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SANDMAN is a state of the art software solution for green sand optimisation and related challenges faced by metal casting foundries. It enables foundry managers to make the shift from traditional, imprecise decision making to data analytics driven, effective decision making.

8 Benefits of using SANDMAN

1. Optimal molding sand control and management
2. Precise control of additive dosing
3. Higher quality of castings
4. Reduced defects and rejections
5. Happier customers
6. Better bottom lines
7. Optimal utilization of resources and energy
8. Minimised toxic waste

SANDMAN is the brain child of Mr. Deepak Chowdhary, a veteran foundryman, successful entrepreneur, thought leader, and an expert in Foundry Green Sand Molding and Related Data Analytics. Founder-director of MPM Infosoft Pvt. Ltd., Nagpur, India, he is a specialist with 30+ years of extensive experience, in helping foundries optimise sand control, achieve accurate dosing of additives, enhance surface finish, and reduce casting rejections.

SANDMAN is backed by foundry experts with decades of industry experience. Software support comes from a group of competent data scientists, senior software engineers, and respected foundry experts. The team is based in IIT Madras Research Park, Chennai, a premier technology center of international repute. This translates into consistently reliable software performance, timely technical support, and profitable business outcomes.

The Power of Data Science for Foundries

SANDMAN employs powerful mathematical modelling and algorithms to organize, analyse, model, and leverage the user foundry's green sand data legacy. Prescriptive and predictive analytics enable optimization of the molding sand system. Consequently, green sand management and control is transformed from a reactive art to a forward looking, data analytics based practice.

The science of Data Analytics makes it possible to analyze large amounts of data, and extract useful knowledge, reveal hidden patterns, identify correlations and gain other useful insights for decision making and enhanced productivity. It provides critical intelligence for business performance with speed and accuracy, and is fast replacing the slower, less efficient, traditional business practices that were susceptible to human error.

What about your foundry? Have you ever calculated the amount of profit that you are losing because of casting defects and repetitive rejections?

How do you control this loss? Foundries have traditionally tried to minimize casting rejections by reactive decision making for optimizing molding sand control. However, there's a superior, more effective way to achieve optimisation of the molding sand process, and thereby reduce casting rejections: SANDMAN.

Molding Sand Control Impacts Foundry Costs and Profits

Today's fast changing economic scenarios and business eco-systems create challenges for business sustainability. Hence, casting rejections and their control in molding sand foundries assume tremendous importance in terms of costs and potential savings.

A back-of-the-envelope calculation indicates that the net cost of a 1% molding sand rejection, in a 2000 ton/month foundry in India, is approximately 1.2 (INR 12 Million) to 1.5 crores (INR 15 Million) per annum.

Foundry Needs and Requirements: Trends in Casting Procurement

Auto manufacturers are increasingly demanding that foundries reduce costs and improve sustainable productivity by reducing casting rejections to PPM levels, improve surface quality of castings and finished components, reduce emissions, reduce carbon footprints and comply with International foundry toxic waste disposal regulations and laws.

With increasing pressure on business sustainability, casting rejections and their control in sand foundries assume a pivotal role in optimizing operational costs.

5 Challenges Faced by Foundries

1. Gap between Domain Experience and Resource Availability

There is an increasing gap between domain experienced personnel and new, skilled manpower to manage the molding sand process, practiced as an 'art'. The human interface in this process management is also becoming increasingly limited, as the process grows faster, more exact and increasingly dependent on fast depleting, standardization resistant, natural resources like silica sand, carbonaceous additives, and bentonite.

2. Knowledge and Experiential Legacy Retention

As people age, change, and move on, the legacy of experience and knowledge of the foundry sand process and management is often lost, or available only in limited spots to the succeeding controllers. The transition often has no documented experiential legacy to pass on in a seamless manner, leading to costly, repetitive mistakes.

3. Non-Standard and Non-structured Data Collection = Untapped Profits

Foundry sand and related rejection data is often recorded in nonstandard formats, making data retrieval and analytical capabilities difficult. Data is often just a collection of thousands and millions of 'cold' data points, which beg to be made meaningful as they are the treasure trove of the foundry analytics for profit, if mined properly.

4. Huge Data Points: Beyond Human Processing Capabilities = Reactive Actions

As the volume of data becomes huge, even the most experienced sand manager cannot keep an all encompassing perspective over the huge process and multi parameter variable scenario.

5. Variability = Cost

This process limiting situation is further aggravated by changes in supply sources, suppliers, machines, production environments, adding to the variability manifold.

Variability is often directly proportional to costly rejections. Validation of any change is almost always at a huge cost to the foundry. Serious costs can be incurred because the effects are felt in the long term and correction logic is often mired in the variables of the interim duration of the change. It hurts the foundry, immensely.

The Solution

1. A Repository of Your Valuable Data

In its current iteration, Sandman acts as a repository of the experiential knowledge of the foundry, with the ability to record, monitor and perform retrospective analyses on any process operation affecting the sand system.

2. Predictive Analytics

Sandman also has a feature-rich set of modules providing predictive and planning capabilities to foundry personnel, allowing them to optimize their operations through our analytics, enabling them to resurrect their otherwise dead data.

The power of multi-parameter, multi-variant analysis enables the foundry to detect and analyse the deviant and/or aberrant process parameters of the greensand, over any specified time period.

It also analyses various rejection incidences vis-a-vis the most influencing green sand parameter, thus allowing the foundry to take timely corrective actions to bring about process consistency.

3. Snapshot for the Management

Sandman's Dashboard feature is designed for senior managers and management. It gives a complete and comprehensible overview of the foundry's state of the system sand rejections, causes and solutions, all with a few clicks.

4. Environmental Impact

Finally, in addition to the benefits of an enhanced bottom-line for a Foundry, Sandman also helps in sustainable Environmental and Energy Star impact, due to reduced casting rejections. This includes,

- Reduced wastage of electrical energy

- Reduced carbon generation

- Reduced toxic waste generation by reducing used sand disposal

- Conserving scarce mineral products like Silica Sand, Bentonite and water

Sandman, therefore, is a great investment in the performance, sustainability, profitability and viability of your foundry.

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