KIRAN SAMA

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Summary

MS graduate in Mechanical & Materials Engineering with professional experience and **Lean Six-Sigma** certified, seeking full-time opportunities.

Education

Michigan Technological University – Houghton, MI **May 2018**
Master of Science - Material Science Engineering
Jawaharlal Nehru Technological University – Anathapur, India **May 2015**
Bachelor of Engineering - Mechanical Engineering

Knowledge & Skills

- ❖ Lean, Six Sigma, DMAIC, DFM
- ❖ Thermodynamics & Kinetics
- ❖ Material Processing & Selection
- ❖ Mechanical Testing (NDT/DT)
- ❖ ISO 9001:2015 QMS, 7QC, TQM
- ❖ Data Analysis, MS Office tools
- ❖ Metallography / Heat Treatment
- ❖ SPC, FMEA, PAAP, APQP, RPN
- ❖ AutoCAD, GD&T, XRD, SEM

Industry Experience

Manufacturing & Materials Engineer at Honda Motorcycle Pvt. Ltd **Jun 2015-Mar 2016**

- Collaborated with operators and managers to identify and remove bottlenecks using theory of constraints and 8D.
- Used root cause analysis and Six Sigma to investigate and prevent manufacturing non-conformance.
- Hands-on experience with applying value stream mapping(VSM), 5S, JIT, SPC, creating sign boards(ANDON) and involved with ISO 9001:2005 Quality Management System(QSM).
- Improved the structural layout of the plant by developing more efficient and well-designated floor plan as per the requirements. Increased production capacity by 20% using existing space.
- Using hypothesis testing (z-test, f-test, t-test, ANOVA etc) to ensure process stability and consistency of product quality from different production lines, operators, machines etc.
- Reduced the re-work, inventory by 60% and lead-time by 35% by switching from Push to Kanban pull system.

Mechanical Engineer Intern at Larsen and Toubro (L&T)-Valves Department **Jan-Apr 2015**

- Worked with different types of valves named Gate – Globe – Butterfly - Check-ball valves.
- Performed various inspection methods on valves (Hydro test - Hardness test - Vacuum test - Tensile test).
- Hands-on experience with manufacturing processes like machining (shaping, milling, drilling, grinding), extrusion, pressing, bending, stamping, welding (TIG/MIG) and CNC machining.
- Documented test readings and performed various data analysis like Pareto, ANOVA, Regression using Minitab.

Sri Venkateswara University Machining Workshop – Hands-on experience **Mar-Jul 2016**

- Performed machining operations on **German Standard Machines**- manual and automatic production lathes, vertical & horizontal milling machines, shaper to prepare objects like single point cutting & parting tools.
- Worked on CNC lathes & milling machines by developing G, M codes to machine complicated work parts.
- Worked on various mechanical testing methods like tensile, charpy, hardness & non-destructive testing.

Project Experience

- **Implementation of Lean Manufacturing in STARSHIP Factory** **Jan-Apr 2018**

Objective: Identified, reduced and eliminated **COMMWIP** waste of a simulated factory using the concepts of lean manufacturing like 5S, poka-yoke, kaizen, line balancing, JIT, SMED, MRP, cell manufacturing, visual control and value stream mapping(VSM). Reduced non-value added time by 95% & increased **productivity** from **30% to 80%**.

- **R&D Project Team for improving Manufacturability-Michigan Tech** **Sep-Dec 2017**

Objective: Worked with manufacturing processes such as CNC machining, milling, sheet-metal, forging, casting and injection-molding. Implemented **Lockout/Tagout(LOTO)** procedures for safety measures. Conducted time motion studies to calculate **cycle times** and **takt times**. Performed root cause analysis to identify and bring solutions to improve machine performance. Reduced the time for manufacturing and **re-work by 45%** and hence the **overall cost by 60%**.

- **X-Ray diffraction analysis on Magnesium Aluminum Iron Oxide** **Jan-Apr 2017**

Objective: Determined the atomic and molecular structure of the crystal. Performed various X-ray analysis such as background subtraction, phase identification, composition, lattice parameter, volume fraction and crystalline size

Work Experience

- Worked as **Teaching Assistant(PH1100)** in Michigan Technological University **Aug 2017-Apr 2018**
- **Inplant Training: Gerdau Steel Plant Mill**, St. Paul Minnesota **Jan 2017**
  ArcelorMittal Steel Plant, Indiana Harbor **May 2017**
- **Teaching Field:** Worked as **Lecturer** in S.V University College of Engineering, India. **Mar-Jul 2016**
  Subjects Taught: Engineering Graphics, Basics of Mechanical Engineering & Workshop.

Research Experience

Improvement of Ductile Iron Casting Process at Michigan Tech Foundry – Prof. Joseph Licavoli Jan-Apr 2018

- This research aims at making efficient ductile iron castings and it considers properties such as temperature, process time, magnesium fade and inoculation methods.
- Using thin wall finger castings ranging from 2mm-6mm, variance between molds were quantified by graphite nodule count and graphite area.
- Through a design of a new treatment tundish process optimization, a consistent castings temperature over 1350^{o}C has been established and Mg fade has been minimized to become negligible.
- The main goal of process and equipment improvements to keep Mg content and iron temperature a constant between castings and minimize the total process.
- Implemented an in-stream inoculation process which led to increase in graphite fraction and nodular count significantly in most of the samples.

X-Ray diffraction analysis on Magnesium Aluminum Iron Oxide (CCM Slag) – Prof. Yu U. Wang Jan-Apr 2017

Determined the atomic and molecular structure of the crystal. Performed various X-ray analysis such as background subtraction, phase identification, composition, lattice parameter, volume fraction & crystalline size.

Sample run parameters: Step size: 0.04 (Normal type)
Angle scanned: 5-700
Scan rate: 0.250/min. (Continuous scan)

- Performed various **Peak profile fitting & Background subtraction** methods like Box-Car method, Cubic Spline method.
- Identified **different phases of XRD** patterns of the sample with the help of DMSNNT software (JCPDS-ICDD).
- Calculated & performed Lattice parameter and indexing patterns for the sample using extrapolation method and least squares method.
- Determined **Crystallite size** and **Microstrain** by Scherrer method, Williamson-Hall method, Warren-Averbach method and compared those values.
- Performed **Volume fraction analysis** (by volume % and by weight %): Direct comparison, Internal Standard (RIR) method and Standard addition (spiking) method.

Separation of individual Components & Recycling of Lithium-ion Battery – Prof. Lei Pan Sep-Dec 2017

By introducing advanced physical separation process, we could recover 40% or more, of the contained material value in the spent Lithium-ion Batteries. Lower capital and processing costs – Maximize energy savings and emission reduction. Materials recovered: Cathode, Anode, Electrode, Metals.
Material cost in **$LiMn_2O_4$**: $16.15/kg, Contained value after recycling: $7.15/kg

Papers Published:

- Published a journal on **Fundamental study of Underwater Welding** in **IJATIR** (International journal of advanced Technology and Innovative Research).
- Published a journal on **Thermofuel - Pyrolysis of Waste Plastic into Fuels** in **IJSETR** (International journal of scientific Engineering and Technology Research).

Organization Involvement:

- Attended **Ductile Iron Society Production Seminar**, Chicago - January 2018.
- Attended **AISTech** conference – Nashville, May 2017 & Philadelphia, May 2018
- Attended American Foundry Society(**AFS**) - Fort Worth - April 2018.
- Involved in Advanced Metal Works(**AME**) enterprise.
- Active member in Material Advantage, Materials United.
- Attended multiple seminars related to Manufacturing & Metallurgy.