

FOUNDRY TALKS

Foundry E-Magazine

For The Foundrymen By The Foundrymen



Innovation Article By



MESSAGE FROM CHAIRPERSON

Light Metal Era

Dear Fellow Foundrymen,

The growth of domestic EV industry in India is set to boost the demand of Aluminum.

Globally, on average around 250 kg aluminum is believed to be used in each EV. The aluminum demand by EV makers was about 250KT (Kilo Metric Tonnes) in 2018 globally and is expected to top out at 10 MTPA (million metric tonnes per annum) by 2030.

So it's time to gear up to meet the growth challenges once EV segment pick up.

Our September edition is based on Aluminum casting. Hope this helps foundrymen to give good insight about the subject.

Happy Reading.



Anuja Sharma

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

LETTER TO EDITOR

Dear Editor,

Today I Could review the WR - E magazine Foundry Talks.

Good to note one key topic focus in each edition of E magazine.

August edition has useful message from Chairperson, Editor, insightful information about LFC.

Congrats to team WR for a well designed, useful magazine for the benefit of Members and Foundry feternity.

Best wishes to all who contributed "For the Foundrymen by the Foundrymen E magazine"

Happy reading to all.

From
Mr. D S Chandrashekar
Vice-President, IIF

MESSAGE FROM THE EDITOR

Dear Readers,

It makes me extra delighted in handing over this issue of Foundry Talk, as this issue is dedicated to my favourite subject: Aluminium.

Although Cast Iron still rules the casting census by weight, Aluminium is giving it tough fight by value. Majority of cast components are used in automobiles, tractors, engines and transmissions. The focus of automobile industry is on "light weighting" and Aluminium is fast catering to their needs.

Aluminium has comparable strength to cast irons in 1/3rd of the weight, this is the turning point and with increased capacity of casting presses, the challenges in conventional car making are obsolete.

The whole body of Tesla is made out of single piece die-cast aluminium component, this has eliminated several welded joints and their trimming, finishing thereafter. Aluminium is certainly metal for future developments, and many large ferrous foundries have already set their Aluminium foundries also, and are doing great work there.

I also extend hearty welcome to delegates registered for upcoming Wescon at Kolhapur. With all the best wishes for Navaratri, Durga Pooja and this festival season; Happy Casting!

Thanks and Regards.



Anant Bam

Editor Foundry Talk
Foundry Consultant
& Energy Auditor

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

FOUNDRY TIPS



Metal Treatment in Aluminium with Practical Tips

By Mr. Anant Bam

Like all metals, Aluminum also need metal treatment for casting soundness and predictable properties. This treatment is split in 4 components namely: Cleaning, Degassing, Grain Refinement and Modification. We all know treatment broadly, in this article; I am giving practical tips out of my own experience on metal treatment.

Cleaning: It is done by fluxes which generate exothermic reaction on active surface. Aluminium oxide is having comparable density with molten Aluminum, hence it does not float readily on surface, and a large amount of it is suspended within metal from top to bottom. Also it being spongy-porous, it catches lot of liquid metal, thus increasing melting loss.

The exothermic reaction breaks spongy network of dross and liquid flux catches released oxide particles, thus removing oxides effectively. This is mainly essential for getting homogeneous metal matrix, without inclusions; which is necessary for attaining desirable mechanical properties.

One can determine effectiveness of cleaning treatment by “K Mould” prior to casting.

Practical Tips: Use flux in 5 installments: at the beginning of melting, at complete melting, during drossing off, after degassing, thereafter periodically for additional drossing off as required. Sum of all 5 should be about 1 to 1.5% of charge weight. Granular flux may be used during degassing as an option. Dosage of granular flux should be about 0.1% of charge weight.

At all drossing off stages, ensure that the dross is powdery dry in nature. Any lumps in dross indicate inadequate flux or inadequate agitation, and leads to high metal loss.

Degassing: Aluminium casting technology has a long history over short time. As such, Aluminium is considered to be quite young as compared to Cast Irons. In primitive age, cleaning and degassing was done by conventionally available salts like Sodium Chloride (Common Salt), Ammonium Chloride (Navsagar/ Navsaar) etc.

Although it was sufficient to initiate treatment process, for assured results, as days passed and technology matured, various combinations on salts were used along with complex compounds like Hexa Chloro Ethane.

Chlorides and Hexa generate Chlorine during reactions in metal treatment. This chlorine is a Green House Gas and makes 21 times greater damage to environment as compared to CO₂. With advent of environmental awareness and impact of carbon footprint on global warming; the technology became greener by using Sodium free fluxes and Inert Gas Degassing.

Degassing is necessary to get uniform metal all through the casting geometry without any pin hole porosity. This gives leakage free casting and mechanical properties become consistent. Degassing improves electrical conductivity drastically.

Effectiveness of Degassing can be ascertained by “Density Index Analysis” prior to casting.

Practical Tips: Keep DI below 10% for general purpose castings, below 5% for structural castings, between 1.5 to 3.5% for leak proof castings. Degassing time varies to a great extent, depending upon initial gas content in raw material and relative humidity during melting.

Grain Refinement: This is the term used by Aluminum casters for Nucleation. Grain Refinement as the name suggests, essentially reduces grain size and enhances strength, reduces chances of shrinkage.

Grain Refinement is achieved by adding Titanium, Boron and sometimes Carbon. Titanium and Boron together in ratio of 4:1 to 3:1 give better results than any of the stand alone refiners.

Practical Tips: For general purpose castings, keep Ti between 0.05 to 0.1%, for heavy duty castings keep it between 0.1 to 0.15%, for highly critical castings keep it between 0.15 to 0.19%.

Never exceed 760o C during lifecycle of metal because Ti loses its effectiveness at 760o C and this change is irreversible.

Modification: Modification is changing morphology of eutectic Silicon from acicular to fibrous structure. This is very similar to converting flake graphite to nodular graphite in irons. Modification basically improves elongation and also enhances response to heat treatment.

Modification can be achieved by traces of Sodium, Strontium, Calcium, Antimony etc. Although Calcium is modifier; it leads to white patches and micro shrinkages, hence it is avoided. Antimony being heavy metal, it may pose health hazards; hence it is also avoided. Popularly Sodium and Strontium are used as modifiers. Sodium is temporary modifier as its effect fades within 30 minutes, and vanishes during re-melting. Strontium is called as permanent modifier as its effect lasts up to 3 to 4 hours and also it is retained to substantial extent after re-melting.

Practical Tips: Modification is not necessary for many castings like air pipes, manifolds etc. In fact in thin walled, shell cored castings, modification leads to leakages.

For exceeding standard limits of mechanical properties, aim for Sr between 0.02 to 0.023%. This will ensure type 3 to type 4 modification without any special care. For further levels of modification, special care is needed.

With disciplined execution of metal treatment, A356.1-T6 can deliver 430 MPa UTS; 320 MPa YS and 15% elongation from test bar made out of casting section.

Raw Material Price Index

Movement In Foundry Raw Material Prices

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, but in June 2022 prices start little bit declining Now Prices ruling in Kolhapur during second week of September, 2022. Prices are somehow stable with little variations which is given in column 12 in the Table below. Also given in Table are the Prices since March 2022. These prices are collected from Kolhapur Market. These are approximate, ruling during the Month & week Indicated in the Table below.



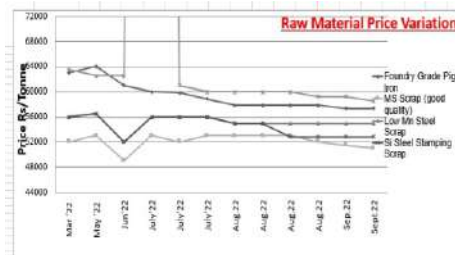
Mahesh Date

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'

Graphical presentations of price Movement of some of these materials / alloys appear below in two graphs.

Movement Of Prices of Raw Materials over a Period 07 Months

| | Mar'22 | May '22 | Jun '22 | July'22 | July'22 | July'22 | Aug.22 | Aug.22 | Aug.22 | Aug.22 | Sept.22 | Sept.22 |
|-------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| | 4 th Week | 3 rd Week | 3 rd Week | 2 nd Week | 3 rd Week | 4 th Week | 1 st Week | 2 nd Week | 3 rd Week | 4 th Week | 1 st Week | 2 nd Week |
| Foundry Grade PigIron | 63000 | 64000 | 61000 | 60000 | 59850 | 58850 | 57850 | 57850 | 57850 | 57850 | 57350 | 57350 |
| MS Scrap (good quality) | 52000 | 53000 | 49000 | 53000 | 52000 | 53000 | 53000 | 53000 | 53000 | 52000 | 51500 | 51500 |
| Low Mn Steel Scrap | 56000 | 56500 | 52000 | 56000 | 56000 | 56000 | 55000 | 55000 | 55000 | 55000 | 55000 | 55000 |
| Si Steel Stamping Scrap | 56000 | 56500 | 52000 | 56000 | 56000 | 56000 | 55000 | 55000 | 55000 | 55000 | 55000 | 55000 |
| Low Ash Met. Coke | 63500 | 62500 | 62500 | 61000 | 61000 | 60000 | 60000 | 60000 | 60000 | 59950 | 59950 | 58500 |
| Electro-Graphite Fines | 100000 | 110000 | 110000 | 110000 | 110000 | 110000 | 105000 | 105000 | 105000 | 105000 | 105000 | 105000 |
| Fe-Si (70-75% Si) | 110 | 128 | 147 | 210 | 200 | 190 | 215 | 153 | 152 | 152 | 152 | 152 |
| Fe-Si-Mg (5-7%< Mg) | 133 | 155 | 165 | 250 | 280 | 250 | 250 | 230 | 220 | 220 | 220 | 220 |
| Fe-Si-Mg (5-7%< Mg) | ±5 | ±5 | ±5 | ±5 | ±5 | ±5 | ±5 | ±5 | ±5 | ±5 | ±5 | ±5 |
| Fe-Si-Mg (8-10% Mg) | 139±5 | 160±5 | 170±5 | 255 | 286±5 | 256±5 | 265±5 | 240±5 | 240±5 | 240±5 | 240±5 | 230±5 |
| High C Fe-Cr (60% Cr) | 102 | 102 | 110 | 135 | 140 | 130 | 130 | 130 | 130 | 130 | 130 | 110 |
| High C Fe-Mn (60% Mn) | 77 | 128 | 110 | 120 | 130 | 120 | 125 | 110 | 99 | 99 | 99 | 90 |
| Ferro-Moly (60% Mo) | 1300 | 1325 | 2000 | 2070 | 2150 | 2050 | 2150 | 2160 | 2160 | 2160 | 2250 | 2450 |



1. Above Prices are Excluding Taxes, GST Extra as Applicable.
2. Phenol Price: Rs. 138 / kg during 2nd Week of September, 2022.

(Info collected during 2nd week September 2022. Readers 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. FOSECO

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.

FOSECO Batch Degasser Model: Degassing Simulation

Degassing of Aluminium: Why Degass?

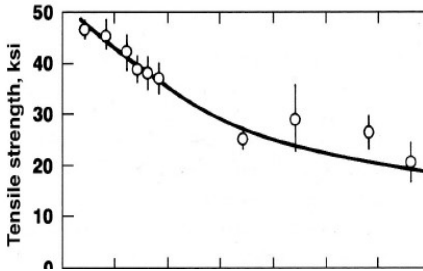


Figure 1

The trouble with Hydrogen in Aluminium is not just because it is the only gas soluble in liquid Aluminium, but essentially more because it is insoluble in Solid Aluminium.

While the very obvious effects of Hydrogen are Porosity defects and post treatment defects like blisters, it also has a significant effect on the Tensile Strength and the Fatigue life (Figure1).

What affects the Hydrogen pick up?

- I. **Ambient Conditions:** The degassing of melt in its simplest form is a process of driving the equilibrium of Hydrogen in the atmosphere and that in the melt. The Water vapor pressure in the atmosphere (Relative Humidity) therefore, has an important effect on the Hydrogen pick up. (Figure 2)
- II. **Exposure of Metal to Atmosphere:** For similar reasons as stated above, the surface area of the furnace or the ladle also has an effect on the Hydrogen pick up: The more the exposure, more will be the pickup.
- III. **Alloying Elements:** Individual alloying elements have their effects on the Solubility of Hydrogen in Aluminium. Some elements like Magnesium, Strontium and Titanium increase the solubility, while Silicon, Iron, Copper and Zinc reduce it. (Figure 3)

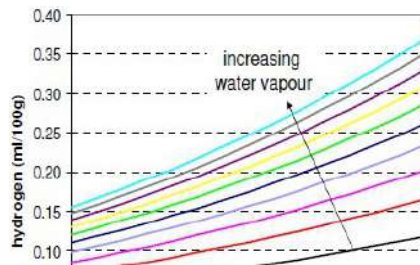


Figure 2

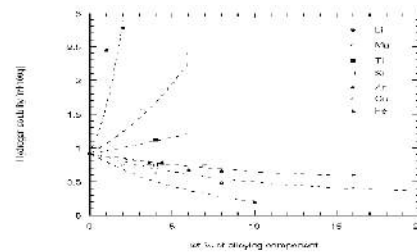


Figure 3

How do we remove Hydrogen?

Rotary Degassing: In Rotary Degassing thousands of small bubbles of inert gas are flushed through the liquid metal to facilitate removal of Hydrogen by floatation. (Figure 4)

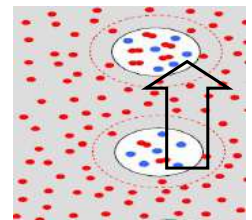


Figure 4



FOSECO



So What affects Hydrogen Removal?

Practically, the efficiency of a degassing process is decided by various factors: some of them can be controlled, and some can not, though they will still have their individual and collective impacts on the Hydrogen equilibrium.

- I. **Degassing Process Parameters:** Efficiency of degassing is directly proportional to the speed of the rotor and pressure of inert gas up to a limit, since they reduce the size of the bubble and increase their numbers, thereby reducing the Hydrogen gas rapidly (Figure 5)
- II. **Degassing Time:** Degassing for a longer time would also reduce the Hydrogen further for similar reasons as above.
- III. **Presence of a Baffle:** A Baffle helps in breaking the inert gas bubble diameter and thus improves the efficiency of degassing by creating smaller bubbles.
- IV. **Rotor:** The Power of the Rotor is a direct function of the Rotor geometry and its rotational speed. The larger the rotor more is the power. Another factor that decides the power of the rotor is its design. All Foseco Rotors are designed to produce a patented Pumping Action, thus giving more power and better mixing. (Figure 6)

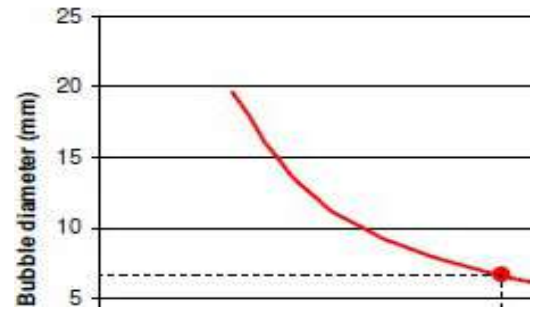


Figure 5

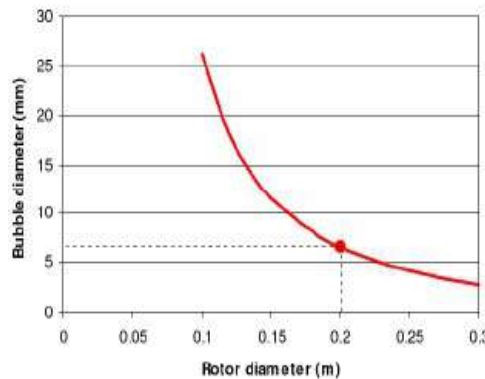
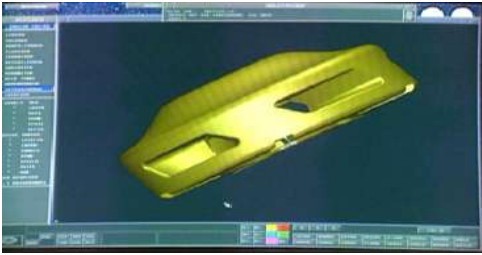


Figure 6

Every design has a different power and hence efficiency of creating a designated size of inert gas bubbles.

So, what is the collective effect?

All of these parameters act simultaneously as the degassing process is progressing. Through seasons and for various alloys, different furnace sizes and designs; and not to forget, through the life of the rotor, (the geometry changes due to erosion) the degassing efficiency will vary.

To summarize: Atmospheric humidity, temperature (atmospheric and melting), presence of alloying elements and crucible designs will have an effect on how much Hydrogen will be picked up, while the rotor design, rotor size, rotational speed, flow and pressure of inert gas and treatment time will have an effect on how much of Hydrogen is removed.

It is practically difficult to interpret the collective impact and the foundries then have to resort to trials and errors and rely on experience and experiments. Many may choose the option of playing it extra safe by adopting higher levels of parameters and possibly run a risk of over degassing and hence shrinkages, apart from the risk of compromising on productivity and optimum use of consumables.

When the equilibrium condition is understood precisely and the Power on the rotor is known, one can decide how much of degassing will happen as a function of time, speed and given geometry of Rotor.

FOSECO Degasser Model is a mathematical model that simulates this equilibrium process of Hydrogen pick up and removal by degassing process, while taking into consideration all the above parameters. It is based on the first principles and provides the user with a plot of the degassing time against the Hydrogen level, allowing them to decide upon the best combination of productivity and desired gas levels. A typical screen shot of the output of the simulation is as given in Figure 7:

FOSECO BATCH DEGASSER MODEL: DEGASSING SIMULATION

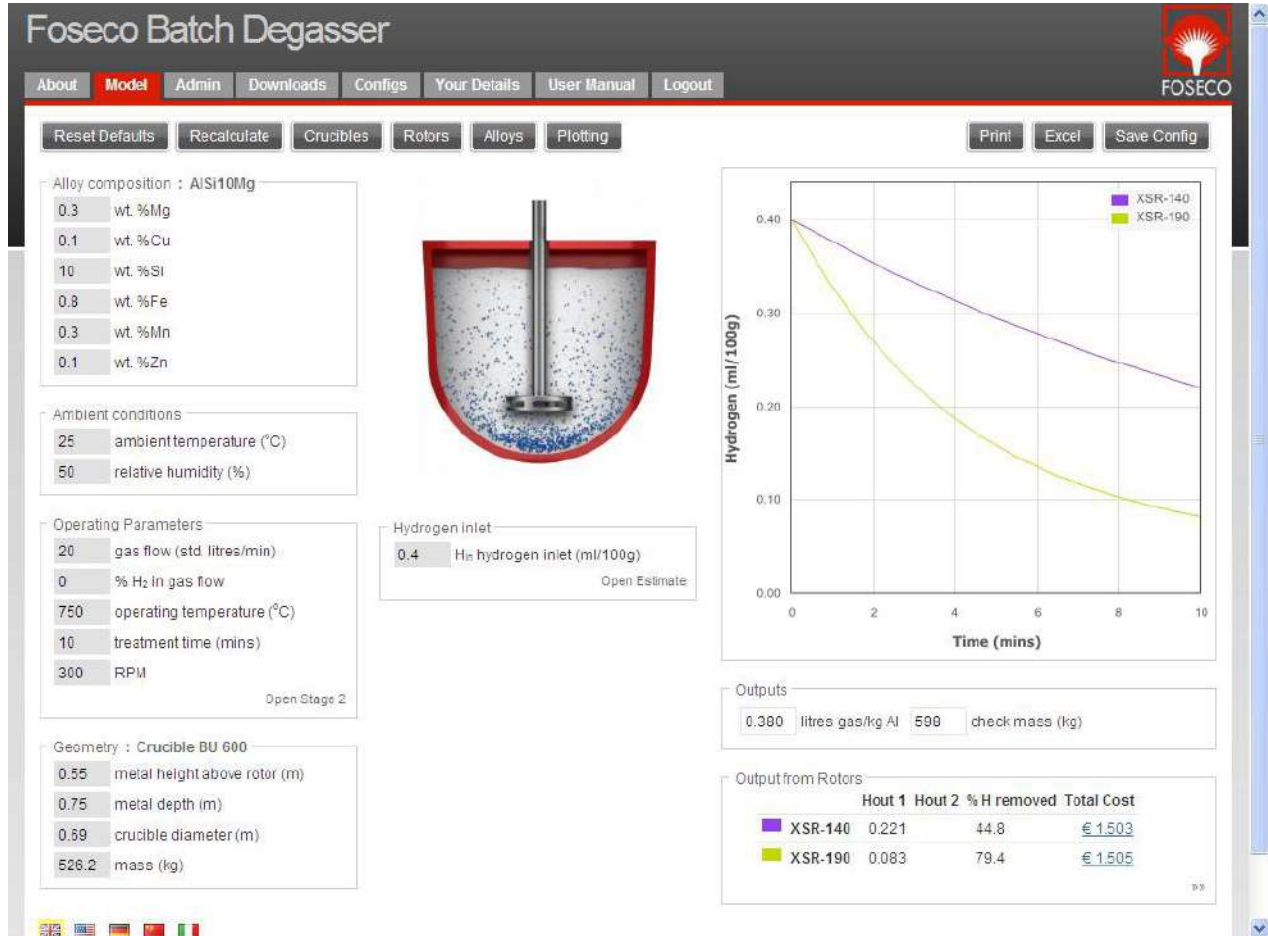


Figure 7

Application of the Model:

The FOSECO Batch Degasser helps the foundry in various ways such as:

1. Defining a new degassing Process for a given foundry and alloy
2. Bench marking to avoid under or over degassing in various seasons or with the type of the Rotors.
3. Development of a new casting
4. Optimization of the existing degassing process
5. Process control and audit

These exercises is undertaken by using the measurement of Density Index, before and after the process. The necessary support for simulation is also provided from the back end once the base data is ready.

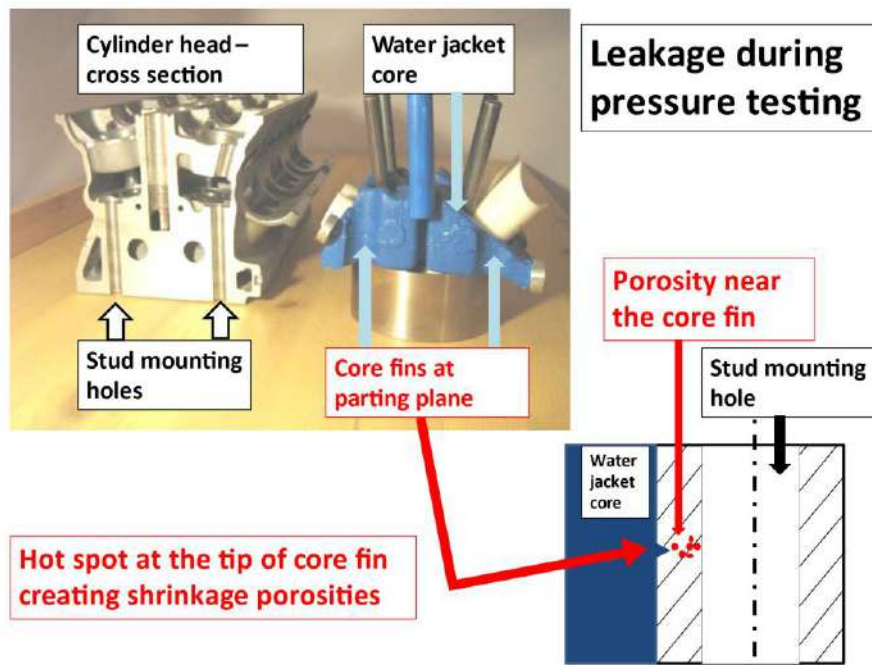


Ask The Expert

Q: We have been producing cylinder head castings in aluminium alloy AL-Si7Mg (A356/AC4C) in large volumes by fully automated Gravity die casting process. Recently, we had a setback when we found some of our castings leaking in pressure test bed. Upon investigation shrinkage porosities were observed in the leak zone, namely the wall around stud mounting hole. Our efforts to trace the origin of the problem did not reveal any process deviation and we are not inclined to reset the SOP. Looking for a way to get to the root of the issue.

A: Leakage through stud mounting hole is normally related to Temperature of metal / die / core, Chemistry, Metal treatment and fading effect. However, one would normally overlook a possibility from the water jacket core itself. The illustration here is a similar case wherein the root was traced to partly trimmed fin at the parting plane of the water jacket core in the zone. A totally untrimmed core would have leaked profusely, the reason being obvious. Partly trimmed fin creates a hot spot ahead of the fin-tip which upon solidification develops into connected shrink paths towards the stud axis. The solution is to trim the fin completely, but becomes laborious if it is thick and demands a tight inspection process. Thicker fins are due to edge wear by high-speed sand particles. A permanent solution will be to repair the water jacket core box by a skin cut at parting plane and sparking out the profiles for definition and include core box rejuvenation as a tooling protocol in quality system documentation. Such a practice would also bring dimensional stability in other profiles of the core. There is no need to tamper with SOP in the process if there are no other troubles in die cast products.

Answered By: Mr. S. Subramanian



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

SPECIAL INSIGHTS



Aluminum Foundries - Current Challenges

By: Mr. Jitendra Lakhota, CEO, M/s. Aakar Foundry, Pune.

New investments & start-ups aspirants should understand current challenges in Aluminium Foundries. Indian Aluminium Foundries are currently dominated by OEMs own group companies, in-house facilities or related organisation. Aluminium Foundries are facing extraordinary business challenges & can be broadly classified in Sustainability, Environment & New Technology. These are captured in 5M – Man, Machine, Material, Method & Money as below,

Man: Organized Aluminum Foundry are facing dearth of skilled manpower & unskilled labor. Talent management & People Development are first priority of business owners because newly passed engineers are not eager to join in foundry business. Post Covid-19 migrant labors from North India is not willing to join in foundry & we have limited un-skill labors availability. Our Foundry operations are dependent on existing employees & we are forced to retain them at higher cost. Our employee cost are shot up at 15% of Sales & YoY increase in employee cost is more than our annual sales growth.

Material: Raw Material Prices constitutes to 50-70% of Sales, based on scope of supplies like Raw Casting or Machined Castings. In last 1 year global volatility in commodity prices affected all metal industry. Aluminum Foundries were more vulnerable due to 100% change in primary alloy ie increase from Rs 170/- to Rs 360/- per kg. We have RM escalation clause agreement with customer & got compensated on quarterly or half yearly basis at retrospective period. Customers follow primary aluminum index of LME/Hindalco/Nalco etc. However, our aluminium suppliers do not follow it & they prefer spot pricing or monthly fixed prices based on quantity off-take. Alloy manufacturers pricing are market driven & based on availability of Aluminum Scrap from Europe, Africa or Middle East, China controlled Silicon & Magnesium (Alloying elements) prices, Fuel Cost & International freight etc.

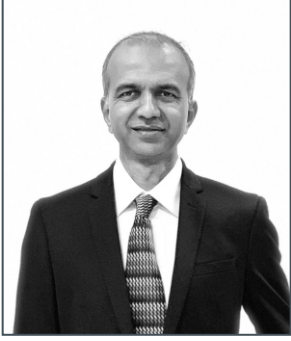
Machines: Aluminum Foundry businesses are capital intensive. Customers provides new business only after good facility is installed at first-hand. Permanent Mould Diecasting (HPDC/LPDC/GDC) processes break-even point is at minimum monthly production capacity of 100 Tons & decided by utilization of central melting facility of CNG/LPG/FO fired furnaces. New investments for same is around 20-25 Crores & with single digit returns payback starts only after 4-5 years after such huge investments. HPDC machines are imported & are fully automatic or semi-automatic. HPDC/LPDC consumes huge electrical power for holding furnaces & hydraulic systems. I had noticed that in every 5-7 years improved technology are available in HPDC machines along with new controllers & coupled with complex hydraulic proportional valves & real time automation/technology. Spares management is also huge investments.

Methods: QMS Certification like ISO 90001, IATF 16949, ISO 14001, ISO 45001 (OHSAS) are prerequisite to get good customers on board. Customer prefers aluminium castings fully finished castings (machined). Product Quality acceptance criteria is stringent after implementation of BS6 norms. Inhouse QA lab equipped with Spectro, UTM, CMM, Contour Measuring, Roughness Testers, APG, Relation Gauges, Automatic Leak Testers, Washing Machine etc are must & new normal to maintain processes & methods in aluminium foundries. Good process & methods also demands capable & skill team.

Money: Many start-up fails after they gets in cashflow trap. Raw Material suppliers ask advance payments but customer payments are realized only 35-75 days & we need to maintain inventory of 15 days. Cashflow management is the key to run aluminum foundries & sustain businesses. RM, Electricity & Manpower are big cost drivers & contributes to 80% of cashflow so EBITDA are narrowed at 8-10% & net profit are slim.

Conclusion: Aluminum Foundries investments needs to do thorough feasibility of current challenges faced as above & then take appropriate investments steps.

Message from IIF Kolhapur Chapter Chairman



Mr. Sachin Shirgaokar
Chairman
IIF, Kolhapur Chapter

Fellow Foundrymen & Friends,

It's my pleasure to be a part of the IIF and various other associations for the past four decades. October is a month of vibrant festivals and bountiful celebrations. Starting from Navaratri Puja, the festive moods linger on till Diwali and BhauBhij. The several festivals in October in India makes a joyous month when the spirits are high, family times and several sweet meals are nothing short of a feast.

The past two years have been fairly challenging. The Pandemic and its impact on all of us, the global changing scenario and the Russia – Ukraine war, all have triggered unimaginable uncertainties and volatility. Along with this, Business is changing rapidly and is going to change more in the next few years than it has in the last fifty.

Technology has been changing the way we live since long. It makes us more powerful in doing our daily tasks. It's like a fast-moving train which all of us must board sooner or later. With the arrival of internet, the world is completely transformed in every aspect and so will all of us in the way we do business. Our companies probably have sizeable investments in technology but is realizing very less of its potential benefits.

Digitization of our business provides opportunities as well as challenges for the Foundry and Engineering Industry. To meet these challenges, we need knowledge with close collaboration between various experts in society. IIF, Kolhapur chapter has felt the need to provide direction of this transformation, potential opportunities & challenges for growth through a well-defined roadmap which will help to effectively benchmark & cast our foundry industry to reach new levels of success in future.

We invite you to be a part of this journey by participating in the WESCON – 2022 being held in Kolhapur on 15,16 October 2022. Let me also welcome your spouses along with you to this city which is home to the Mahalakshmi Temple and visit the best sites nearby.

Let me extend my best wishes to Mrs. Anuja Sharma, Chairperson IIF Western Region for all her initiatives and extend my best wishes to all fellow foundrymen for the future. Let us build newer competencies and rise higher every day.

Western Region Activities



2nd Council Meet in Vadodara



Innovation Tech Series Seminar #1 by Mr. Nikhil Sharma & Mr. Anant Bam @ Vadodara



Project Global Seminar #1 by Mr. Nick Child



Project Eklavya: Foundries - Institutes Partnership Initiative @ Mumbai



Digitalization is the greatest transformational force of today's society, which has radically, fundamentally and globally changed the ways of society and will continue to do so. It affects how people interact and relate to each other, how we perceive things, how we take on tasks and how we find solutions. Digitalization leads to a transformation of society's most important elements - Growth, Innovation, Welfare, Sustainability and Security.

This situation provides opportunities as well as challenges for the Foundry Industry. To meet these challenges and create a sustainable future, we require knowledge through close collaboration between the various experts in society. The Institute of Indian Foundrymen, Kolhapur Chapter has felt the need to provide direction of this transformation, potential opportunities & challenges for growth through a well-defined roadmap which will help to effectively benchmark & cast our foundry industry to reach new levels of success in future through Digitalization.

'WESCON - 2022' a two day Conference is being arranged on **Sat. 15th & Sun. 16th Oct. 2022 at Hotel Sayaji, Kolhapur**, with the theme '**Digitalization - New Era of Change**'.

Sponsorship Slots:

| Category | Sponsorship Amount |
|----------|--------------------|
| Platinum | 5,00,000 |
| Diamond | 3,00,000 |
| Gold | 2,00,000 |
| Silver | 1,00,000 |
| Bronze | 50,000 |

(Excluding GST)

15 - 16 October 2022
Hotel Sayaji, Kolhapur

Delegate Fee :

For IIF Members - 4,000/-
Non IIF Members - 4,500/-
(Including GST)

For Further Information & Details please contact

Mr. Samir Parikh - 982 205 6315

Mr. Malhar Bhandurge - 992 293 0788

Mr. Jaykumar Parikh - 989 044 8840

Mr. Vinay Khobare - 989 009 7962

Mr. Abhijeet Naik - 797 293 1113

Email: kolhapur@indianfoundry.org

IIF Western Regional Conference

Wescon

Digitalization... 2022

New Era of Change

Chief Guest :



Mr. B.P.Kalyani
Executive Director
Bharat Forge Ltd.,
Pune.

Guest of Honor :



Mr. V Narasimhan
Executive Director,
Brakes India Ltd.
Chennai.

Key Note Speaker :



Mr. J Ganesh Kumar
Managing Director
Indo Shell Cast Pvt. Ltd.,
Coimbatore.

Meet our Speakers :



Mr. Prakash Rathod
Chairman & MD
Caspro Group of Companies,
Kolhapur.

Meet our Speakers :



Mr. Vijay Menon
Managing Director
Menon & Menon Ltd.,
Kolhapur.



Mr. Raju Ketkale
Executive Vice President
Toyota Kirloskar Motors,
Pune.



Mr. Milind Kank,
Managing Director
Yeshshree Press Comps. P.L.
Aurangabad.



Ms. Tejashree Joshi
General Manager
Environmental Sustainability
Godrej & Boyce Mfg. Co. Ltd.
Pune.



Mr. Mukund Kulkarni
Director
Expert Global Solutions,
Aurangabad.



Mrs. Nital Raval
Founder
Biorthym India,
Pune.



Mr. Goutam Gouthi
Leadership Facilitator
Brahma HR Consultants,
Ahemdabad.



Mr. Ulhas Chandratre
HRM Expert,
Pune.



Mr. Robin Banerjee
Managing Director
Caprihans India Ltd.,
Mumbai.



Mr. V Srinivasa Reddy
Executive Director
Synergy Green Industries,
Kolhapur.

Organised by



Jointly with

