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Southern Stream... NEWS LETTER

Inside this issue

<i>How to Out-Strategize the Competition in 2024</i>	2
<i>Deoxidation Saves Alloying Cost and Improves Iron Castability</i>	4
<i>It's a sentence every leader should learn</i>	6
<i>Foundry Quest</i>	8

Quote for the month



‘Sustainable development is the pathway to the future ... it offers a a framework to generate economical growth, achieve social justice, exercise environmental stewardship and strengthen Governance

Ban Ki-Moon
Secretary Gen
UN

Dear Members

I am thrilled to discuss the concept of "Green Foundry," a progressive approach that aligns industrial practices with environmental sustainability. In a world where the impact of human activities on the environment is undeniable, the foundry industry stands at a crucial juncture to embrace green initiatives.

A Green Foundry focuses on minimizing its ecological footprint by implementing sustainable practices in the production of metal castings. This involves adopting energy-efficient technologies, reducing emissions, and optimizing resource usage

One key aspect of a Green Foundry is the incorporation of renewable energy sources, such as solar or wind power, to decrease dependence on fossil fuels. By doing so, not only can we mitigate the environmental impact, but also contribute to the cleaner energy alternatives.

Recycling and reusing materials within the foundry process is another essential component of the green initiative. Implementing effective waste management strategies can significantly reduce the environmental burden associated with traditional foundry practices. Additionally, the use of eco-friendly materials in casting processes can further enhance sustainability.

Moreover, the concept of a Green Foundry extends beyond production processes to encompass the well-being of the surrounding ecosystem. Implementing green spaces, tree planting initiatives, and effective water management practices contribute to creating a harmonious balance between industrial activities and nature.

As we navigate the challenges of the 21st century, the Green Foundry concept serves as a beacon of hope, demonstrating that industrial progress can coexist with environmental preservation.

In conclusion, the transition to a Green Foundry is not just an option; it is a responsibility we owe to our planet and future generations. Let us collectively work towards creating a foundry industry that not only meets our production needs but also ensures a healthy and sustainable environment for all

Thank You,

Sanchit Kittur

Chairman - Southern Region



“ the concept of a Green Foundry extends beyond production processes to encompass the well-being of the surrounding ecosystem.”





How to Out- Strategize the Competition in 2024



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*L*ast year's predictions for 2023 generally overlooked or underestimated dynamics in areas like geopolitical events and environmental changes. So, in 2024, instead of making predictions, let's look at the useful information already out there to see how it might help strategy in the coming year.

Bosch CEO Stefan Hartung recently told the German business newspaper Handel blatt that he expects 2024 to be more challenging than anticipated, with 2025 likely following suit

While challenges exist, opportunities remain in technology, innovation and regulatory/government incentives

In Chinese culture, 2024 is deemed the Year of the Wood Dragon, combining dragon characteristics with the nurturing wood element. This combination signifies growth, progress, and abundance, creating an ideal period for fresh starts and long-term success

These are the areas we need to see worth focusing on in 2024 to maintain competitiveness:

1. Politics: Worldwide elections in 2024, including the U.S. presidential election, European parliamentary elections, and general elections in India and Russia, will shape global dynamics. Outcomes may influence policies on climate change, immigration, and economic growth.

2. Economy: Global economic challenges persist, influenced by geopolitical tensions affecting supply chains. The U.S. faces a GDP growth slowdown, while Europe is recovering from Russia's impact, and China is dealing with real-estate challenges.

3. Electric Vehicle Strategy: Europe may experience delays in electric vehicle and battery production due to U.S. market priorities, while Tesla's expansion in China and advancements in chip manufacturing will impact the EV sector.

4. Regulations: In the U.S., the proposed Clean Competition Act (CCA) would impose a carbon-border adjustment on energy-intensive imports while incentivizing the decarbonization of domestic manufacturing. The Foreign Pollution Fee (FPF) Act, introduced in Congress in November 2023, would impose a fee on products imported into the United States that are "dirtier" than their domestic alternatives. Moreover, at the beginning of 2024, a fee on certain methane emissions took effect in the U.S. While insignificant on its own, it marks the first U.S. federal-level effort to price greenhouse gas emissions to combat climate change. EU regulations—including the Carbon Border Adjustment Mechanism (CBAM) and battery regulations—emphasize sustainability. The Corporate Sustainability Reporting Directive (CSRD) strengthens reporting rules, aligning with global efforts to combat climate change.

5. Energy: Global efforts to reduce energy consumption continue, marked by the EU's increased energy-efficiency target. Regional variations in the demand for oil, gas, and coal are expected, with significant growth in renewables, particularly solar and wind energy. The Inflation Reduction Act supercharged the U.S. economy and boosted clean energy technology in 2023. In 2019, renewables surpassed coal as an energy source in the U.S. There is still great potential in wind and solar, which are the fastest-growing renewable sources but contribute to just about 6%

of the total energy used in the U.S.

6. Environment and climate: Despite global efforts like COP28, challenges persist in transitioning to a net-zero economy. Key players, including China and India, must balance energy demands of industry and individuals' energy needs with environmental goals. Potential policy shifts in the U.S. with the upcoming presidential and Congressional elections highlight ongoing challenges in climate efforts.

7. Government incentives: Countries like the UK, EU, and the U.S. continue to offer incentives for manufacturing sectors. Investments in R&D, circular economy initiatives, and renewable hydrogen production receive substantial support.

8. Technology: Anticipated integration of Generative AI into operational systems and its impact on manufacturing processes are a key focus for efficiency and innovation, as are interoperability and advancements in digital twins and the industrial metaverse.

9. Innovation: Manufacturing innovation incentives provided by the U.S. Federal Research and Development (R&D) Funding—the largest-ever investment for federal R&D—and the European Innovation Fund shape the sector. FertigHy's low-carbon fertilizer in Europe, Chinese smartphone manufacturer Xiaomi's entry into electric vehicles, and Northvolt's sodium-ion battery showcase are just a few ongoing advancements with high-impact potential.

10. People & Wellbeing: Prioritizing employee wellbeing, fostering diversity, and creating open environments for mental-health discussions will be critical for organizational success.

11. Cybersecurity: The rising trajectory of cyber-attacks in the industrial environment will pose ongoing challenges. Recommendations for business leaders include focusing on building resilient operations, creating collaborative partnerships, and prioritizing trust, diversity, and sustainability. In the Indian environment, we too have General Election coming in the Year which should establish a clean and long-lasting governance which would ensure smooth transition of our Economy to tide over the onslaughts in supply chain and Material shortages to ensure that we too achieve what's best possible in the year 2024...

Happy 2024 and Year of the Wood Dragon!



Deoxidation Saves Alloying Cost and Improves Iron Castability

In both gray and ductile iron, a cleaner iron matrix substantially increases the material's tensile strength – and improves foundries' processes and casting quality

*I*n both gray iron and ductile iron metallurgy, deoxidation not only produces a cleaner iron matrix but also a material that is substantially stronger. For gray iron, Class 30 iron strength nearly reaches Class 40 strength levels, without alloying. In ductile iron, deoxidized base iron produces near 100,000 psi tensile strength without alloying.

Deoxidation is the treatment process that removes free oxygen atoms from

the molten metal. Because of deoxidation the iron has fewer hardened oxide particles dispersed throughout its matrix, meaning it contains fewer "crack initiation sites." Alloying the contaminated base iron in order to increase its strength is reduced or eliminated once deoxidation is accomplished. The adverse effect of the suspended oxide particles is avoided. The true strength of the "purer" base iron material is revealed in both gray and ductile iron.

The improved strength that deoxidation imparts to the base iron creates important savings for the iron foundry. In one cast iron application, over \$400.00 per heat was saved on the first heat with deoxidation. Fine-tuning the iron composition on subsequent deoxidation heats produced an additional \$70.00 per heat savings. And those savings occurred on a small sized heat of 2,500 lbs

Many cast iron producers reduce carbon levels in the base iron when attempting to reach Class 40 iron strength levels. Carbon levels of 3.10% to 3.15% are common. The reduced carbon level makes it possible to attain Class 40 strength, but it harms the volumetric expansion provided by graphite precipitation in the iron during solidification. The lower carbon levels substantially reduce casting yield, increase risering requirements, and add to casting difficulty

With deoxidized base iron, carbon levels can be increased to 3.30% C and alloying can be completely or nearly eliminated at the same time. The graphite portion of the overall carbon level is increased in addition to the overall level of carbon being increased in deoxidized iron

Castability of Class 40 iron changes, becoming similar to the ease of casting Class 30 iron

Deoxidation removes free-oxygen atoms that are always present in conventionally melted iron. That free oxygen reduces the portion of carbon precipitating as graphite in ductile and gray iron, which critically affects the volumetric shrinkage occurring during solidification

With proper deoxidation, the need for

pig iron (which promotes graphite formation in gray and ductile iron) is eliminated entirely. Pig iron has no purpose or no value or purpose to melted gray or ductile iron if that iron has been deoxidized. Foundries using Mastermelt's De-OX Metal Treatment deoxidation process have eliminated pig iron, both the basic pig iron grade and foundry grade in gray iron and low silicon/low manganese in ductile iron, without incident or adverse effects

Ductile iron producers typically add copper to the melt to enhance the material's tensile strength. That becomes unnecessary when base iron is deoxidized prior to magnesium conversion treatment. The deoxidized iron's strength rises to near 100,000 psi after deoxidation, without copper addition. Deoxidation removes the suspended MgO oxide particles that reduce strength and elongation in ductile iron

The anneal heat-treatment that ductile iron foundries apply in order to meet the ferritic ductile iron elongation specification levels is no longer needed. As-cast elongation of deoxidized ductile iron nears 20%. And this high level of elongation is achieved without influence of residual levels of chrome or manganese

This latter point directly confronts age-old ductile iron theories that set limits of chrome to 0.05%; above that level, carbide formation initiates. Deoxidation of ductile base iron has produced material that is carbide-free, near 20% elongation, near 100,000-psi tensile strength, in cupola melted iron containing 0.30% Cr. This never-before result was first observed in Mastermelt deoxidation trials and confirmed in additional testing, and it is being fully investigated at this time.



In 1 Sentence, Google CEO **Sundar Pichai** Just Taught a Master Class in **How to** **Avoid Regret**

It's a
sentence
every
leader
should
learn

As a leader, you have to make difficult decisions

How do you keep regret and self-blame from eating at you when those decisions don't work out as you hoped?

Consider this simple statement from Google CEO Sundar Pichai: **"You can go back and pretty much take another look at everything"**

" In other words, hindsight is 20/20, and it will always lead you to second-guess yourself if you let it

From some viewpoints, Pichai has a lot to regret these days. His company faces a landmark lawsuit from the Justice Department over alleged anti-competitive practices that, the government says, helped secure Google's absolute dominance in search. Despite Google's deep expertise in artificial intelligence, it's been eclipsed by startup Open.ai, maker of ChatGPT. Not only that, Open.ai has partnered with Google's arch-rival Microsoft. Although Google employs some of the world's best A.I. talent, Open.ai captured both the limelight and a big chunk of market share last November when it made ChatGPT available to everyone with a browser

At the time, according to reports, Google's leadership reacted with a "code red," which designates an existential threat. But when Wired editor at large Steven Levy asked in a recent interview whether, in retrospect, Google should have released its own A.I. first, Pichai's answer was a lesson in emotional intelligence, avoiding regret, and looking at the big picture. "You can go back and pretty much take another look at everything," he began. The rest of his answer is well worth reading, too

There are three really wise ideas embedded in that answer, and smart leaders should consider all three.

1. "You can go back and take another look at everything."

Looking back after the fact, almost every decision you've ever made could have gone at least a little bit better. It's so easy to start wondering, "What if I had done this instead of that?" But most of those decisions were the best you could do at the time, given the information you had. So asking yourself "what if?" is usually fruitless. As Pichai implies, if you had made a different decision, it could have gone worse instead of better.

2. "It really won't matter in the next five to 10 years."

It certainly is possible that in a decade or

more, you may still feel the effects of some of the decisions you make today. But those types of decisions are the exception, not the rule. This is why asking yourself how much something will matter five years in the future can be a powerful way to gain perspective.

Pichai is likely right that a decade from now, or maybe even in five years, no one will care that Open.ai brought a large language model to the consumer market before Google did -- any more than they care that the BlackBerry was the first commercially successful smartphone. By that time, A.I. will have taken on capabilities most of us probably can't imagine today.

3. "Look at the signal and separate it from the noise."

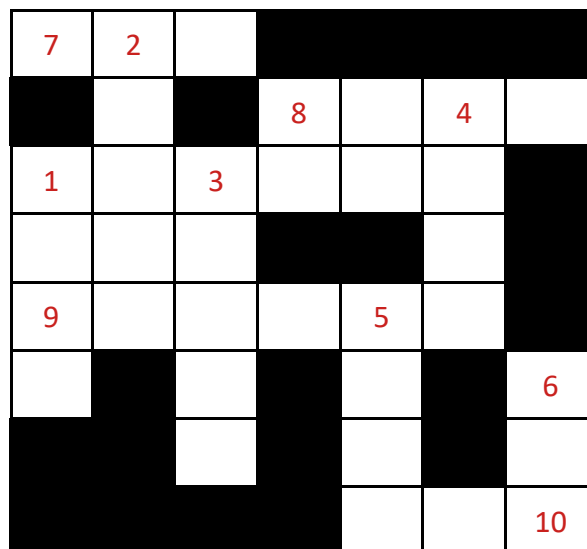
As a leader, this is one of the most difficult things you have to do. And it's doubly tough when a new technology attracts the kind of attention, speculation, and hype that A.I. is getting right now. Pichai is right. There's a lot of noise but the signal is that, in time, A.I. will likely affect almost everything that we do.

However, that isn't happening tomorrow. In the meantime, new A.I. uses will be discovered, new A.I. companies will emerge, and the big incumbents like Google and Microsoft may use their deep pockets and in-house expertise to solidify their positions as A.I. leaders. Or maybe not. It's truly too early to say.

There's a growing audience of Inc.com readers who receive a daily text from me with a self-care or motivational micro-challenge or tip. Often, they text me back and we wind up in a conversation. (Want to learn more? Here's some information about the texts and a special invitation to an extended free trial.) Many are entrepreneurs or business leaders, and they know how important it is to hear the signal amid the noise and focus on what's truly important. And to avoid giving in to regret if a decision they made doesn't work out as they planned.



S. Nadimuthu
Mentor and Technical Advisor



Down

1. Density is defined as the _____ per unit volume. (4)
2. _____ allowance is given to pattern for easy removal of mould. (5)
3. In Sandwich ductile iron treatment FeSiMg alloy is covered with _____. (5)
4. _____ element has an atomic number of 26.(4)
5. An international foundry expo organised every year in India is called _____. (4)
6. In lathe machine _____ type of chucks are used for holding the material. (3)

Across

1. In ductile iron treatment FeSiMg is known as _____ alloy. (6)
7. In SEM analysis, to detect the chemical composition of the material _____ equipment is used. (3)Abbreviation
8. In the core less type induction furnace, metal is placed in a crucible surrounded by a water-cooled alternating current solenoid _____.(4)
9. A stress _____ curve is a graphical depiction of a material's behaviour when subjected to increasing loads. (6)
10. A pattern material used in the investment casting process. (3)