MINERAL ENGINEERING

Mineral Engineering is the science of **mining**. ... **Mineral Engineers** survey and plan mines, including systems of ventilation, and participate in their management. They also design the blasts used to open mines.

Before the advent of heavy machinery the raw ore was broken up using hammers wielded by hand, a process called "spalling". Before long, mechanical means were found to achieve this. For instance, stamp mills were used in Samarkand as early as 973. They were also in use in medieval Persia. By the 11th century, stamp mills were in widespread use throughout the medieval Islamic world, from Islamic Spain and North Africa in the west to Central Asia in the east.[1] A later example was the Cornish stamps, consisting of a series of iron hammers mounted in a vertical frame, raised by cams on the shaft of a waterwheel and falling onto the ore under gravity.

The simplest method of separating ore from gangue consists of picking out the individual crystals of each. This is a very tedious process, particularly when the individual particles are small. Another comparatively simple method relies on the various minerals having different densities, causing them to collect in different places: metallic minerals (being heavier) will drop out of suspension more quickly than lighter ones, which will be carried further by a stream of water. The process of panning and sifting for gold uses both of these methods. Various devices known as 'bundles' were used to take advantage of this property.[*when?*] Later, more advanced machines were used such as the Frue vanner, invented in 1874.