Technology that we use:

### Working Principles:

1) **Agitated Thin Film Evaporators**

The Agitated Thin Film Evaporator comprises two major assemblies:
- A jacketed shell precision machined from the inside
- A rotor assembly that revolves at high speeds while closely fitting the shell.

The feed enters the shell tangentially and spreads along the periphery through the distributor. The rotor blade tips slides with a close clearance with the wall and spread the feed uniformly on the heated surface into a thin film and then agitate it.

The heating medium in the provides the necessary heat for evaporating the volatile component of the feed. The vapor transmits counter current to the film and gets cleared in the entrainment separator before being left through the vapor nozzle. The concentrated product leaves the evaporator bottom through the concentrate nozzle.

2) **Short Path Distillation Units**: The Short Path Distillation Unit (SPDU) works on the same principle as the Agitated Thin Film Evaporator. However, in the SPDU, the rotor cage assembly houses an internal condenser.

The feed enters above the distributor and gets spread into a thin film on the inside surface of the shell. The rollers on the rotor cage gently agitate the film. The product travels down the heated surface in a very short time while generating vapors. This vapors flow across the rotor and condense in the internally mounted condenser. This short vapor path eliminates pressure drop. The distilled product and the balance bottoms are taken out though separate outlets.

3) **Agitated Thin Film Dryer- Vertical** In a vertical dryer, the rotor blades are hinged. The feed enters the shell tangentially and gets spread along the inside surface of the shell into a thin film. The hinged rotor blades keep the film under intense agitation preventing any scale formation. The feed progressively passes through different phases like liquid, slurry, paste, wet powder and finally powder of the desired dryness. The vapors flow counter current to the film. The powder gets collected in a powder receiver at the bottom.

4) **Agitated Thin Film Dryer- Horizontal** Horizontal orientation is required when the feed is in the form of a thick slurry, paste or wet powder. The fixed clearance rotor with screw elements prevent scale formation and convey the material from the feed end to the powder discharge end in a continuous fashion.

5) **Combination Dryer** A combination of vertical and horizontal dryer produces best results when the feed is dilute and a dry powder is required as an end result eliminating several processing stages like crystallization, filtration or centrifugation.

6) **Rising Film Evaporator** Separation of heat sensitive products with close boiling points is possible using structured packing exhibiting higher efficiency & lower
pressure drop. Use of falling film evaporator & agitated thin film evaporator as reboiler improves quality & yields while processing heat sensitive products.