



The geometry of the **TOP™ Thickener** dewatering chamber provides additional solids residence time and larger inventory for compacted solids. Inclined scrapers are used for further dewatering within the chamber. WesTech's approach to elevated tank design is unique. An algorithm has been developed to simultaneously analyze parameters such as beam size, beam quantity, leg size, and leg location. Designs are verified using structural analysis software. Flow distribution patterns can be analyzed using computational fluid dynamics (CFD). WesTech uses CFD technology as a tool to optimize the feed distribution system design.

Uranium Ores

Uranium ores are generally classified as acidic, alkaline, or phosphate rock based. In all cases, the ore is milled and classified prior to leaching. Since the final milling is done in a ball or rod mill as a slurry, it is necessary to concentrate the milled ore slurry in a pre-leach thickener prior to the leaching process in order to reduce dilution. Acidic and phosphate ores are leached with acid while alkaline ores are generally leached with sodium carbonate and/or sodium bicarbonate.

Solvent Extraction

Once leached, the ore slurry is washed in a countercurrent decantation circuit where the valuable dissolved uranium-bearing materials are separated and washed from the gangue ore. This pregnant solution is then passed through a buoyant media clarifier where any finely divided gangue material can be further separated, and the valuable pregnant solution is polished.

This separation is important to minimize the development of "crud" in the subsequent solvent extraction process. The solvent extraction process allows for ion exchange of uranium ions between two aqueous phases. It is also common to use conventional direct resin-based ion exchange in lieu of solvent extraction.

Yellow Cake

Following ion exchange or solvent extraction, a precipitation reaction produces finely divided "yellow cake" particles. This "yellow cake" material is thickened and then filtered to produce a solid cake material suitable for further conversion into UO_2 or UO_3 .

WesTech specializes in liquid/solids separations which are critical in the production of the uranium intermediate product called "yellow cake." These processes include: sedimentation for concentrating ore slurry, counter current decantation for washing and recovery of pregnant solution from leached ore slurry, polishing of pregnant solution prior to solvent extraction as well as final concentration and filter dewatering of "yellow cake" product.