

### Tumble Spray System

This is an automated bulk processing system designed for smaller parts that require 100% coverage. This is one example for a specific customer; the entire system can be customized in various ways to accommodate any number of different needs. Here's how it works.

- 1) The phosphate parts are presented in large bulk containers and placed in the dump unit. The parts are then dumped into the incline feed conveyor.
- 2) The feed conveyor runs a specific amount into the preheat tumbler (by weight). The parts tumble in there for a preset amount of time until the preheat temp is reached.
- 3) The preheat tumbler unloads into the spray machine and then takes on more parts.
- 4) The spray machine seals and begins to spray primer. The spray gun goes back and forth while spraying for a predetermined amount of time. Once complete, the top coat spray gun does the same thing. Both guns are mounted on the same carriage.
- 5) With the spray cycle complete the parts are unloaded onto the finish conveyor and transferred to smaller totes. Tote fill quantity is determined by weight again, and totes are automatically shuttled in and out.



This photo shows the dump unit on the right and the infeed conveyor with the hopper removed. The operator manually controls the dump rate with a pendant controller. The hopper is designed to hold the contents of a full container, however, some parts flow better with fewer in the hopper.



This is the infeed conveyor feeding the pre-heat tumbler. Part of the outer fencing has been removed for clarity.



This is a better view of the pre-heat tumbler. It uses the same mesh belt as the spray tumbler. The heated air passes through with the parts tumbling or stationary. Air temperature through the unit is controlled by a thermocouple and the part temperature is controlled by the amount of time spent in the unit.



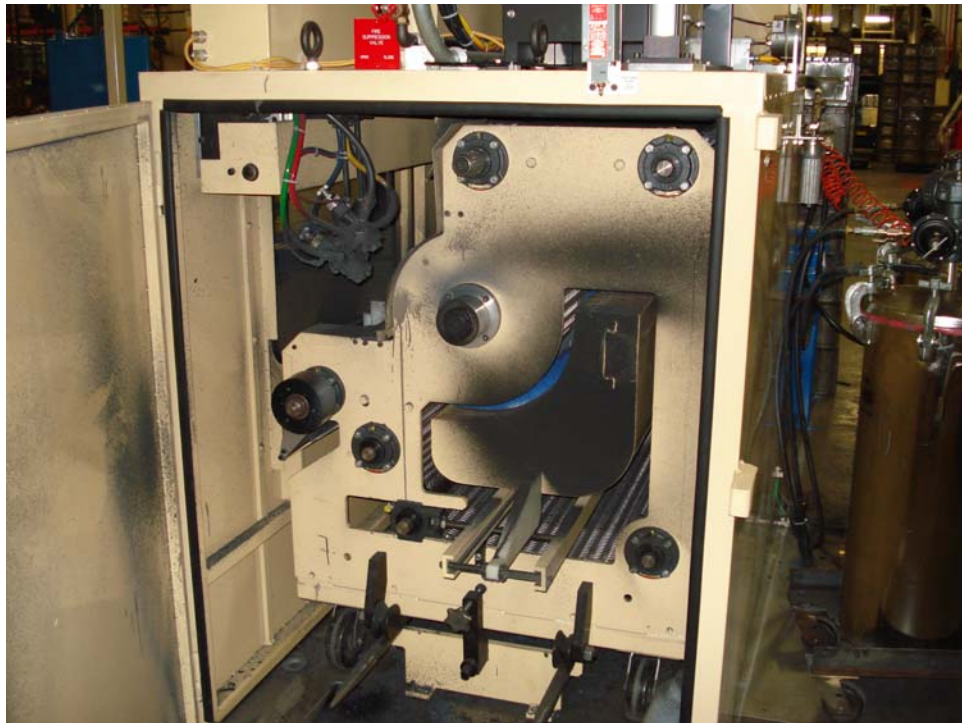
This is the front of the pre-heat tumbler. The orange hopper shuttles the parts to the spray machine. This sequence is initiated by the spray machine emptying its contents onto the finished conveyor.



This is the front of the spray machine with the door closed. The door rises at the end of the cycle to empty finished parts and accept the next batch. The machine will not spray without being 100% sealed. Note the filtered fresh air intake duct in the next picture.



This photos shows the finish conveyor feeding the smaller totes. These totes are filled based on weight and shuttled out when full and replaced with an empty. In this scenario, the batch size is not necessarily the same as the tote capacity.



This shows the end of the spray machine with the door open to remove the tumble cart for cleaning. The cart can be replaced in a matter of minutes with all of the drive mechanism staying stationary in the machine .The “J” shaped unit in the center is the pre filter assembly which slides out for access without removing the cart.