Department of Mechanical Engineering

Industrial Visit Report – KCP Sugar and Industries Corporation Ltd, Vuyyuru

III/IV B.Tech Students of Mechanical Engineering Department were taken to KCP Sugar and Industries Corporation Ltd, Vuyyuru for industrial visit on 09-09-2025 to acquire knowledge by seeing practically the things happening in KCP Sugar and Industries Corporation Ltd. As a part of visit 52 students and 2 faculty (Dr. K Sai Sarath and Dr. V. L. Mangesh) have visited.

K.C.P Sugar and Industries Corporation Ltd is a prominent sugar manufacturer in India with diverse operations including Rectified Spirit, Alcohol, Ethanol, Power Cogeneration, and more. Originating from the vision of late Shri. Velagapudi Rama Krishna ICS, the company grew from a struggling 600 TCD sugar factory in 1941 to its current capacity of 7500 TCD, inspiring other sugar industries in Andhra Pradesh. In 1995, the company reorganized into K.C.P.

Sugar and Industries Corporation Ltd. under the leadership of late Shri. V.M. Rao, who revamped operations, introduced innovations, and expanded product lines. Today, under the stewardship of Smt. Irmgard Velagapudi M. Rao, Shri. Vinod Sethi, and Smt. Kiran Rao, the company maintains its prominent position in the industry.

During the visit, students were briefed on the history and growth of KCP, its diverse business units, and its contribution to industrial development. At the Vuyyuru plant, the focus was primarily on the sugar manufacturing process, which includes cane crushing, juice extraction, clarification, evaporation, crystallization, and centrifugal separation. Students observed the large-scale boilers, turbines, and milling equipment used in converting raw sugarcane into refined sugar.

The engineering workshop showcased modern machine tools, fabrication facilities, and quality control systems used for maintenance and component production. Safety measures, environmental practices like wastewater treatment, bagasse utilization for power generation, and pollution control systems were also explained.

The following equipment were physically observed by students.

1. Cane Carrier
2. Mill (Crusher/Shredder)
3. Cane Knives
4. Intermediate Carriers
5. Bagasse Carrier
6. Boiler
7. Steam Turbines
8. Generators
9. Gearbox
10. Juice Heater
11. Clarifier
12. Filter (Rotary Vacuum/Pressure)
13. Evaporator (Triple-, Quadruple-, or Quintuple-Effect)
14. Vacuum Pan
15. Crystallizer
16. Dryer
17. Cooler (Granulator)

At the plant, students were given a detailed presentation on cogeneration technology, where bagasse (a byproduct of sugarcane crushing) is used as the primary fuel to produce steam. The high-pressure boilers generate steam that drives turbines**,** thereby producing electricity. Students observed the boiler house, turbine section, cooling towers, control room, and switchyard facilities. The process of converting thermal energy into electrical energy was

explained in detail, along with the role of automation in regulating pressure, temperature, and load distribution.

The visit also emphasized the importance of energy efficiency and sustainable practices, as the use of bagasse reduces dependence on fossil fuels and minimizes environmental impact. Safety measures, including protective equipment, fire safety systems, and emergency protocols, were also demonstrated.

This visit enriched the students' practical knowledge of power generation, cogeneration, and industrial energy management, bridging the gap between theoretical studies and industrial applications.

The visit helped students bridge the gap between theoretical knowledge and real-time industrial practices. It enhanced their understanding of large-scale manufacturing operations, energy efficiency, and sustainable industrial practices. Overall, the experience was highly informative and motivating, enabling students to appreciate the practical applications of their classroom learning.

Finally, Dr. V. L. Mangesh, Professor and Dr. K Sai Sarath, Assistant Professor thanked management of KCP Sugar and Industries Corporation Ltd, Vuyyuru for accepting and providing guidance during the industrial visit.

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