

“Real-Time Quality Control for Aggregate Plants”

Pavement Technology Inc. (PTI) has recently developed an aggregate quality control system, which utilizes an Automatic Belt Sampler (ABS) and an Automated Gradation Unit (AGU). These two units work in tandem to give on-the-spot-analysis of crushed aggregate. Typically they are located downstream from a secondary crusher.

The ABS is a technological advance on the traditional method of stopping the conveyor belt to obtain a sample, on the traditional method of obtaining a sample from a stockpile, and on the traditional method of obtaining a sample from a haul vehicle. The ABS is mounted on a conveyor belt. The ABS has adjustable idlers that conform the belt to approximately a 35-degree angle. A “Cutter Head” parks on the edge of the moving conveyor belt and sweeps a representative sample in 6/10’s of second and deposits the sample into a specimen into the AGU.

The AGU is typically mounted directly underneath the ABS or adjacent to it. The AGU receives the sample from the ABS. The AGU is capable of shaking up to a 90 lb. sample. Vibratory Motors shake the AGU screens (7-screens) and ramps through the resonant optimum frequencies for each screen size. After the shaking cycle is complete the screen rotate 90 degrees. Each screen has gate attached to the back of the screen. These gates open one at a time and deposit material into a hopper, which sits atop load cells. A Programmable Logic Unit (PLC) performs all calculations-percent passing, percent cumulative, percent retained, and the weights of all the sieves. A conveyor can be mounted underneath the weigh hopper to discharge tested material into a discharge pile. Tested material can also be sent to the original conveyor belt. Test result’s can be obtained in less than 10 minutes.

The ABS allows a user to sweep one or multiple sample from a moving conveyor belt and deposit these samples into the AGU. The AGU produces a test report, which can be sent to the control house. The plant operator can then make changes to the close side setting on a crusher. Real-time Quality Control allows aggregate producers to monitor plant production closely, run more material within specification, and utilize plant personnel and their expertise in other areas.