

**A Report on One day Industrial Visit to
Kirloskar Ferrous Industries Limited-Koppal Plant Karnataka, India
Organised by Department of Mechanical Engineering on 21.03.2024**



Event Coordinators: Mr. Jagannath Pattar, Assistant Professor, Department of ME; Mr. Raghavendra H, Assistant Professor, Department of ME; Mr. S. Manoj Kumar, Assistant Professor, Department of ME
Participants: II Year-46 students along with 4 faculty
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Company Profile:

Kirloskar Ferrous Industries Limited, District: Koppal, Karnataka, India takes an unbreakable pioneer an entire industry founded in 1991. Kirloskar Ferrous Industries Limited (KFIL) was formed with the intention of transforming the high-quality Pig Iron and Grey Iron casting industry. With a parent company that possesses a rich 130-year manufacturing and engineering legacy, KFIL has been built on a solid foundation of innovation and customer-centricity.

The cylinder block, head castings and housing are used in a wide range of engines, across construction machines, farm equipment and utility vehicles made by some of the world's largest automobile manufacturers. The pig iron is used to make a variety of cast iron that finds critical use in a wide range of industries.

Our innovations in the foundry space have made us leaders in the category. The fires in our forges is where our products are created with the utmost precision and quality.

The art of engineering transformation begins with a world class Infrastructure.

Foundry:

Features	Koppal Plant	
	Line 1	Line 2
Capacities/Annum	60000 MT	Phase I - 48000 MT Phase II - 24000 MT (Cum 72000 MT)
Moulding	High pressure mould line air impact(HPML)	High pressure mould line squeeze type (HPML)
Moulding Line Establishment year	1994	2014
Mould box size(mm)	1250x900x400/400	1300x1000x400/400
Facility	Fully Finish Machining	

The industry has modern 3D Core Printing facility. KFIL produces prototype castings of different varieties using 3D printed cores/molds and pouring in the regular HPML. These castings are made in shortest record time to support our customers for immediate Proto-requirements.

KFIL has been accredited with following certificates:

1. ISO 140001 Certificate
2. IATF 16949 Certificate
3. ISO 45001: 2018 (OH&S) Certificate

The facility at Koppal is located close to the iron ore deposits of the Hospet-Sandur-Bellary belt, which allows us to backward integrate to the Blast Furnace to our Foundry. Similarly, the Solapur plant has a casting manufacturing facility with forward integration to a semi-finish machining facility. Both plants have highly productive equipment and skilled manpower along with tactical supply-chain-logistics. These facilities can produce a range of products that includes Grey Iron castings from 30 kg to 300 kg single piece weight and Pig Iron of Foundry grade, SG grade and Basic Grade. Preserving the planet for the future is always on top of our minds. Towards that end, we effectively utilize the waste gas from the Mini Blast Furnace by powering three Power plants aggregating to 11.5 MW.

In 2014, we commissioned a new foundry with High-Pressure Mould Line, Robotic Core Centre and advanced processing capabilities, as well as an in-house casting fettling and finishing shop with advanced and highly productive equipment.



PIG Iron Plant:

The Pig Iron plant operates from two strategically located business units at Koppal and Hiriyur and has a combined annual liquid metal production of 0.55 million tons. To enhance productivity, the Blast furnaces are equipped with Hot Blast Stoves to preheat the gases to a higher temperature. The Coke oven, with a six-link arch design, facilitates effective waste heat recovery and has high transmission efficiency with an annual capacity of 0.2 million tons of Coke. With state-of-the-art technology, the boilers are placed in between the Oven batteries to enhance waste gas heat recovery, which generates 19~20 MWs of Power consistently. The manufacturing facilities are in tandem with the state-of-the-art technology to cater to the quality needs of the customers.

Furnace	Koppal Plant	
	MBF 1	MBF 2
Volume (m3)	295	250
Liquid Metal Production (MTs/Annum)	2,16,000	1,80,000
Sinter (MTs/Annum)	5,00,000	
Coke Oven (MTs/Annum)	2,00,000	
Captive Power Plant (MWs)	31.5	

Objective of visit:

The objectives of an industrial visit to Kirloskar Ferrous Industries Limited in Koppal, Karnataka, could include:

1. **Understanding the manufacturing processes:** Observing the various stages involved in the production of ferrous materials, including iron and steel, to gain practical insights into industrial operations.
2. **Learning about technological advancements:** Exploring the innovative techniques and technologies employed by Kirloskar Ferrous Industries Limited to enhance productivity, efficiency, and product quality.
3. **Studying quality control measures:** Observing the quality control procedures implemented by the company to ensure the production of high-quality ferrous products that meet industry standards and customer requirements.
4. **Understanding environmental sustainability practices:** Learning about the company's efforts to minimize environmental impact through sustainable manufacturing practices, waste management, and energy conservation measures.
5. **Exploring career opportunities:** Providing students with exposure to potential career paths and job roles within the ferrous industry, including opportunities for internships, apprenticeships, and employment.
6. **Networking and industry connections:** Establishing connections with professionals and experts in the field of ferrous metallurgy, fostering potential collaborations, and gaining insights into industry trends and future prospects.
7. **Enhancing theoretical knowledge:** Reinforcing classroom learning by witnessing real-world applications of theoretical concepts related to metallurgy, materials science, engineering, and manufacturing processes.
8. **Promoting interdisciplinary learning:** Integrating knowledge from various disciplines such as mechanical engineering, materials engineering, and industrial management to understand the multidimensional aspects of ferrous industry operations.
9. **Encouraging critical thinking and problem-solving skills:** Engaging in discussions and analyses of challenges faced by the industry and exploring potential solutions through brainstorming sessions and interactive exchanges with industry professionals.
10. **Fostering teamwork and leadership skills:** Collaborating with peers and faculty members during the visit, participating in group activities, and taking initiative in learning opportunities to develop essential teamwork and leadership competencies.



11. Outcome of the visit:

- The industrial visit to Kirloskar Ferrous Industries Limited proved to be an enriching and educational experience for all participants. It offered a comprehensive understanding of ferrous manufacturing processes, technological innovations, environmental sustainability practices, and career opportunities in the industry. We extend our sincere gratitude to Kirloskar Ferrous Industries Limited for their hospitality and valuable insights shared during the visit
- Students understood the various working of engines and their development init.
- Students learned the different systems of automobile and their parts functions.
- Also learned what different methodologies in casting process.
- Students also saw the complete procedure of casting, moulding & machining processes.



The details of the visit are as follows:

The Department of Mechanical Engineering, MITS, Madanapalle organized a one-day Industrial Visit to **Kirloskar Ferrous Industries Limited**, Koppal on 21st March 2024 for Second year students. The visit was organized with the prior permission and guidance of **Dr. C. Yuvaraj** Professor & Principal and **Dr. S. Baskaran** Assoc. Professor & Head of the Department. A total of 46 students along with 4 faculty members have joined the visit.

1. We started from our college premises sharply at 10:40 P.M. on 20th March 2024.
2. Reached "**Kirloskar Ferrous Industries Limited**", by 10:30 am
3. At 10.45 p.m. We are welcomed by the **Mrs. Jayashree Sagar** HR Manager & Admin; She gave instructions before visiting the company. Upon arrival, participants were warmly welcomed by the company representatives **Mr. Mohammed Azeez** Manager. An introductory session provided an overview of Kirloskar Ferrous Industries Limited, its history, products, and market presence. Safety instructions and visitor badges were distributed to ensure a secure and organized visit.
4. At 11.15 p.m. We visited the Production Section with the Manager **Mr. Mohammed Azeez** & **Mr. Naresh** Safety Department. At each layout we got about the explanation of each part which is to be installed in the company. We started journey from the Raw material to Useful Product.
5. At 11.45 p.m. Then we move towards the Melting, Pouring & Forging sections of Aluminium Alloy for the different applications.



6. Highlights of the Visit:

1. **Guided Tour of Production Facilities:** Students were guided through the production facilities, including the foundry and blast furnace areas. They observed first and the iron and steel casting processes, from raw material preparation to finished product inspection. Quality control measures and inspection procedures were demonstrated, highlighting the company's commitment to product excellence.
2. **Technical Presentations and Demonstrations:** Technical experts from the company conducted presentations on the latest advancements in ferrous metallurgy and demonstrated the use of equipment and machinery in the manufacturing process. Students engaged in interactive discussions, gaining insights into the application of theoretical concepts in real-world industrial settings.
3. **Environmental Sustainability and Safety Practices:** A session on environmental sustainability initiatives and safety protocols showcased the company's commitment to minimizing environmental impact and ensuring the well-being of its workforce. Students learned about waste management practices, hazard identification, and emergency procedures, emphasizing the importance of responsible industrial operations.
4. **Career Opportunities and Industry Insights:** A panel discussion with industry professionals provided participants with valuable insights into career paths and opportunities in the ferrous industry. Current trends, challenges, and future prospects in the industry were discussed, inspiring participants to consider diverse career options and stay updated with industry developments.

Finally, at the end of the session at 1.00 p.m. Our faculty **Mr. Jagannath Pattar** on behalf of MITS College of Engineering, has given a vote of thanks for the “Kirloskar Ferrous Industries Limited”, for giving a great opportunity to visit the plant. At 1.30 p.m., we started a return journey to the college. We express our deep sense of gratitude to **Dr. S. Baskaran** Assoc. Professor & Head, Department of Mechanical Engineering, for his constant encouragement, guidance and support.

We are grateful to **Dr. C. Yuvaraj** Professor & Principal who has extended his support and cooperation for the success of this Industrial Visit. We also extend our warm regards to the **Management** for providing us with the required facilities and extending their support for successful completion of the Industrial Visit. Finally, we take the privilege to express our sincere thanks to one and all for their affection and best wishes for the successful completion of this Industrial Visit.

