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Casting defects not only affect quality, they impact your profit margin and competitiveness. The good news – there is a standard test for every defect and Simpson offers the solution. No foundry is too small to invest in defect protection with Simpson lab equipment!



Want to know more? Contact us today:
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IN-HOUSE SAND TESTING FOR DEFECT PREVENTION



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ARTICLE TAKEAWAYS:

- In-house sand testing for better raw materials control
- Tracing scrap back to its root causes
- Foundries need real-time sand property management

Defect prevention is critical to producing high-quality, cost-effective castings in a competitive industry – no matter the process used. Sand testing plays a key role in this, helping all foundries identify issues in sand composition and processing that could lead to defects. Here's why investing in an in-house sand lab is vital:

REAL-TIME SAND QUALITY CONTROL FOR DEFECT PREVENTION

In-house sand testing allows foundries to monitor raw materials and ensure consistency throughout the production process. By testing materials like bentonite/pre-mix, and raw sand on-site, foundries can control input quality and reduce defect risks from substandard or inconsistent materials. Off-site testing, such as through universities or suppliers, may result in data discrepancies due to time delays or environmental exposure affecting sample moisture content. Immediate, accurate sand data helps prevent issues like sand inclusions or blowholes in castings.



PROACTIVE ISSUE DETECTION TO MINIMIZE SCRAP

Scrap can often be traced back to unexpected variations in the sand system. Testing sand in-house at key stages—like after cooling, mixing, or reclamation—can help detect process disruptions early, whether from a malfunctioning dust collector, improper additive feeding, or machine wear. Rapid detection enables timely adjustments, minimizing costly scrap.

CONTINUOUS VERIFICATION OF ON-LINE CONTROLLERS

Online control systems, like Simpson's Hartley controllers, offer dependable, real-time sand property management but still benefit from periodic lab validation. Regular lab testing ensures the online system's accuracy, particularly for moisture-sensitive metrics like compactability and green compression strength. This validation supports sustained defect prevention and reliable casting quality.

DATA TRACKING FOR PROCESS IMPROVEMENT & CYCLIC DEFECT PREVENTION

A well-maintained sand lab can track past sand conditions, aiding in root cause analysis for recurring defects, especially those associated with seasonal conditions or challenging casting designs. This historical data can prevent similar issues from arising in the future, supporting continuous improvement in casting quality and defect reduction.

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REAL-TIME SAND MONITORING TO ADDRESS DAILY VARIABILITY

External sand testing can be unreliable for real-time control due to moisture loss and long tempering times, which can distort properties like compactability. On-site testing enables foundries to monitor sand quality consistently throughout the day, addressing day-to-day fluctuations in real-time and preventing defects associated with outdated data.

SUPPORT FOR COMPREHENSIVE QUALITY ASSURANCE PROGRAMS

In-house sand testing can also support broader quality initiatives, such as ISO 9000, by documenting sand control measures. This proactive approach to quality assurance helps prevent defects from reaching the customer, safeguarding the foundry's reputation and market competitiveness.

By adopting an in-house sand testing protocol, modern foundries can ensure that sand quality is consistently maintained, reducing the risk of defects and ultimately enhancing casting quality and profitability.



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