



THE INSTITUTE  
OF INDIAN  
FOUNDRYMEN

WESTERN

R E G I O N

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By : IIF - Western Region

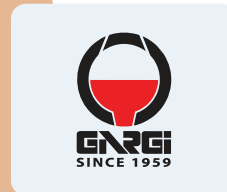
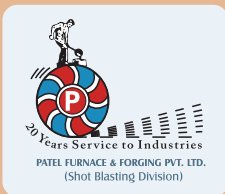
# FOUNDRY TALKS

Foundry E-Magazine

For The Foundrymen By The Foundrymen



Innovation Article By



## MESSAGE FROM CHAIRPERSON

### New Beginning



**Anuja Sharma**

Chairperson, IIF-Western Region  
Dir.-Mrkt.-Shamlax MetaChem Pvt. Ltd.

Every beginning has an end and change is the constant process of nature so now I have come to end of my tenure and the June edition is the last edition of Foundry Talks.

Concept of this E-Magazine was to provide some practical knowledge and information to the foundrymen and we were successful up to some extent. We received many appreciation messages and suggestions from the readers around the globe. This was a team work but here I would like to mention the name of the key person of Foundry Talks Mr. Prayut Bhamawat (Hon Secretary IIF Western Region) and his hard work dedication behind the curtains. He worked hard to publish all the issues on time. He did all the compilations and follow up with the people who contributed in the Magazine. Thanks Prayut for your support. This magazine wouldn't be possible without you. I would also like to thank Mr. Mahesh Date for Raw Material Index every month. I am also thankful to all who have contributed in this magazine including Mr. Anant Bam.

I wish all the best to new team of IIF Western Region and hope such initiatives will be taken by new team in the future for the benefits of foundry men.

Good Bye...

## MESSAGE FROM THE EDITOR



**Anant Bam**

Editor Foundry Talk  
Foundry Consultant  
& Energy Auditor

Dear Readers,

As the calendar of IIF takes a new turn, many chapters have welcomed their new chairmen and office bearers. I wish all new and old office bearers all the best for the task they have taken.

Friends, IIF is one such organization, where all foundry related people; let it be from suppliers, service providers foundries or casting buyers; all of them work together for the benefit of this "Mother Industry".

As the IIF has its roots at chapters, mid level administration at regions and apex at head office, foundries also have various departments for easy and smooth working. Out of these departments, one department is doing a thankless job, that too on holidays. This is Maintenance Department.

Friends, we have tried to focus on equipment health in this issue. If the equipment is in good condition, it can perform smoothly and the process can complete without any interruption. We have got innovation article from Patel Shotblastings, and special insight article on maintenance from a fatherly figure, R. C. Kothari. I am sure you would love in reading it.

Your replies and feedback is precious for us.

Do write back,

Happy Casting.

We truly welcome your feedback or suggestions for WR E-magazine. Please feel free to write to us at [wr@indianfoundry.org](mailto:wr@indianfoundry.org) with subject "Letter to Editor".



# FOUNDRY TIPS

By Mr. R C Kothari

## Eliminate the Obsolete Maintenance Mindset & adopt 5 pillars of maintenance reliability.

Foundries must take off their blindfolds and develop a new strategy for asset management, and make it a mandatory process until it becomes a new mindset. This is an outline for a complete training program.

**Why-Change of Mind Set Needed** - Automation keeps expanding, and this should result in better products, faster deliveries, and lesser cost. In many cases, new technology has not produced the promised results, because of the obsolete maintenance mindset. The fast pace of change requires a new maintenance approach.

**Old days** - we had selector switches, relays, and linkages. **Today**, HMI, PLCs, and electronic probes have replaced these components. These advancements have made the maintenance of the equipment much more complicated. As automation technology keeps reaching new heights, it also introduces different types of component failures that cause downtime. These are called **random failures**, and the most difficult task for any maintenance department is how to deal with these breakdowns.

For example it is difficult to detect an electronic card failure. Granted, the new technology is more reliable and precise; however, failures occur without warnings.

**The traditional time-based maintenance (PMs)** - worked great for age-related failures such as: guides rails and mechanical devices, Modern times- very little success on random failures. Nevertheless the same, traditional preventative maintenance is used today as it was being used decades ago. This is because; companies have not introduced or do not know how to implement new maintenance strategies.

**MAINTENANCE** – remained neglected in planning-priorities The fact is that as market conditions change, companies quickly introduce new financial forecast and sales strategies. However, very few have developed a new program for maintaining their highly automated assets.

### Maintenance Reliability-what it is?

Failures are just like diseases: as a new disease enters our world, medical researchers immediately develop new medications to prevent, eliminate or reduce the consequence of the disease. In the same manner **the new technology era requires an all-inclusive maintenance program that focuses on elimination, prevention and consequence reduction of failures. This is called the maintenance reliability program.**

### Having described the need & defined maintenance reliability- let us examine the 5 pillars of reliability

Any solid maintenance reliability program has five fundamental pillars:

1. Management support,
2. Maintenance reliability teams,
3. Training
4. A reliability system
5. Success measurement methods,

**Management support** - Maintenance reliability must be a company program, and not just another maintenance plan or flavor of the month. It should become the way of life in the organization & must have management support at all levels. Operations, maintenance, quality, purchasing, engineering, safety and environmental management, all must come together to support this program. **Most important, operations and maintenance must merge the supplier-customer relationship to a team; otherwise the journey to reliability will become frustrating and would not produce results.**

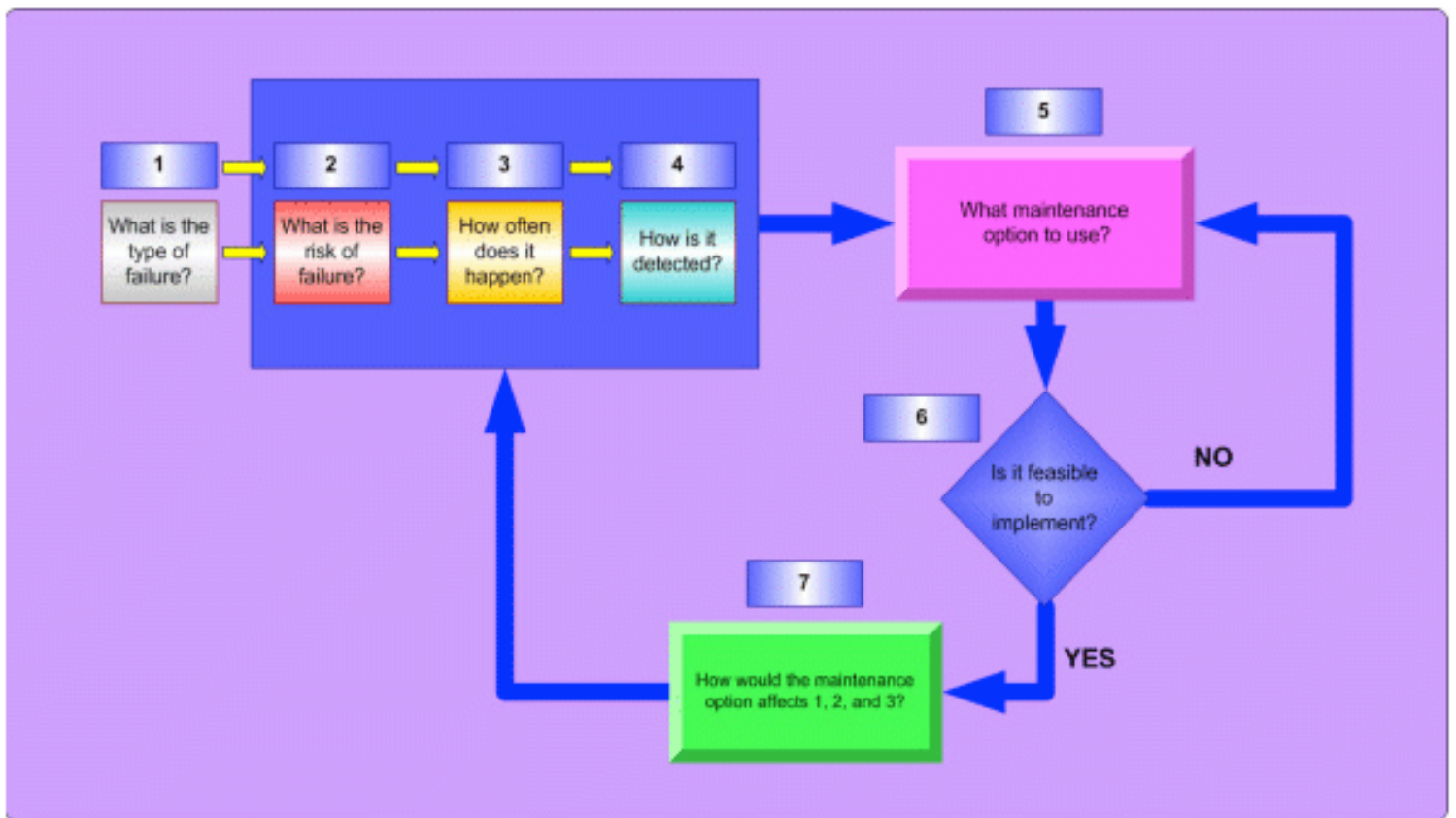
**Maintenance reliability teams** - Each production department to develop a team that should include knowledgeable production operators, production supervisors, maintenance supervisors, maintenance planners, and maintenance personnel such as mechanics and electricians.

The team members shall choose a facilitator. Normally, the facilitator will be a maintenance planner, or an engineer, but it could be anyone from the team. The facilitator normally organizes the meetings, keeps tabs on the activities, and follows up on the action items.

**Training** - All management and the reliability teams must be trained on maintenance reliability. They must understand all the concepts and definitions, and how to apply them before undertaking any project.

**Reliability system** - The company must adopt a solid reliability system that the team members can use, and this applies the same across the organization. All critical pieces of equipment shall be examined within this system and a comprehensive plan must be developed to make sure every step is taken to eliminate or prevent failures - or consequences of failures. **Failures to be all-inclusive, meaning equipment failures, quality issues, and performance problems.**

A correct maintenance reliability system has several components:



A proper maintenance reliability system addresses seven basic concerns about automation system maintenance:

- 1) **It categorizes the types of failures** - The maintenance reliability team shall work together to identify the types of failures. Correct types of failures must be identified in order to select an accurate maintenance option. This is a crucial step toward making the equipment more reliable.
- 2) **Identifies risks of future failures** - The team must determine the risk of failure. What happens if the piece of equipment fails? Does the failure cause environmental or safety issues, or does it cause major downtime or product rework?
- 3) **Tracks occurrence of failures** - The maintenance reliability team shall determine the frequency of the failure, meaning how often the failure occurs.
- 4) **Proposes and manages the methods for detecting failures** - Currently what method is being used to detect the initial issue, prior to the final failure? Meaning, is there a way to detect this failure before it occurs?
- 5) **Identifies and initiates the correct maintenance option for the type of failure that is determined** - The maintenance reliability team shall implement the correct maintenance option for the determined type of failure. The chosen option is the maintenance plan to eliminate, prevent or reduce the consequence of failure.

- 6) **Assesses feasibility of the selected option, as well as countermeasures** - Is the countermeasure feasible? Is it possible to implement the fix, or is it financially viable? In many cases, our first option might not be practical, and we should choose another option.
- 7) **Evaluates the results of the maintenance approach that is chosen** - How do the countermeasure effect steps 2, 3, and 4? Should the counter measure become a permanent fix or do we need to re-examine it?

## Success Measurements

### 15 - Benefits to derive with new maintenance program

1. Eliminate PM processes that have no value
2. Eliminate downtime
3. Reduce emergency work orders
4. Reduce maintenance overtime
5. Increase plant productivity
6. Reduce annual shutdown duration, and cost
7. Improve maintenance planning
8. Identify training requirement, for maintenance and operations.
9. Truly identify operations and maintenance responsibilities.
10. Reduce total maintenance cost
11. Create a cooperative environment between operation and maintenance
12. Identify the capital projects that need to be completed to reduce failures
13. Identify design issues that need to be addressed
14. Identify weaknesses in operating procedures
15. Identify the correct spare parts be kept in inventory

**Conclusion** - Ultimately, the plant management to develop success measurement metrics such as overall equipment effectiveness, total maintenance cost, number of emergency work-orders per month, and so on.

Maintenance reliability to become the doctrine of the organization's overall asset management program. If any failure continues to occur, the responsible reliability team shall refer back to the maintenance reliability system to re-examine the maintenance option, or the identification of the type of failure, and fine-tune the countermeasures.



# Raw Material Price Index

## Movement In Foundry Raw Material Prices



**Mahesh Date**

As per IIF data, there are nearly 7,000 foundries across India. The Indian foundry industry is ranked second globally with a production of 10 million tons per annum. It is catering to the automotive, tractor, power train, railways, energy and engineering sectors in domestic as well as overseas markets - Directly and indirectly.

There was sudden spike observed in April 2022 and continued due to various reasons. Prices got declined-stabilized thereafter but these fluctuations led us to establish the common reference point where we can study the actual raw material prices variations.

Now prices ruling in Kolhapur during 4<sup>th</sup> week of June 2023 are given in column 14 in the Table below. Also, given in table are the prices since March 2023. These prices are collected from Kolhapur market. These are approximate, ruling during the month and week as indicated in the table.

In the prices indicated below, transportation cost is included in most items. Only applicable GST is to be added. Prices of many materials are on the basis of "Immediate Payment"

### Movement Of Prices of Raw Materials over a Period of 4 Months

**(A) Major Ferrous Metallic Raw Materials, Low Ash Metallurgical Coke, and Electro-Graphite Fines {Rs / Tonne}**

	Mar-23	Mar-23	Apr-23	Apr-23	Apr-23	Apr-23	May-23	May-23	May-23	May-23	Jun-23	Jun-23	Jun-23	Jun-23
	3 <sup>rd</sup> Week	4 <sup>th</sup> Week	1 <sup>st</sup> Week	2 <sup>nd</sup> Week	3 <sup>rd</sup> Week	4 <sup>th</sup> Week	1 <sup>st</sup> Week	2 <sup>nd</sup> Week	3 <sup>rd</sup> Week	4 <sup>th</sup> Week	1 <sup>st</sup> Week	2 <sup>nd</sup> Week	3 <sup>rd</sup> Week	4 <sup>th</sup> Week
Foundry Grade Pig Iron	52616	52616	52116	52116	50800	50800	50800	49866	49866	49866	49866	49366	49366	49366
MS Scrap (good quality)	45000	45500	45000	45000	45000	45000	44600	44500	44500	44200	44200	44000	44000	44000
Low Mn Steel Scrap	47000	47500	47500	47000	47000	47500	47000	46500	46500	46500	46200	46000	46000	46000
Si Steel Stamping Scrap	45500	46000	46000	45500	45500	46000	46000	46000	45700	45500	45500	45200	45000	45000
Low Ash Met. Coke	49500	49500	48500	48000	47500	47500	47500	47500	47500	47500	47500	47500	47500	47500
Electro-Graphite Fines	105000	108000	105000	102000	100000	100000	95000	95000	93000	92000	85000	85000	80000	80000

**(B) Major Ferro-Alloys {Rs./Kg}**

Fe-Si (70-75% Si)	135	137	135	135	131	131	131	130	130	130	131	131	130	126
Fe-Si-Mg (5-7% < Mg)	215	225	210	210	200	200	205	205	205	200	205	210	218	215
Fe-Si-Mg (5-7% < Mg) (TOL)	±5	±5	±5	±5	±5	±5	±5	±5	±5	±5	±5	±5	±5	±5
Fe-Si-Mg (8-10% Mg)	225±5	235±5	230±5	225±5	220±5	220±5	220±5	220±5	220±5	218±5	220±5	225±5	218±5	218±5
High C Fe-Cr (60% Cr)	120	122	125	125	121	121	121	127	127	127	125	123	123	125
High C Fe-Mn (60% Mn)	100	105	105	100	100	99	100	105	105	105	95	95	90	87
Ferro-Moly (60% Mo)	3500	3750	3000	2300	2650	2600	2650	2650	2650	2650	2700	2700	2725	2750

1. Above Prices are Excluding Taxes, GST Extra as Applicable
2. Phenol Price: Rs. 112/Kg during 4<sup>th</sup> week of June 2023  
(Info collected during June 2023, Reader are requested to check the market prices)

**Disclaimer:** Rates represented here are as per the data collected from the reliable sources based in Kolhapur and it may vary based on the supplier, location, payment terms & other conditions.



# Innovation Article

By M/s. Patel Furnace & Forging Pvt. Ltd.

P. A. Patel | Managing Director | info@pshotblast.com

Innovation Article is sponsored article to promote the innovation done by the company. To Showcase your company product / Innovation, Please write to [wr@indianfoundry.org](mailto:wr@indianfoundry.org)

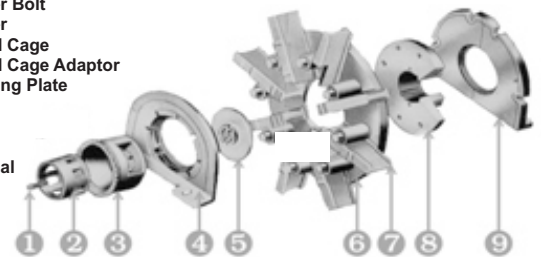
## DEVELOPMENT IN SHOT BLASTING PROCESS

Most of the foundries think shot blasting and fettling are an out source activity. As soon as castings are cast and cooled, they are loaded on tractor and unloaded at shot blasting contractor’s premises for shot blasting. Many foundries demand fettling and painting also to reduce their cost of man power and improve profitability. Contract based shot blasting out side has many disadvantages. First their machines are procured from small vendors, which are poor in design and quality, having no control on operation. Sometime castings are over blasted or under blasted. If castings are with fins and if they are broken, castings get rejected and create loss to foundry. When you outsource surface finish suffers. Shot blasting contractor normally uses S 660 (170mm) size steel shots (abrasive media) which gives longer life and reduced shot consumption but due to large size, castings get denting, increase in roughness and attract rejection. Sometime due to break down of machine or under maintenance, delivery of blasted castings get delayed 5 to 6 days, affecting dispatches, billing and cash flow of foundry. Most of the places fettling contractor prefers doing shot blasting where machine, space & power is supplied by foundry, Contractor, brings his man power, shot, spare parts and carries out various operations. Two Wheel Y Type Hanger 500 Kgs. and 1000 Kgs. Hook Capacity Shot Blasting Machine. Are the most popular among foundries. We are using new RLM wheel and also Direct Drive Wheel.

With need to increase output it has become apparent that shot blasting cycle on the machine must be reduced. In effort to give increased output we have introduced new RLM wheel, which throws more abrasive and consumes less power. In this way one machine is able to do the work formerly done by two machines. The new wheel has larger control cage and impeller making it possible to throw more abrasive resulting in better and faster cleaning and ease of maintenance. We also offer Direct Drive Wheel.

Ask for our NEW wheel PARTS, We can replace old M type wheel with new wheel

1. Impeller Bolt
2. Impeller
3. Control Cage
4. Control Cage Adaptor
5. Centering Plate
6. Wheel
7. Blade
8. Hub
9. Hub Seal



### Blast Pattern on job is most important aspect in shot blasting.

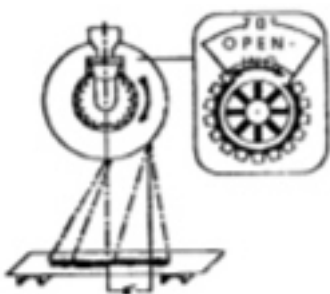


Figure Shows Blast pattern on a flat mild steel Plate 6 mm thick X 8mm W X 36mm long Pattern located 8” inches to the right of the Vertical centerline on a clock-wise wheel, The Pattern is called hot Spot and will feel warm to the hand if touched immediately after shot blasting. The ½” movement of control cage opening will shift the Blast Pattern by several inches blast pattern should be checked regularly effecting performance of the blasting machine.

Shot Blasting & Fettling are important process in foundry. It provides fast and better cleaning. It saves power. If foundry provides space and finances, small 500 Kgs, Y hanger to MSME enterprises with help of 2 to 3 labours can shot blast and fettle 20 to 25 Ton in 24 Hours and 35 to 40 tons / 24 hours in 1000 Kgs., Y hanger type machine, giving value addition to foundry and employment to new entrepreneurs under “Made In India” scheme. Ours is 100% indigenous machine developed over a period of 30 years’ experience and sold more than 4500 machines in India and abroad.



**Patel Furnace & Forging Pvt. Ltd.(Shot Blasting Division)**

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**Company Email:** info@pshotblast.com, sales@pshotblast.com

**Website:** www.pshotblast.com

**YouTube:** http://pshotblast.com/videos/

# Ask The Expert

## Q. 1. What are best tips for foundry equipment maintenance?

**Ans:** Maintaining foundry equipment is crucial for ensuring efficient and safe operations in a foundry setting. Here are some good practices for maintaining foundry equipment:

1. **Regular Cleaning:** Clean the equipment regularly to remove accumulated debris, sand, and other residues. Use appropriate cleaning methods that are safe for the specific equipment and avoid damaging sensitive components.
2. **Inspections:** Conduct routine inspections of the equipment to identify signs of wear, damage, or potential issues. Look for cracks, leaks, loose connections, worn-out parts, and any abnormalities. Address these issues promptly to prevent further damage.
3. **Lubrication:** Apply proper lubrication to moving parts to minimize friction and wear. Follow the manufacturer's recommendations for the type of lubricant, quantity, and intervals for lubrication. Ensure that lubricant levels are maintained within the specified range.
4. **Cooling Systems:** Monitor and maintain cooling systems, such as water jackets or cooling channels, for equipment that generates heat. Ensure proper flow and circulation of cooling media to prevent overheating and extend the lifespan of components.
5. **Alignment and Balance:** Regularly check the alignment and balance of rotating parts, such as shafts, pulleys, and gears. Misalignment can cause excessive wear and damage. Make necessary adjustments to ensure proper alignment and balance.
6. **Replace Worn Components:** Keep a close eye on wear-prone components, such as molds, crucibles, nozzles, and refractory linings. Replace worn-out or damaged parts promptly to maintain quality and prevent accidents or equipment failure.
7. **Calibration:** Calibrate temperature and pressure sensors regularly to ensure accurate readings. This is particularly important for controlling the melting and casting processes in a foundry.
8. **Electrical Safety:** Regularly inspect and maintain electrical systems, including wiring, connectors, and control panels. Ensure that electrical connections are secure and that there are no signs of overheating or damage. Follow proper electrical safety protocols when working on or near electrical components.
9. **Training and Documentation:** Provide thorough training to operators and maintenance personnel on the proper use and maintenance of foundry equipment. Keep detailed records of maintenance activities, repairs, and any modifications made.
10. **Safety Measures:** Follow all relevant safety guidelines and regulations for operating and maintaining foundry equipment. Ensure that personnel have access to appropriate personal protective equipment (PPE) and that safety protocols are strictly followed.

It's important to note that specific maintenance practices may vary depending on the type of foundry equipment and processes involved. Consulting the manufacturer's guidelines and seeking expert advice can provide further insights tailored to your specific equipment and operations.

To ask your question or get the suggestions, please write your problem with detailed description to [wr@indianfoundry.org](mailto:wr@indianfoundry.org) with subject "Ask the Experts". Identity of the Questioner will be kept confidential.





## Message from Hon. Secretary – IIF Western Region Journey of IIF Western Region 2022-23

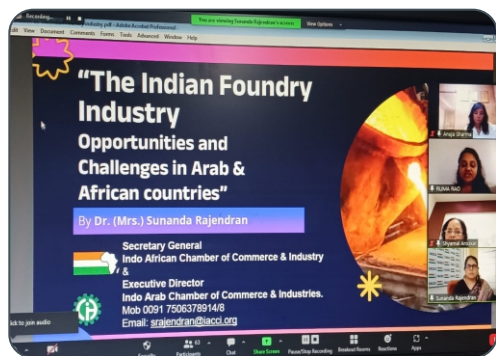
I am glad to provide the short summary of IIF – WR Activities conducted for the year 2022-23 which was quite an eventful under the leadership of WR Chairperson Mrs. Anuja Sharma.

Many new projects were taken up at a new level and were delivered to the best extent. Giving a theme of Innovate to Elevate, main vision of chairperson was to bring awareness on the innovation taking place in the foundry industry and use it to grow. For this Innovation Tech series was conducted in all the 8 chapters of WR beginning from September 2022. Then there was great show by Kolhapur chapter who notched up the level of WESCON conducted so far by getting highest delegates registration and providing efficient delivery. We also had one of kind CEO meet organized in Pune. This year for the 1st time in IIF, WR conducted inter-regional work visit, visiting Southern Region & Eastern Region where we had very open knowledge sharing discussion. We were really pleased by the kind gesture & support extended by both the regions.

With an aim to give an international touch, we launched Project “Go Global” where the 5 webinars were conducted some by international speakers and some focusing on the export. For bringing more business to the table, WR 1st time organized Buyer Seller Meet in Mumbai where both Buyers as well as sellers benefited from the same. This time initiative was also taken to close the gap between industry and institute by conducting sessions with educational institutes. Last but not least, IIF – WR started this E-magazine “Foundry Talks” with a vision to pass on some foundry tips, innovations, raw material price index & views of industry experts to the foundrymen in short and crisp way.

To make the above delivery feasible, there were contributions from countless members starting from National to Regional to Chapter & Individual level. And one thing stand apart was the vision of WR Chairperson which no-doubt consisted of Out – Of – Box thinking. We hope with these activities and initiatives, we were able to reach to the members in some way or the other. We will truly appreciate your suggestions to make us do even better. Thank you!!

### Western Region Activities



Go Global Project Webinar # 5 on “Unleash the export opportunities in African and Arab Countries.”



Mahindra & Mahindra Ltd.



Atlas Copco (India) Ltd.



LCB Sourcing

B2B Meet at Mumbai on 28th June 2023