Peranandhanathan M – M.TECH.,
Materials and Metallurgical Engg, (IIT- Kanpur, India)
Metallurgical Consultant - Foundry
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Permanant Address:
431, Nehru Nagar, Punjai Puliampatti (PO),
Nallore (PT), Ward-7, Sathy TK, Erode,
Tamilnadu-638459.

Technical Skills

- Exotic Alloy castings development for grades C12A, 4A, 5A, 6A, Monel, CW6MC, CU5MCuC, CW12MW, CW2M, N7M, CK3MCuN, CN3MCu, CB7Cu-1
- Casting quality Improvements through Process Control in Molding (Sodium Silicate, No-Bake), Melting, Knock out, Cutting, Heat Treatment and Welding
- Experience in metal Refining (Induction furnace, Ladle Refining, Wire injection and Vacuum De-gassing)
- Failure and Metallurgical investigation by OM, SEM, EDAX, XRD etc.,
- Material Development for special requirements like corrosion and Mechanical properties (Sub Zero impact 40J at -50◦C and 80J at -35◦C in WC9/1.7379, 27J at -20◦C in WC6/1.7357, 30J at -41◦C in C5/1.7365, 20J at -34◦C in C12A, G48 Pitting Corrosion at 50C for 72 hrs in CK3MCuN, CW6MC)

International Publications

- **Published Two Technical Papers in ISIJ International "Iron and Steel Institute of Japan" on**
  1) **Modeling of Slag Eye Area in Argon Stirred Ladles - Vol.50 (2010), No.11.**
     - **Authors:** M.Peranandhanathan and Dipak Mazumdar
  2) **Mixing Models for Slag Covered, Argon Stirred Ladles - Vol.50 (2010), No.8.**
     - **Authors:** S.P. PATIL, D.Satish, M.Peranandhanathan and D.Mazumdar

Academic profile

Degree	Specialization	Institution/School	Month & Year	Performance
M.Tech	Materials and Metallurgical Engineering	Indian Institute of Technology- Kanpur	Jan-2010	9.0/10
B.E	Metallurgical Engineering	Government College of Engineering, Salem	April-2006	77.63%
Higher Secondary	Math's & Computer Science	Nyruthi Higher Secondary School, Tiruppur	March-2002	89.58%
S.S.L.C	Math's and Science	K.V.K Govt Higher Sec School, P.Puliampatti	March-2000	70%

Work Experience

1. Organization : Arihant Technocast Pvt Ltd(ATPL),Coimbatore,Tamilnadu, India.

Designation : Production Manager (Metallurgist)
Area of Work : Production, Metallurgy and Process Control
Duration : 12-Dec-2016 to 20-Apr-2019
Job Profile : Foundry Metallurgist

Responsibilities:

I. Process Establishment and Team Development:

- Process Establishment and Team Developing for Brand New Foundry from 0.5 ton to 50 ton
  - Established PEPSET (3 part : No-bake Moulding system with Auto loop line) to achieve upto of 52 moulds in 8 hrs shift with **Manhour/ton of 40** starting from Core making to Closing with average casting 40 Kg
    i. 30 ton mixer with PLC controlled compaction with the complete setup of Booster plate
    ii. Optimized the resin consumption through proper selection of raw Materials (Total Resin+Binder+ Catalyst 0.9%)
    iii. Auto Roll over for stripping of mould after predefined time controlled by PLC
    iv. Flow Coat and DIP coat painting station for coating of mould and cores with uniform coating thickness with a 125-178 Micron
    v. Auto closer for positing of cope and drag in mould closing consistently with "Matching Bro Assembly"
  - Established Coldbox Core Making (3 part Amine Cured Core) with **Manhour/ton 10**
    i. Core weight upto 100 kg produced with full solid/ two half ready for Critical Knife gate body, Pumps and valve casting
    ii. Establishing the tooling for selection of vent for complete filling of cores in the intricate deep recess location
  - Established Shell Mould and Shell Core Making with Manhour/Ton of 45, with casting weight 18 kg
  - Established Bottom pouring even for mould weight 25kg
  - Established Tundish pouring to avoid double stopper pouring for optimize the flow
  - Established Hot Knock out followed by water or air quenching for exotic alloys like Duplex, Super duplex, Super Austenitic stainless steel
  - Established Hot knock out followed by loading and heat treatment at higher temperature for Super Duplex Pump casing
  - Developed complete team of employees without foundry back ground through training and Motivation

II. Regular Activities:

- Monthly Material Planning and Execution
- Daily Heat wise production planning (Moulding, Melting, Process and metallurgy control
- Cutting, Heat treatment and Dispatch planning and Production
- Man-Power recruitment for shop floor activities
- Attendance maintenance and salary preparation for Contract employees
- Continuous Process monitoring, Training to work force in Shop Floor meeting

2. Organization : L&T Valves, Coimbatore, Tamilnadu, India.

Designation : Assistant Manager
Area of Work : QA-Metallurgist
Duration : Since 21-Mar-2015
Job Profile : Foundry Metallurgist

Responsibilities:

I. Foundry Development for Exotic Alloy Castings:

- Exotic Alloy development with LTVL approved vendor through Complete training, Witness and walk through on casting manufacturing process
  - Melting Charge preparation, Charging Sequence, Aim chemical composition finalizing, De-Oxidation addition
  - Suggestion on Pouring and Tapping temperature
  - Knock out temperature preference (Hot Knock out and Slow cooling)
  - Cutting Process selection (Arc cutting/ gas cutting, intermediate heat treatment before cutting, Pre-heating requirement during cutting)
  - Fine tuning of molding parameters for CO2 and No-bake 2 part process
  - Heat treatment parameters selection (Rate of heating, Soaking Temperature, Soaking Time, Selection of Thermocouple, Cooling medium)
  - Weld rod selection, Welding precaution (Preheat temperature, Inter-pass temperature, Electrode selection)
- Successfully developed
  - CW6MC in **"Auto Shell, Coimbatore"** through training and Witness pouring
  - Monel M35-1 in **"Shaw Precicast- Sangli"** through Technical Training
  - C12A Development in **"Veeyes Foundry-Coimbatore"** through Technical training and Witness Pouring
  - C5 and C12 development in **Jsons Foundry, Sangli** and **SVE Castings, Bellary** through failure analysis, Witness pouring, modification of melting charge, De-oxidation practice, Pouring and tapping temperature.

II. Vendor Quality Improvement through Process Modification:

- Grade 4A re-work reduction through Process improvement in **"Peekay Steels Calicut"**
- Stainless steels Weld Rod consumption reduction in **"Madura Steels, Dingidual"**
- Mechanical failure for Grade C12 in Peekay steels Calicut

III. Special Projects (Identification, Development and Approval of New vendor):

- C12A, C12 and C5 Process Development in L&T approved Foundries
- Identifying New Foundry Source for C12A, C12 and C5 (Star Wire - Ballabhgarh, PTC – Lucknow, Flow Link System, Coimbatore, Peekay Steels- Coimbatore)
- In-house Casting Rework reduction through failure analysis and Technical training to foundries
- Failure analysis in castings and Guiding foundries on 8D Technique for CAPA

IV. Regular Activities:

- QMS Audit, Process audit, improvement and Customer approval for Foundries
- New Foundry Approval for Vendor development on Exotic Alloys
- TDC preparation for casting procurement, Special material, MESC specification

3. Organization : Emirates Techno Casting, Pentair, HFZ- Sharjah, UAE.

Designation : Plant Metallurgist
Area of Work : Quality Assurance
Duration : 16-July-2013 to 28-Feb-2015
Job Profile : Foundry Metallurgist and Process control Team member

Responsibilities:

I. New Product Development Activities:

- Metallurgical Feasibility study and new product development for customer specific requirement (Ex: Carbon, Low alloy, Stainless steels and Nickel alloys)
- Formulating Process flow and Standard Operating Procedure for metallurgical process (Ex: Melting, Heat treatment, Pickling, Welding and Fettling processes)
- Establishing raw-material inspection procedure for quality and process improvement
- Metallurgical suggestion on raw material procurement to meet specific chemical requirement

II. Process Improvement Activities:

- Root cause analysis and Corrective measure for non-conformed product through failure analysis using OEM, SEM
- Quality improvements through process Analysis and modification (De-oxidation practice, Heat treatment, cutting and fettling)
- Conducting Technical (Metallurgical) training to operators and supervisor.
- Walk through of complete manufacturing process for critical material/Product for material development and process optimization

III. Special Project in Metallurgy:

- Reduction of surface cracking on CW6MC through failure analysis and Process modification Using SEM
- Analysis on effect of Calcium silicide wire injection against the lumps addition through inclusion analysis using OEM and SEM
- Failure analysis on inclusion related defect, through Digital Microscope, OEM and SEM
- Successfully developed special requirement on C12A like less than 2% Tempered Martensite, Cr equiv< 10, X-bar <15, impact 40J at 6 ◦C
- Established Coil Pre-heating for welding of heavy section casting
- Developed Low temperature properties with Chrome-Moly alloy steel i.e., 40J at -50◦C and 80J at -35◦C in WC9/1.7379, 27J at -20◦C in WC6/1.7357, 30J at -41◦C in C5/1.7365
- Developed Business partner relationship with Sharjah University for utilizing SEM and XRD facilities for failure analysis, R&D activities
- Strengthened in-house laboratory Microscopic analysis, with development of etchant for different materials through literature survey
- Technical review of NORSOK QTR Documentation requirement on Duplex stainless steel for STATOIL Approval
- Reducing the gas porosity in 22 Chromium Duplex stainless(Grade 4A) steel
- Improving the G48 Pitting corrosion at 50◦C for 24 hrs in Grade 4A, 50◦C for 72 hrs in CK3MCuN, CW6MC
- Supported NABL (ISO 17025) approval for In-house Corrosion testing

4. Organization : Sanmar Foundries Limited, Trichy, India

Designation : Executive Manager
Area of Work : Development-Metallurgy
Duration : 07-July-2010 to 06-July 2013
Job profile : Metallurgist

Responsibilities:

I. Product Development Activities:

- Conducting Metallurgical Feasibility study for manufacturability of New alloy (Ex: Carbon, Low alloy & Stainless steels and Nickel base alloys)
- Charge and Cost Calculation for New alloy Manufacturing
- Formulating Process flow and Standard Operating Procedure for metallurgical process (Ex: Melting, Heat treatment, Pickling, Welding and Fettling processes)

II. Process Improvement Activities:

- Process Audit of the Metallurgical activity
- Process capability study on Metallurgical processes
- Root cause analysis for Metallurgical failures
- Formulating internal chemistry for achieving the Material specific properties, ease manufacturability.

III. Special Alloy Developing and Manufacturing:

S.No	Iron Base Alloys	Nickel base alloys
1	Carbon and Low alloy Steel	Ni-Cu Alloys
2	Austenitic Stainless Steel	Ni-Cr-Mo Alloys
3	Duplex Stainless Steel	Ni-Cr-Fe Alloys
4	Precipitation Hardened Stainless steel	Ni-Mo Alloys

IV. Special Project in Metallurgy:

- Developed Linear optimization program for preparing Cost calculation of melting charge
- Developing new process for metallurgical improvements.
- Returns reduction through Carbon boiling in Carbon steel with Induction melting furnace
- Improving the OTD in Exotic and Nickel base alloys by walk through of casting manufacturing process

5. Organization : Iron and Steel Research Laboratory, IIT-Kanpur.

Designation : Research Associate
Area of Work : Modeling of Steel Making
Duration : 01-02-2010 to 31-04-2010

Responsibilities:

- Developed a Mixing Models for Slag Covered, Argon Stirred Ladles through multiple linear regressions using Solver in Excel.

6. Organization : Southern Iron and Steel Company Limited (JSW), Mettur, India.

Designation : Graduate Engineering Trainee
Area of Work : Ladle Refining Furnace (Operation)
Duration : August 2006-July 2007
Job profile : Melting In-charge

Responsibilities:

- Meeting customer requirement of the melt in terms of Chemical Composition and Mechanical Properties for 65 different kinds of low alloy and structural Steels
- Producing clean steel through secondary refining process of Ladle Refining, De-Sulphurisation, Vacuum De-Gassing to improve billet quality and Castability

Academic Projects

M.Tech Thesis **Advisor:** Dr.Dipak Mazumdar, IIT Kanpur

- **Slag Eye Area: Measurement and Correlation**
  - Developed a model to predict the slag eye area (to minimize the alloy-reoxidation, inclusion formation, oxygen pickup and slag entrapment)

B.E Project **Advisor:** Prof.P.G.Venkata krishnan, GCE, Salem

- **Internal soundness correlation of Spheriodized Graphite cast iron between X-ray radioscopy, Gamma radiography and ultrasonic testing**
  - Qualitative comparison of these techniques using Analysis of Variance, based on shape intricacy, cost and time factor

Conference Presentation

- **Presented a Technical Paper** on "**Eye Area in Argon Stirred Ladles**" in the IIM conference in Kolkata in 2010 and **Won First Prize.**

Personal Details

Father's Name : Manivasakaperuman.S
Mother's Name : Ragupathy.M
Spouse Name : Sumathi.S
D.O.B : 23.10.1984
MaritalStatus : Married
Languages Known : Tamil, English and Hindi

References

Name	**Bhuvaneswaran.S,**
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