

Report of the factory visit to IREL on 08/10/2025.

The Quilon Management Association (QMA) arranged a factory visit to IREL's Chavara Mineral Division. The visit was October 8th including 15 QMA members and 20 management students from various institutions in Kollam. The objective of the visit is to provide our members and students with a practical understanding of the mining and processing of rare earth minerals. IREL's Chavara Mineral Division is one of the leading public sector mineral sand mining and processing facilities in the country, and the visit was a valuable learning experience for our members.



The 22-kilometer stretch of coastline from Neendakara to Kayamkulam in Kollam district is the richest mineral deposit in the world. According to the latest estimates, there are 127 million tons of mineral reserves. Ilmenite alone accounts for 80 million tons. If one ton of black sand is extracted, an average of 475 kg of ilmenite, 146 kg of zircon, 122 kg of sillimanite, and 61 kg of rutile are obtained. The ilmenite here alone contains 60 percent titanium dioxide. Most of the ilmenite is used to make synthetic rutile and titanium pigment. Companies like Travancore Titanium Products Limited (TTP) in Thiruvananthapuram and Kerala Minerals and Metals Limited (KMML) in Chavara, Kollam were started to produce value-added products like titanium dioxide using

ilmenite through synthetic route. Indian Rare Earth Limited (IRE), established under the ownership of the Central Government in Chavara, Kollam, carries out the process of extracting ores from mineral sands. The only private sector company in Kerala in this field is CMRL in Aluva. Production here mainly takes place through synthetic route.



The synthetic rutilite is an industrial product with huge export potential. Titanium and titanium dioxide have many uses, including paints, pigments, welding electrodes, titanium sponge manufacturing, special abrasives, titanium metal alloys, biomedical artificial knees, MRI etc., and aerospace equipment.

Rutile is an oxide mineral composed of natural titanium dioxide (TiO_2). Synthetic rutile is a chemical containing titanium dioxide that is separated from a mineral such as ilmenite through a chemical process. Synthetic rutile may contain about 88-95% titanium dioxide (TiO_2). By removing iron oxide from ilmenite through a chemical process called the Becher process, titanium dioxide is converted into a synthetic rutile enriched to 88-95%. This is what is used in titanium and titanium dioxide-based products.

The visiting team consisted of 20 student members from MSN Institute of Management and Technology, Bishop Jerome Institute of Management and TKM Institute of Management and 15 QMA members and officials. The team was greeted by Shri. Sanjay Singh Lonia HOD of Safety Department. He took the team to the Safety Hall of IRE wherein he explained the safety procedures to be followed inside the Factory premises and of the hazardous areas in the campus holding radioactive minerals.

The visitors were then taken to Plant Technical Service Hall wherein IREL officials explained the process activities in the separation of Heavy Minerals from the beach sands of Chavara coast. The power point presentation elaborately contained the physical as well as chemical properties their applications of the end products viz Ilmenite, rutile, Zircon, siliminite, Lecoxine, garnet etc. Process Engineers Sri Simanchal rath and Sri Ayyappa Kishore took the visitors around the Plants of IRE and explained the activities in each plant, the separation and concentration of Heavy minerals.



After the factory visit a meeting was arranged at the seminar hall of IRE guest house. IRE Unit Head and General Manager Shri. N. S. Ajith addressed the group. The QMA members from IRE also attended this meeting. Sri Aji, Human Resource Manager made a Power point presentation on CSR activities of the current year. The meeting was felicitated by QMA president Dr. Madhusoodhanan pillai, QMA Secretary General P. N. Appukuttan expressed QMA's appreciation of achievements in recent years especially its record production in recent times and commendable CSR activities.

The students also were happy and expressed their thanks to QMA for arranging such an informative endeavor.

During the tour, participants observed the various stages of mineral processing, including crushing, grinding, and separation. They also interacted with IREL employees and gained insights into the company's operations and challenges. The company has implemented various measures to ensure environmental sustainability and worker safety. The factory visit provided valuable practical insights into the mining and processing of rare earth minerals. The company has implemented various measures to

ensure environmental sustainability and worker safety. IREL could consider hosting more industry visits to promote awareness and knowledge sharing about rare earth minerals and their applications. The company could also explore opportunities for collaboration with academic institutions and research organizations to advance research and development in the field of rare earth minerals.

