

Delivering casting solutions

Sim-Cast save their customer's development time and money by helping them understand their process!



Fast and Agile

Sim-Cast are helping their customers reduce their development lead time by offering fast and agile solutions.

Reducing time to market and being agile has become a more important feature of a manufacturer's success.

Ever increasing reliability, efficiency and cost demands are leading to more design iterations and feedback from testing, which requires fast and agile manufacturing.

Development costs

This traditionally led to foundries investing in front-end development earlier in order to reduce risks, which is costly and reduces their capacity.

This upfront work involves trials and

testing to understand and resolve issues, before committing to expensive tooling.

Sim-Cast reducing risk

Sim-Cast are helping foundries reduce their development costs and time, with minimum disruption to capacity.

Sim-Cast are able to simulate numerous different trial configurations and designs in a fraction of the time and cost of real production.

Sim-Cast reduces risk further, with sensitivity studies of the process and tolerances applied.

All of this attention to detail allows Sim-Cast to deliver solutions that work every time on demand.

This issue – June 07

- Product development
- Reducing risk
- Ensuring robust design

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Previous Issues

- [March 2007](#)
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Ensuring Robust design

To reduce additional unplanned product costs, Sim-Cast determine the sensitivity of their solutions.

Sim-Cast understands the process and system noise to reduce unplanned failure, which could lead to additional costs and delays.

Sim-Cast understands the different input ranges before using this data with nominal data to understand the resultant output.

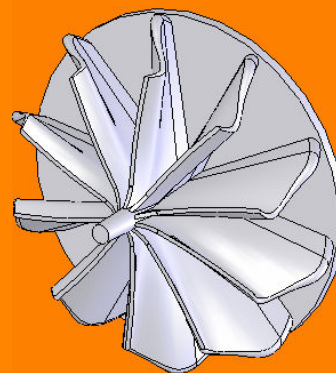
Inputs

Alloy pour temp
($\pm 2\%$)

Mould temp
($\pm 2\%$)

Mould thickness
($\pm 20\%$)

Pattern dimension
($\pm 10\%$)



TiAl Turbine wheel

Outputs

Manufacturing Cost

Manufacturing Rate

Manufacturing Quality

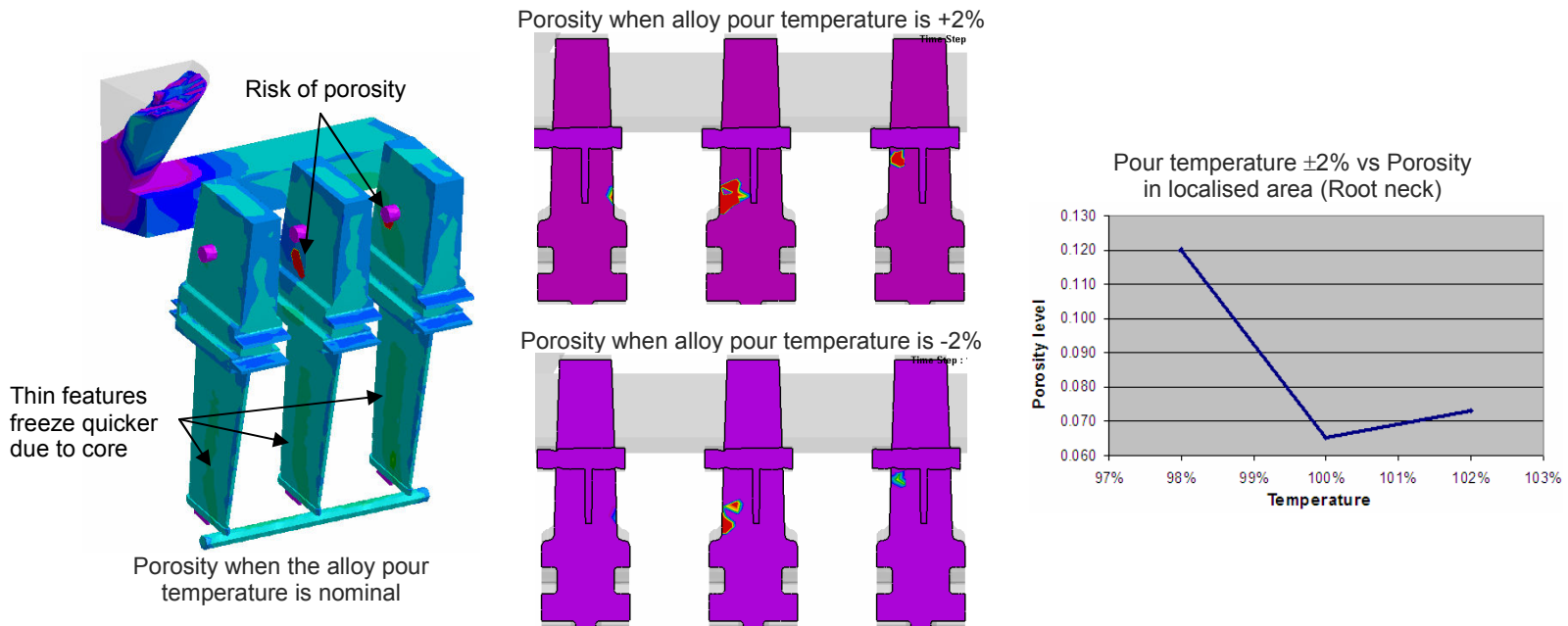
↓
Metallurgical quality
+
Dimensional quality

↓
Operational performance



Why use Sim-Cast

Sim-Cast's solutions include the capability to understand the impact on subtle process variance and noise. As seen in the cast equiax blades below, $\pm 2\%$ variation in the alloy pour temperature will affect the output, which in the case below can be seen as the change in porosity levels.



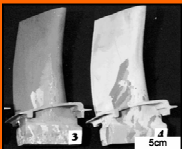
Business benefits

Sim-Cast's experience and capabilities offer unique opportunities to achieve exceptional performance, and are helping their customers meet increasingly demanding improvement goals and targets.

Sim-Cast focus on solutions for today's problems and deliver;

- Increased business capability and capacity
- Increased knowledge and understanding of the process
- Improved new product development process and time to market
- Centralised and standardised processes
- Improved ability to handle capacity fluctuations
- Reduced labour costs

HABs



[Ref: Spowart & Mulles, 2003]

Freckle chains



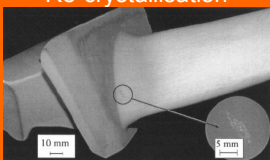
[Ref: Beckermann C, 2000]

Porosity



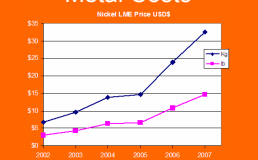
[Ref: Machine design iss 10144]

Re-crystallisation



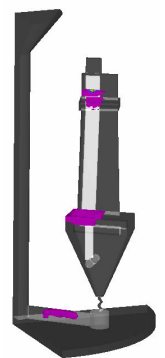
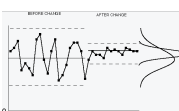
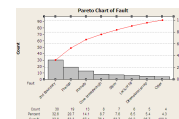
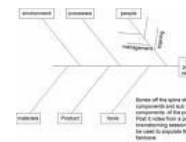
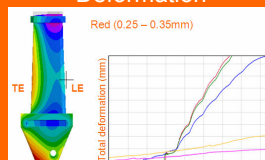
[Ref: Burgel et al, 2000]

Metal Costs



[Ref: LME Nickel Prices 2002-2006]

Deformation



Identifying today's problems

Providing today's solutions