Improvement of Feeder Technologies for Energy Savings in Cast Iron Foundries

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Casting

Table 4. Summation of results comparing feeder sleeve material (and modulus) with type and size of porosities found in the liquid penetrant test, as well as the flatness value from the CMM measurements.

<table>
<thead>
<tr>
<th>Material</th>
<th>α1</th>
<th>α2</th>
<th>α3</th>
<th>α4</th>
<th>α5</th>
<th>β1</th>
<th>β2</th>
<th>β3</th>
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<tbody>
<tr>
<td>Flatness [mm]</td>
<td>Average of casting groups</td>
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Improved optimisation of cast design

Fig. 6. Porosity simulation for casting groups α1, α2, β1 and β2. The 3D model is sectioned through the vertical centerline, exactly as the real castings were. The simulations of α1 and α2 apply a graphite exothermic and exothermic-insulating sleeves have a difference between the insulating and exothermic feeders, and β1 made all the difference.

Thermal gradient control

Enable lower casting temperature

β1

WHERE

HOW

Energy Savings in Cast Iron Foundries

2%

L

u

r

show at 85% solidified.

Fig. 7. Simulation of thermal gradients at the neck of the center feeder. Thus, all 9 castings are sound and CP1 defects in one or more areas. Casting group, center feeder sleeve, and an exothermic/insulating top feeder sleeve provide the conditions needed to distribute the heat evenly and prevent uneven cooling, allowing for better casting quality.

Potential Process Errors

• • • • • • •

E/I

Exo

Ins

Spot feeding

Correct feeding improves...

- ventilation cast in the foundry,
- handling of the goods after casting,
- transport of the goods, and
- the operation of the finished product.

WHERE

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