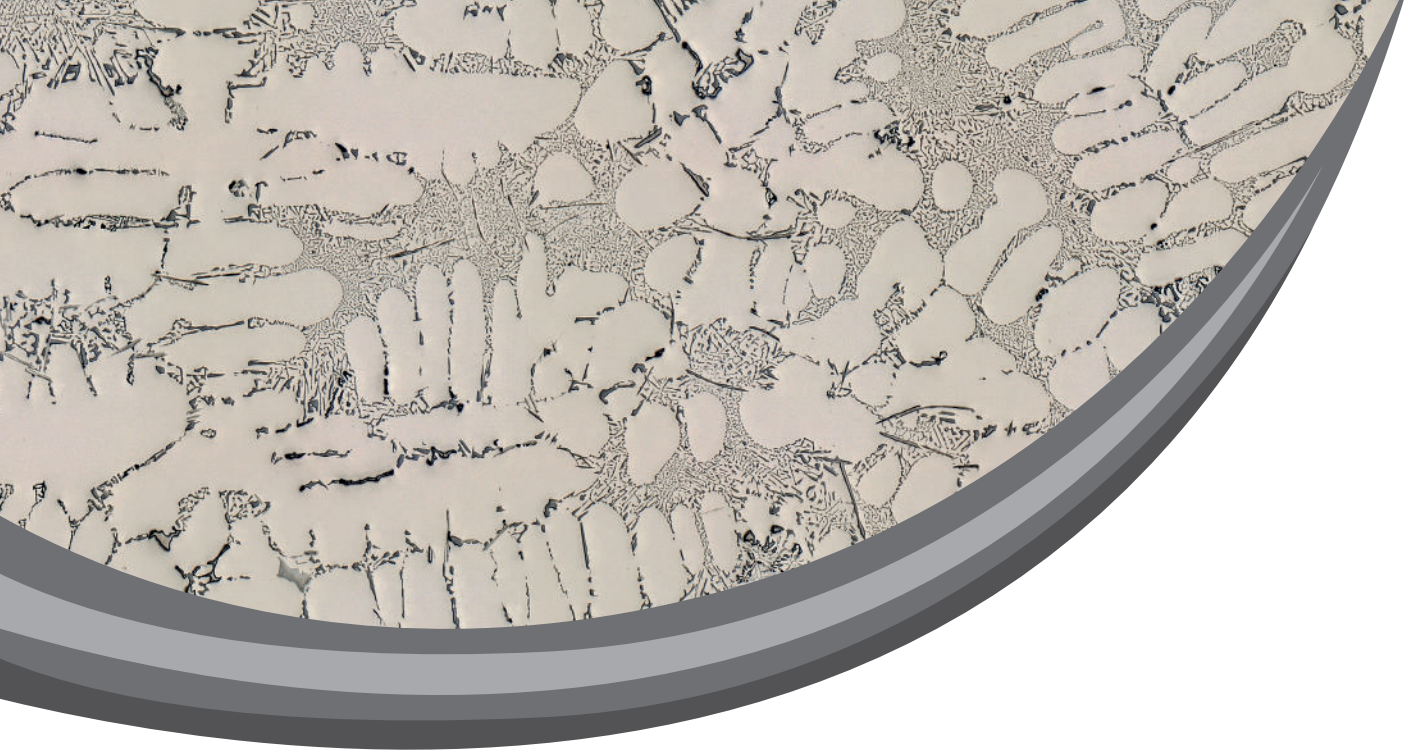

MEASURE THE SOLIDIFICATION PROPERTIES OF YOUR MELT BEFORE CASTING

- Diagnostic tool / Troubleshooting defects
- Production tool: Go/No-go indicators
- Melt Process improvement
- Quality control for new batch of ingots
- First Article Inspection
- Casting design tool for simulation software

FOUNDRY SOLUTIONS
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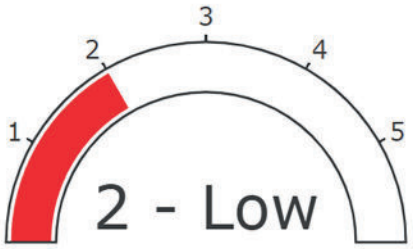
SF Thermal Analysis

MEASURE YOUR SOLIDIFICATION

QUALITY INDICATORS

Grain Refinement



Liquidus 618	Modification 5
TFR 90 35	β - AlFeSi

GRAIN REFINEMENT

- Uniform solidification & casting properties
- Reduce defects due to porosity and shrinkage

Control your grain refinement using SFTA

- Confirm grain refinement treatment before casting
- Reduce amount of grain refiner used to obtain desired results
- Determine proper treatment intervals

EUTECTIC MODIFICATION

Strontium modifies the eutectic structure of Al-Si alloys from acicular to fibrous. Most aluminum foundries buy pre-modified ingots. The main drawback of this practice is the level of strontium vary from ingot batches and supplier. Therefore, the mechanical properties and the level of porosities will be affected.

Recently, a foundry transitioned from using pre-modified ingots to treat the melt themselves. This was achieved using thermal analysis to control the modification level. This change in practice improved the elongation by 30%, the yield strength by 15% and less dependent to the ingot supplier.

Advantages of using SFTA to control modification

- Target the minimum strontium level
- Control the modifi cation treatment
- Adjust the melt process
- Consistent mechanical properties

HOT TEARING

Aluminum alloys such as Al-Cu, Al-Zn and Al-Mg are prone to hot tearing.

Thermal analysis allows to determine the hot tearing index using the solid fraction and the Terminal freezing range (TFR) temperature. For example, the TFR between 90% and 99% solid gives a good indication of the hot tearing susceptibility of the alloy.

SOLID FRACTION CURVE

- Measure your true solid fraction curve
- Adjust casting simulation parameters
- Design new alloys
- Technology transfer from R&D projects