Factory Visit
(19.10.2020)

Report

at

The Ramco Cements Limited,

R.R.Nagar,

Virudhunagar

Faculty Members:

1. Dr.L.Ganesan – Principal
2. Mr.K.Selvaraj – DGM (A)
3. Mr.Dharmar – HoD Incharge/Civil Engineering
4. Dr.K.Vijayalakshmi – HoD/Computer Science and Engineering
5. Dr.S.Kannan – HoD/Electrical and Electronics Engineering
6. Dr.S.Periyanayagi – HoD/Electronics and Communication Engineering
7. Dr.P.Sureshkumar – Associate Professor/Mechanical Engineering
8. Dr.K.Basarikodi – HoD/Mathematics

Cement Factory

Faculty Members reached the factory at 9.00 am. PRO of the factory welcomed us and explained about the traditional values of R.R.Nagar plant with photos. He also explained about history of the plant and the eminent persons visited the factory from inception to recent days.

Principal and DGM (A) met the Factory head and explained about the purpose of visit such as to know about the step by step process of cement industries, industrial problem identification and placement opportunities for our students. Factory head accepted principal's request and allotted two plant incharges (Mr.S.Kannan, GM(Engineering), Mr.M.Mahesh, Senior DGM(E&I) for guiding the faculty members.

First, Incharges take us to show the overall process monitoring unit by Ramco System developed ERP software called Optima (Process Optimization solution). They explained about each and every step of processing sequence of plant starting from raw materials to finished goods. The automated software has shown animated picture of process sequence and process parameter variation of each unit.

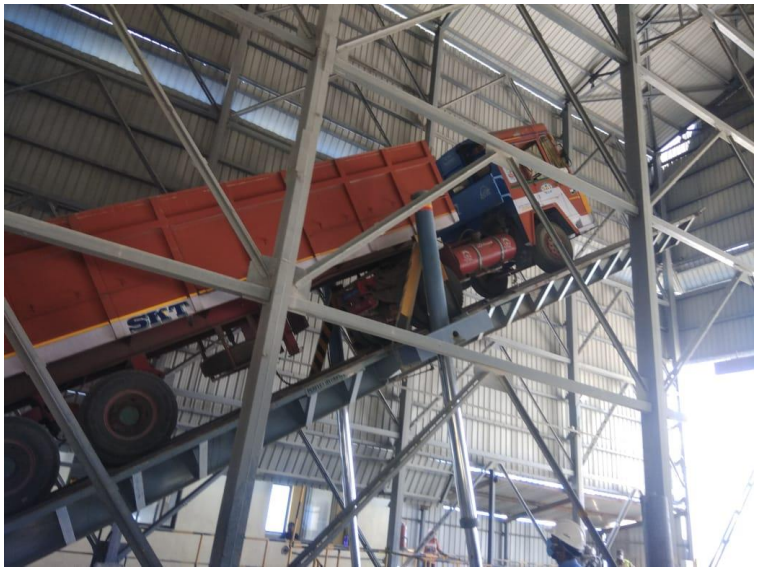
They have explained about Proportioning, Blending & Grinding in manufacturing unit. The raw materials from mines are routed in plant laboratory where they are analyzed. The proper proportioning of limestone and clay are optimized before the beginning of grinding. The plant equipped with horizontal mill type where they grind the raw mix with the help of heavy wheel type roller and rotating table. Rotating table rotates continuously under the roller and brought the raw mix in contact with the roller. Roller crushes the material to a fine powder and finishes the job. Raw mix is stored in a pre-homogenization pile after grinding the mix to fine powder.

We went to Processing Phase II: Preheating of Raw Materials section: After final grinding, the material is ready to face the preheating chamber. Preheater consists of series of vertical cyclones from where the raw material passes before facing the kiln. Preheating chamber utilizes the emitting hot gases from kiln. Preheating of material saves the energy and make plant environmental friendly.

We visited the Kiln Phase: Kiln is a huge rotating furnace which is also called as the heart of cement making process. Here, raw material is heated up to 1450 ºC. This temperature initiates a chemical reaction called decarbonation. In this reaction, materials (like limestone) release the carbon dioxide. High temperature of kiln makes slurry of the material. The series of chemical reactions between calcium and silicon dioxide compounds form the primary constituents of cement i.e., calcium silicate. Kiln is heating up from the exit side by the use of natural gas and coal. When material reaches the lower part of the kiln, it forms the shape of clinker. They explained about the importance of clinker making process through kiln phase. Major feature for the Plant was upgraded with the latest SF Cooler for clinker cooling.

We visited testing section where they tested the powder by XRD. Quality control equipment like the Cross Belt Analyzer, XRF, XRD are in use there for testing of powder. The mineral content of raw material is analyzed through X-Ray Diffractometer. Based on the X-Ray Diffractometer, they are adding the additive contents in cement. We enquired about cost of XRD device details for research purpose. They also informed to contact Ramco Research Development Centre (RRDC), Chennai regarding the testing of solid and powder.

We have also visited the raw material erection section. The plant has 2 – 100 ton tippler section. They have also shown the demonstration of tippler when unloading condition.



Apart from plant visit, we have also visited occupational health centre which is located at the plant itself. The centre is fully equipped with bed and physiotherapy sections. Dedicated doctor and nurses are available in health centre at 24/7.

We have visited Ramco Vidyalaya school which is located at the factory campus. The Principal of school welcomed all the faculty members and explained about their achievements. Our principal requested to send their students to RIT for getting quality education. He also explained about the scholarship details to students and placement status of RIT.

The lunch has been provided by Cement factory at 1.30 pm

Mining Section

Afternoon we have visited Ramco Mines, Pandalkudi. Mines officials have welcomed us for their factory visit. Initially, they have explained about plant location and manufacturing process through PPT. There are photos of 5 mines which were shown through Google map. Further, they have taken us to show the mines location (7 benches).

We have also observed that the completed mines are transformed into Ecological park. This is a great initiative taken by our group. Finally the visit has completed at 6.00 pm.

Areas identified for project during visit

1. Mortar cube testing parameters are changed by manually. Optimization technique

	may be used for parameter optimization in order to make less testing time 2. The Control Equipments like PLC, SCADA may be upgraded with new technologies like LabVIEW. 3. Condition monitoring of Critical equipments, Fault analysis may be done inorder to avoid catastrophic failure of equipment 4. Energy conservation in Lighting, by measuring the Lux level, illumination level may be done. 5. Sodium Vapour lamps may be replaced with LED Lamps for conservation of Energy. 6. Instead of Conventional DOL and Rotor resistance starters, VFD may be employed in phased manner. 7. Wear and tear analysis may be conducted in frequent interval for moving parts 8. Curing time may be reduced through accelerator curing technique 9. EDAX device might be adapted for finding the chemical composition of raw material in accurate manner 10. Processing speed and accurate color identification technology may be improved. Already they have adapted through German based technology.