SNAM
Casting Higher Standards

CONNECT

September, 2016

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SNAM Alloys has taken a restructuring of the Marketing and Development functions to bring our services closer to the customer.

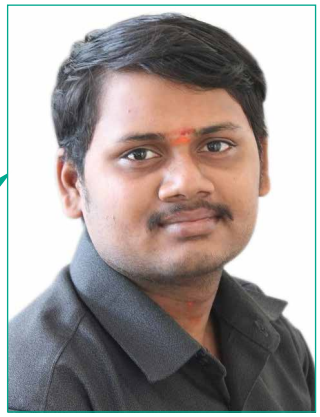
Mr. Nadimuthu has moved to our Pondicherry office as Vice President / Marketing and Development from the 1st of September.

He will lead the Marketing team and as well handle the Development works of the R&D centre, Hosur.

Mr. Nadimuthu

Along with him Mr. Veeravignesh, Application Engineer has also moved to the Pondicherry office from 1st September.

He will focus on the marketing and support for the SNAM Equipments while continuing the work of providing technical solutions, Thermal Analysis support etc.



Mr.Veeravignesh

We aim to provide synergy of Marketing with the cutting edge advantage of R&D to our customers with this new organizational change.

SNAM is committed to provide the best possible services to its customer and will leverage the advantage of having a state of the art R&D centre (with a captive foundry inside at its service) to provide quick solutions to its customers.

SNAM Alloys Pvt. Ltd. has

INTRODUCED ROBOT

process in their production.

HAPPY TO WELCOME AND INTRODUCE

Dr. Projjal Basu

SNAM Alloys Pvt. Ltd., R&D Centre is happy to welcome and introduce Dr. Projjal Basu who has joined SNAM Alloys on 01.06.2016 as the Head – Technical, R&D Centre. He did his BE from Jadavpur University, and then MTech and PhD from IIT Kharagpur, all in Metallurgical Engineering. He has a total work experience of over 25 years on various aspects of iron and steel research, and has worked in India (Tata Steel, NML, IIT), USA (Univ. of Utah), South Africa (Univ. of Pretoria), Saudi Arabia (Al Hoty-Stanger), Malaysia (Univ. Sains Malaysia, Southern Steel). He brings with him years of academic as well as professional experience which will enhance our ability and dedication to help in solving problems in foundries.

Cast Right 2.0

SNAM has been engaging in industry collaboration initiatives for supporting OEMs and supplier foundries to meet their objectives through enhanced support in research and development activities, about which we mentioned in the November 2015 issue of SNAM CONNECT. We have launched the phase II of this programme, Cast Right 2.0, with a kick-off meeting held on 29.06.2016 at the Ashok Leyland Corporate Office, Chennai.

The event was a grand success with participation from other foundry verticals including sand system suppliers, melting equipment suppliers, and other foundry raw material suppliers. Foundry representatives from 24 foundries also participated in the function. SNAM Team was represented by Mr. S Srikanth (Director), Mr. S Nadimuthu (Vice President, R&D), Dr. Projjal Basu (Head – Technical, R&D), and Mr. Kumar Kislay (Team Leader – Foundry Projects, R&D).

From 27th to 30th July 2016, we had training sessions for the first two batches as part of the Cast Right 2.0 initiative at SNAM R&D Centre in Hosur, at Ashok Leyland MDC in Hosur and at DISA's facility in Tumkur.

Technical Training for foundrymen at SNAM R&D

As you might know, SNAM has been providing technical training to new and practicing foundrymen in tackling the challenges of the 21st century in a foundry environment, for quite some time now. We have had 10 such training sessions till date, and have served over 103 foundry professionals from over 40 different foundries. The upcoming training programmes at SNAM R&D for foundry professionals are scheduled as below:

17-19 October 2016 & 15-17 December 2016

Contact us @ marketing@snam.co.in or info@snam.co.in for registration.

Defects, Causes and their Remedies in Casting Process (Part-1)

Casting defect is a major problem in foundries, and it can be attributed to the variations in process parameters. Casting involves various process parameters, and to eliminate the defects, production process has to be standardized. For correct diagnosis and elimination of the defects, proper guidelines are required.

Root cause analysis is to be done when defects are found in the casting and necessary step should be taken to eliminate them. The person(s) involved in the process should have the required knowledge for the correct identification and analysis of the defect.

The defect identification can be made on the basis of the following criteria:

- Defects occurring at the time of mould filling like blowhole, misrun, cold-lap, gas porosity, etc.
- Defects related to solidification of the metal like shrinkage, sink mark, etc.
- Defects which appear on the casting like rat-tail, incorrect dimension, cavity, metallic projection, etc.
- Defects which result in the distortion in shape of the casting like flash, mismatch, etc.

In this article, we will focus on blowhole defect.

Blowholes occur as cavities, and are shiny in appearance. Blowholes occur when gas gets trapped in the metal during solidification; the region of blow hole is usually oxidized and can have a layer of graphite on the surface. This defect is not region specific, it can occur in any part of the casting.

Blowholes are of two types; surface and subsurface blowhole. Surface blowholes are visible before machining, while subsurface blowholes are visible only after machining of the casting.

Know Your Casting Defects...

The possible reasons for occurrence of blowholes can be:

- High gas release from lustrous carbon
- High moisture content in the sand
- Low permeability of mould and core sand
- Entrapment of gases in the core (inadequate venting of core gases)
- High Bentonite content in green sand
- High release of gases from core
- High sand temperature

Possible ways to avoid blowhole defect are:

- Improve the sand conditioning by reducing the moisture content, inert dust, bentonite and carbon content in the sand.
- Control the use of bentonite and carbon carrier to improve gas permeability of the sand.
- Reduce the quantity of binder or use slow reacting binders to reduce the amount of gases released.
- Use of resin-bonded sand.
- Store the core in a dry place in order to reduce the moisture absorption.
- Provide proper venting to the core.
- Use slow reacting carbonaceous material, with higher efficiency for producing lustrous carbon.

Next article in this series will focus on another type of filling related defects.

Automation in Foundry Operation

We continue the article series on Automation in Foundry Operation, with this issue's article on metal pouring automation.

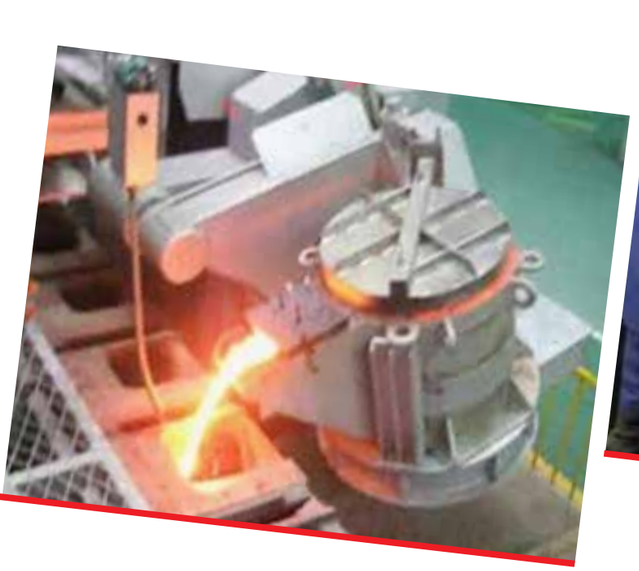
Metal Pouring

Metal pouring system is the process of handling and transferring molten metal into the mould with minimal wastage.

Past: Many low cost automation techniques have been developed in foundries, one among which is the integration of mechanisms and linkages into the ladle pouring system for easy handling at the prevalent temperature conditions. This has improved the working conditions of shop floor persons exponentially, but this low cost automation was not able to control the flow of molten metal, or the loss due to spillage.

Automation in Foundry Operation

Present: The development of low cost automation systems led to the motorization of ladle handling equipment which resulted in a more effective and efficient way of pouring molten metal with uniform pouring rate and without any interruption. With these developments, the safety aspects, casting quality and yield improvement were achieved in foundries.



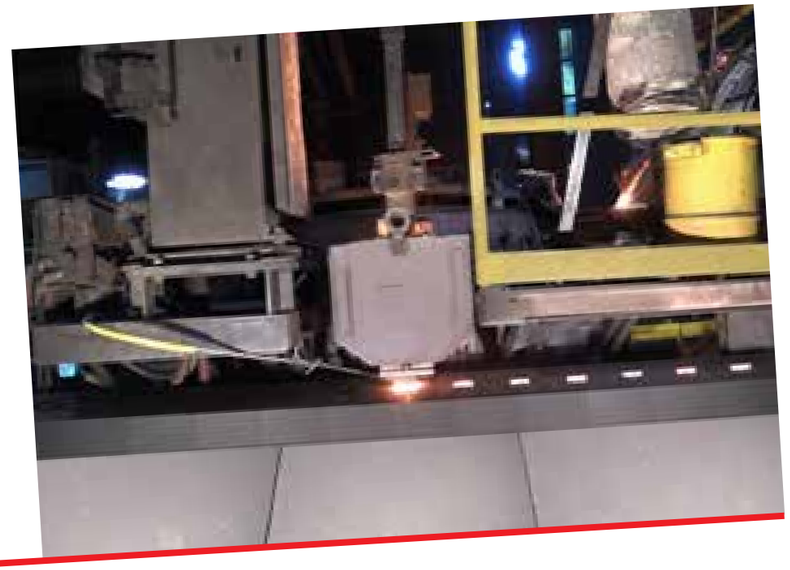
Future: Advancement in technology has led to the development of pressurized pouring furnaces which have a bottom pouring system and regardless of the level of molten metal, it always provides constant flow rate. It uses vision technology to regulate flow rate and positioning, which results in an efficient pouring technique.

Following advantages are observed by using these systems:

- Complete filling of casting with reduced metal losses
- No pouring interruption, so no cause of voids in casting
- Possibility to have a smaller sprue cup and optimized runner system

Automation in Foundry Operation

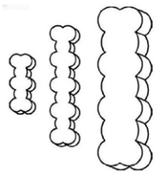
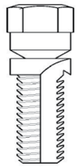
Studies have also indicated that in case of manual pouring about 3 percent of metal is lost as a result of splashing alone, not including the other losses during pouring. So the maximum casting yield attainable is limited. But after implementing a semi-automated pouring system, the metal losses due to splashing were completely eliminated and the casting yield was improved.



Metal stitching is also possible like other kinds of stitching...

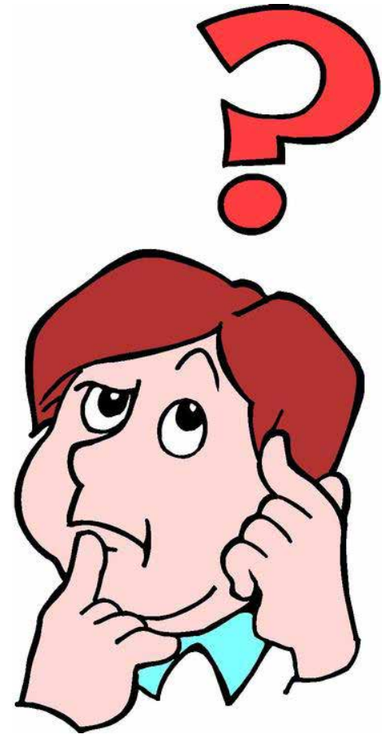
Metal stitching is the most widely used and accepted method for repairing cracks and attaching new pieces to repair cast iron parts. The concept is nearly as old as cast iron is. The basic parts include locks that span the crack with lobes that provide grip to hold the crack together and some type of threaded screws, rods, bolts or special pins designed specifically for the purpose. The screws are installed by drilling and tapping threads directly into the crack in a continuous overlapping way that removes the crack completely and creates a pressure tight seal.

This is achieved by the use of any of the following:

Locks	Stitching Pins	Studs
		

Example of a reworked casting

1. **The tendency of blow holes in a casting is reduced when moulds have adequate _____**
   a. Green compressive strength
   b. Permeability
   c. Hot strength
   d. Refractoriness
2. **Carbon is present in malleable cast iron as _____**
   a. Flake graphite
   b. Nodular graphite
   c. Cementite
   d. Temper carbon nodules
3. **Material used for the indenter in Vickers hardness tester is _____**
   a. Diamond
   b. Hardened steel
   c. Tungsten
   d. None of the above
4. **B4 cup is used for measuring _____**
   a. Density
   b. Permeability
   c. Viscosity
   d. Temperature
5. **Efficiency of a riser is increased by the use of _____**
   a. Chill
   b. Chaplet
   c. Bottom gate
   d. Cheek box



Answer key to Tech Quiz

1. b
2. d
3. a
4. c
5. a

ANSWER / SOLUTION TO CROSSWORD:

	N	I	S	E	^{6}R		N		
				K		W	O	L	^{5}B
				A			G		
			Y	^{5}R	A	N	R	E	^{3}T
	R						^{4}A		L
	E					E			A
	L	E	K	C	I	^{2}N			B
	D					O			O
E	^{3}I	^{4}D			K	^{2}C	U	H	^{1}C

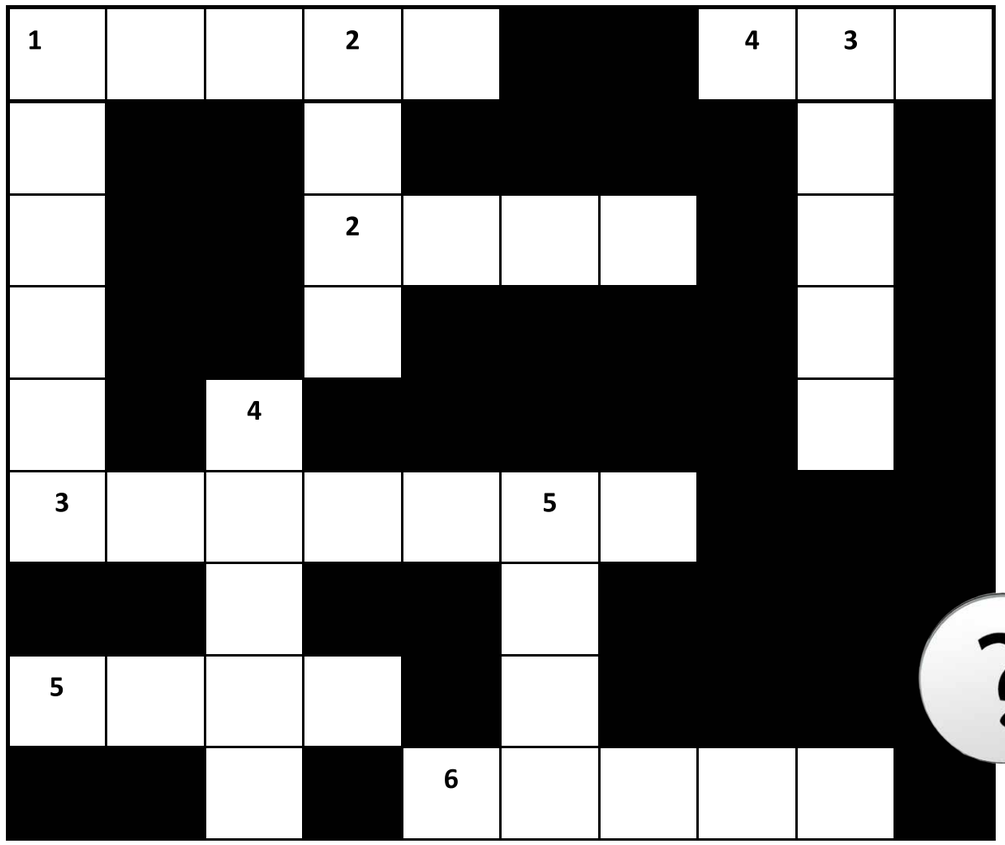
Crossword

Across:

1. Device for holding work or tool on a machine so that the part can be held or rotated during machining or grinding (5)
2. ____ is a three-dimensional geometric shape that tapers smoothly from a flat base to a point called the apex or vertex. Typical pouring cups in foundries follow this geometry (4)
3. An alloy that contains three primary elements (7)
4. Metal block used in forming materials by casting, moulding, stamping or extrusion(3)
5. A casting defect due to trapping of gas in molten or partially molten metal (4)
6. A synthetic or naturally occurring polymer – commonly used as binders in core production(5)

Down:

1. With a melting point of 1492°C, _____ is used in very hard alloys like stellite and also as a binder in carbide cutting tools (6)
2. Element with atomic number 28 and used as an austenite stabilizer in iron and steel industry, with high resistance to oxidation (6)
3. A gear placed between two other gears to transfer motion from one gear to the other (5)
4. A colourless, odourless, inert gaseous element used commonly in welding, laser, light bulbs etc. (5)
5. The angle formed between a tooth face and a line perpendicular to the cutting centreline, related to tools (4)



Letters to SNAM

Dear Readers! With the launch of the ninth and present issue of the SNAM Quarterly Newsletter, we are entering our third year of publication. At this juncture, we would like to know how we have done so far. We seek your feedback on the content of the SNAM Newsletter, and how you find the routine sections of Tech Quiz, Crossword, Did You Know!, and the technical articles. Please write to us at info@snam.co.in, with your valued feedback and suggestions.

Snam's Global **Network**

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