

## **ES451 Field Visit 3 Hindustan Platinum Pvt. Ltd.**

1. Describe the visit in 200-400 words

**Ans:** We went to Hindustan Platinum Pvt. Ltd., located at Pawane, Navi Mumbai, on 3rd November. We were instructed not to bring metallic items, including wallets and ornaments, a day earlier, so we only had a few metallic items that day. Some of us put the things in our bags and kept them on the bus itself; others put their stuff in a bag and kept it in the security office at the premises. One staff member from the security team generated a visitor pass for each person individually, which took a very long time. As the process was going on, a few people from the plant took the students who were provided with their visitor passes in batches. Frisking was done with metal detectors to ensure we had no metal objects on us. As the company deals with precious metals, they don't want any metallic piece or particle to exit the premises, so they implemented this rule. After that, we were all taken to a conference room where the company vice president and top management greeted us and presented the procedure to follow in case of emergency and what the company does, their air pollution and domestic sewage and effluent treatment systems and their future roadmap. After the presentation, we were asked to wear the PPE provided. We were split into two batches, with one batch going to see the air pollution control system first and the other taken to the domestic sewage and effluent treatment plant. After seeing both the systems, we returned to the conference room and were given refreshments. We also were encouraged to ask questions regarding the presentation and the visit. After the Q&A session, we took a group photo with the staff members in the room and left the premises after another round of frisking and getting back our possessions.

2. List the different products refined and manufactured in the industry

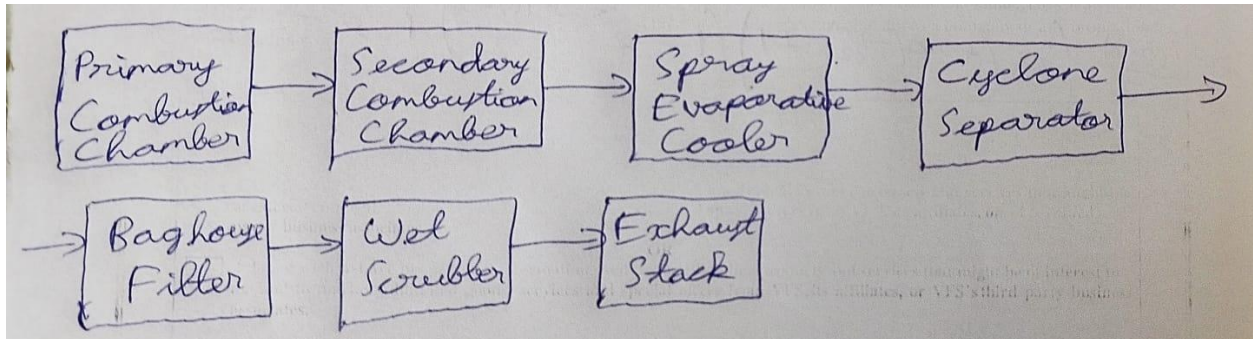
**Ans: Products and services offered:**

- a) Management of precious metals involves overseeing gold, silver, platinum, palladium, ruthenium, and iridium.
- b) Chemicals and Catalysts: Specialized catalysts are crafted for optimal process output, utilizing materials like alumina, silica, and carbon. Both heterogeneous and homogeneous catalysts incorporate metals such as palladium, platinum, rhodium, ruthenium, among others.
- c) Refining Services: Precise refining of precious metals is carried out, extracting the most valuable metals through high-yield systems. Analytical procedures are employed to determine the exact amount and composition.
- d) Electrical Contacts: Offerings include assemblies, profiles, semi-finished products like silver and silver alloyed wires, silver anodes, silver and silver alloyed strips, rivets, and other electrical contacts.
- e) Engineered Goods: These products, ranging from thin wire to labware and items for the glass industry, are distinguished by their high levels of customization, quality, and durability.
- f) Nitro Technologies: Nitro technology encompasses customized getter systems and catalyst gauze production. Services include metal management, plant cleaning, refining, and technical advice.

**3. Draw and Describe the scheme of treatment for Air pollution control**

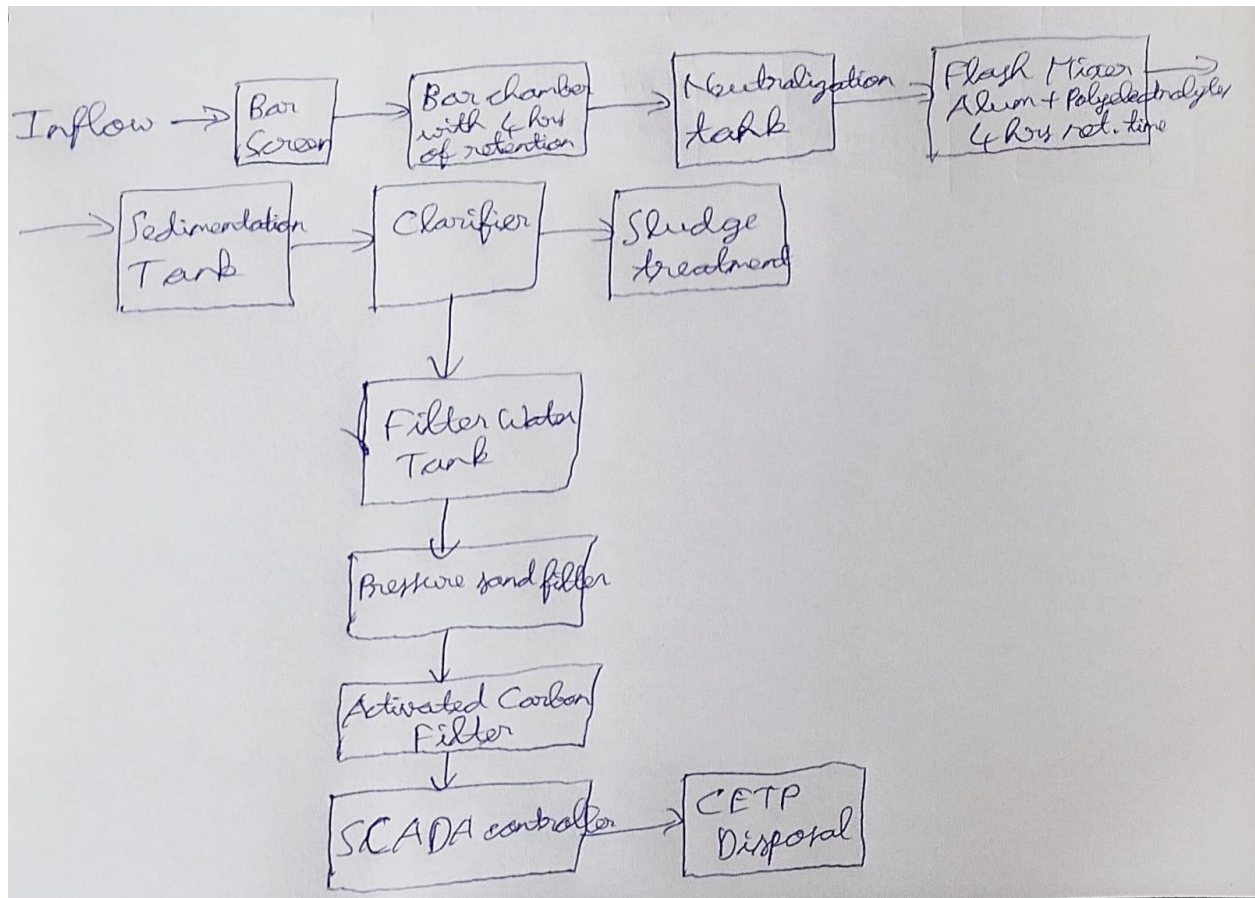
**Ans:** All combustible waste is placed in the primary combustion chamber, where the temperature is regulated based on the quality of the material. The secondary combustion chamber, where the exhaust is directed, is maintained at a temperature ranging from 800 to 900 °C. To safeguard subsequent technologies, the exhaust is then directed to a spray evaporative cooler, reducing the temperature to 200–300 °C. Four cyclones are employed to transport the cooled exhaust and capture all particulates, predominantly those of larger size. The bag house receives the exhaust from the cyclones and collects fine particulate matter. Subsequently, the scrubber receives the exhaust, neutralizing its acidic properties through the spraying of a caustic solution. After neutralization, the exhaust is released through the chimney. The gathered particulate matter contains only

precious metals, which are later utilized in the production process. The entire system operates in a fully automated manner. To ensure compliance with specified requirements, various interlocks are implemented at different stages of the air pollution control system.



#### 4. Draw and Describe the scheme of treatment for Effluent Treatment

**Ans:** Bar screens are employed to filter larger particles from wastewater before it enters the effluent treatment plant. The effluent undergoes initial treatment in the neutralization tank to adjust the pH level to a range of 6 to 8. Caustic soda is used to counteract acidity. Real-time flow and pH monitoring are facilitated by installed flow and pH meters. Oxygen is introduced to aid coagulation for subsequent processes. The neutralization tank retains the effluent for four hours. The neutralized wastewater is then directed to the flash mixer, where polyelectrolytes and alum are added, and the wastewater is held for four hours to ensure thorough mixing. The sedimentation tank follows in the wastewater treatment process. Its primary function is to separate clarified supernatant from concentrated sludge. The filter press receives the concentrated sludge, which is subsequently sent abroad for the extraction of valuable metals in the ppm range. A pressure sand filter and an activated carbon filter are utilized to filter the clarified supernatant and remove valuable metals. The SCADA controller facilitates real-time monitoring of water quality metrics such as BOD, COD, TSS, and other parameters.



5. Any other observation which can improve the situation or not in good conditions

**Ans:** I noticed that the PPE shoes which they gave were very uncomfortable while walking as they were too heavy. Also they could speed up the process of frisking by acquiring state of the art devices. The visitor pass generation was also pretty slow probably because of old computer systems. Those can also be upgraded to smoothen the process.